

CORPORATE GOVERNANCE AND BANK PERFORMANCE:

Evidence from the US prior to and during the financial crisis

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Pouha Harikleia, ID: 1102100009

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Abstract

As the international economy is characterized by severe instability and a fluorescing mistrust of the general population towards leadership on a global scale, blame has to be assigned whilst the public reprobation craves for retribution. In the light of the above, corporate governance mechanisms have been indicated as liable parties, although there are economists raising attention to scapegoating phenomena.

This study represents a systematic attempt in determining the complex interrelationship between corporate governance and bank performance during the period of 2003 to 2009 covering both the core of the crisis and the years building up to it.

The overall results of this study contradict the involvement of corporate governance mechanisms indicating an immunity of bank performance to their ratings, with only one variable (Tobin's Q) exhibiting a dependency to CGQ Industry ratings (2003-2009). These results are in good coherence with previous studies, when however reducing the examined timeframe to the last three years of this period, neither CGQ nor their sub-scores seem to have affected the banking sector, indicating that other factors must have dictated the global decline of their performance. It is noteworthy that especially during the years 2008 and 2009 a strong negative enslavement of bank performance to corporate governance mechanisms was observed, primarily concerning ROA and Tobin's Q.

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I. Introduction

The global financial system is experiencing, what is widely considered as the severest economic crisis since the Great Depression, encountered in 1929 (Cheffins, 2009, Eli, 2009). Initiating in 2007, with the collapse of US subprime mortgage market, the crisis led to a low interest rate environment (Brunnermeier, 2009), harboring a slowdown in economic activity, which reemerged as a recession, finally escalating into an unexpected financial break down. Experts labeled the phenomenon as local, but they soon stood to be corrected, as the instability swiftly extended to a global crisis. In 2007 the nationwide mortgage crisis in the US, intensified into an impasse for the homeland's banking system, turned into an international banking crisis and led to the decline of an already trembling global economy (Beedikter, 2011).

Today, there exists a consensus among leading financial minds, that the origin of this crisis can be, to some extent, attributed to the shortcomings of corporate governance mechanisms (Kirkpatrick, 2008). It is believed, that the inadequate standards set by these mechanisms, along with a constant tendency towards globalization, fostered the evolution of a local housing sector crisis into a disastrous worldwide economic slowdown.

This investigation, represents a systematic attempt to encapture the significance of corporate governance standards and whether these affected the bank performance in the US over the period 2003-2009, covering not only the crucial period of the crisis but also the years leading up to it.

The purpose of this empirical study is to determine possible associations, between bank performance and existing corporate governance principles, so as to establish whether corporate mechanisms can be blamed for nowadays situation. Financial researchers and regulators seem to have a keen interest in this topic, as many national and international organisations continuously conduct research in order to establish, if and to what extent these mechanisms influenced economic key figures prior or during the global crisis.

This matter has been hitherto addressed by many researchers (Spong and Sullivan, 2007, Cornett *et al*, 2010, Bermig and Frick, 2010), as studies have been triggered not only by corporate scandals such as the ones of Enron, WorldCom or Parmalat, but also by the recent economic recession. This investigation is intended as a supplement to

existing inquiries and will focus on the interrelation of bank performance and corporate governance. Using a sample of 169 publicly traded banks situated in the US, with both, poor and strong corporate governance ratings, a correlation of their rating to performance will be claimed and a comparative evaluation to previous studies conducted.

This investigation will emphasize on the timeframe encompassing the actual crisis (2007-2009), a period which to the best of our knowledge has yet to be studied, due to the contemporary nature of the phenomenon, as well as on a period which encompasses years prior to the economic recession (2003-2009).

The approach in terms of corporate governance ratings will be twofold and based on:

- a summary of CGQ Industry rating and
- sub-scores corporate governance rating,

while several other financial measures will be considered, in order to quantify their effect on bank performance. Preliminary the period from 2003 to 2009 will be examined in its entirety, and following this, the last three years will be highlighted.

The study briefly outlines the core of the financial industry, both in the US and worldwide and depicts the corporate governance framework, enumerating existing theories and trends that are encountered in implicated economies. This followed by a critical evaluation, in Section II, of the existing literature. Sections III and IV will sustain the main purpose of this investigation, revealing indicators, methods, statistics and equations that will be employed to analyze existing data. Finally, in Section V a general conclusion will be cited, followed by some recommendations based on findings.

Ia. Financial Industry

The history of financial system goes back almost 12,000 years. At that time, the kind of financial exchanges among people had the form of assets transactions, where the most valuable objects were exchanged. This kind of exchange was embodied in the conception of the current banking system (Davidson, 2008). In addition, while at first financial transactions were restricted only to local traders, the evolution of the world contributed to the expansion of financial services, leading to an international banking and financial system.

Nowadays, financial industry is one of the biggest industries worldwide, while it is also ranging among the most important ones, consisting of a wide range of companies and institutions, such as banks, insurance companies, securities traders, security exchanges etc. Financial Industry is a strong foundation to other industries too, as it underpins other sectors to expand and prosper. Financial sector's aggregate income reveals the value that other industries ascribe to these services (Philippon, 2008). According to Forbes Annual Report, 7 out of 10 top companies worldwide belong to the financial sector.

However, the form of today's financial sector has nothing to do with that of some decades ago, where its services were much limited or separated. In the U.S. during mid-1960's, financial services were divided into three main categories: banking, insurance and securities. Banking services consisted of lending and saving money, insurance companies were occupied with property, casualty and life insurances, while securities businesses dealt with advice, brokerage and underwriting. Regulation at that time was tight, while these services were not classified to the high-growth businesses. By the 1980's, the financial services had been transformed, with firms providing loans, securities, insurances and several new financial services that until then were not in their portfolio or at least were not combined. The old unilateral model of services was no longer considered to be a competitive business and was superseded by the new "*lender-broker-dealer-adviser*" model (Smith *et al.* 2006). By the end of 1990's, intergraded firms were expanded to global markets, with capital raising, lending and merger advice covering more than 80% of market share (Smith *et al.* 2006). At that time financial services were divided into two categories: retail market that dealt with consumers and wholesale market that were banks, governments and corporations that had access to

capital markets, while the market was aggressive and highly competitive. The international character and the blending of financial services commenced in mid-1980's, when several institutions started to operate abroad with a wide range of activities. In the US, the Gramm-Leach-Bliley Act^a is the one that allowed in the late-1990's, to merge different types of companies that belonged to financial services. This new regulation gave the opportunity to financial institutions to combine both saving money on behalf of their customers, while at the same time make investments for them. The vantage for the financial institutions was that due to the combination of these two actions, they were able to perform well both in good and unfavorable economic conditions, at least for a short period of time, enabling them to finance the booming "home buying" in the 1990's (U.S. market) by offering subprime and adjustable rate mortgages^b.

Nowadays, financial industry is reformed due to globalization, deregulation, and the recent financial crisis. The U.S. and other developed economies worldwide try to harden their regulation and financial standards in an attempt to prevent another economic meltdown. International bodies such as the IMF and the Basel Committee on Banking Supervision^d are working towards a more transparent, stable and efficient financial system by adopting various legislative measures at times, such as the Financial Services Action Plan (FSAP) in 1998 by IMF and the Basel I (1988), Basel II (2006), and Basel III (2009) by the Basel Committee.

We cannot know what the future will look like for this industry, as many banks and other financial institutions were being blamed for fraud and misleading, however, there are too many factors that could help to the recovery of financial services, with better corporate governance mechanisms being on the focal point of debates.

a. The Gramm-Leach-Bliley Act (GLB) was approved by President of U.S. Bill Clinton in 1999 and opened the market between securities, insurance and banking companies. This enabled them to act as a combination of a commercial bank, and investment bank and an insurance company, while allowed them to be intergraded.

b. In the late 2005, delinquency rates on subprime adjustable rate mortgages began rising from less than 4 per cent to over 10 per cent in September 2007. At the same time, growth rate for such mortgages continued to expand rapidly. Due to rising house prices, actual investor losses were minimal until 2007. Between 2000 and 2006, outstanding mortgage loans increased from USD 4.8 trillion to nearly USD 9.8 trillion, a rise of 13 per cent a year. During the same period, loans to subprime borrowers tripled and at the end of 2006 accounted for 12 per cent of all mortgages (IOSCO, 2008).

c. FSAP seeks to identify the strengths and vulnerabilities of a country's financial system, to determine how key sources of risk are being managed, to ascertain the sector's developmental and technical assistance needs, and to help prioritize policy responses (OECD, 2004)

d. Basel Committee on Banking Supervision (BCBS) was found in 1975 in an attempt to provide guidance regarding banking supervisory issues, and international standards on capital adequacy. BCBS purpose is to encourage monetary and financial stability worldwide and to foster international cooperation. (BIS.org)

Ib. Corporate Governance Framework

Corporate governance definition is multifaceted. For many researchers and regulators, corporate governance is the way companies are directed and controlled, while for others is the mean by which companies and society can prosper. Several theories have been developed during the years and due to the different manner corporations operate across countries. It is important to mention some of the most widespread theories of corporate governance as are still considered to be the fundamental stone for many corporations.

One of the most famous theories that have been developed, is the agency theory, a shareholder oriented theory, which is rested on the separation of ownership and control, while agency problems arise from conflicts of interest between principles (shareholders) and agents (managers). Another theory is the Stakeholder theory, which is considered to be well-known for its social-oriented approach, as in this aspect, companies have an impact on society and are accountable not only to shareholders but to stakeholders too. Finally, a less expanded theory is the transaction costs theory in which companies are trying to internalize transactions for which the cost is higher in the market. Transaction costs theory advocates the problem to the fact that managers try to square company's transactions with their own interest (*opportunism*) and the limited information and time they have (*bounded rationality*), while this activities need to be controlled from shareholders.

However, corporate governance practices vary across countries and that is why a unified corporate governance system couldn't be applicable worldwide. US had always a keen interest on corporate governance and pursued a more shareholder-oriented approach, as that of agency theory. US focus more on market-based systems of corporate governance, with shareholders being the leading actors. Although UK has also been market-oriented, what diversifies it from the US is remuneration practices and board culture. While Anglo-American system is widely expanded, German corporate governance is placed opposite the first one. German companies have displayed an impressive growth the last decades, with many academics attributing this success to their way of governing a corporation. What lends variety to this system compared to others, is that German corporate governance is relationship-based, focusing on long-term investments, while Anglo-American confronts short-termism problems, restricting in that way their financial investments and thus the financial prosperity of the country.

Another framework that is worth to be mentioned is that of Southern European countries, which prevails in Greece and Italy. Corporate governance in these countries is characterized by family ownership systems “*and therefore falls into the insider-oriented model*” (Solomon, 2010). In this model, companies are either family-owned or owned through a cross-company shareholdings structure. Finally, another important and well-established system is that of East Asian and most particularly of Japan. Economy there, is based on *zaibatsu* (Kaen, 2003), a group of family-owned businesses. This insider-dominated structure of corporate governance is characterized by little takeover activity, while shares are not traded so frequently as in the market-oriented system. In contrast to the Anglo-American system, Japanese companies are relationship-based, concentrating ownership on few, eliminating in that way agency problems that could be spotted on a more market-oriented corporate governance system.

It is evident that the past few decades have experienced an increasing interest in corporate governance, with countries espousing a specific model/theory that characterizes them. However, scandals as that of Enron, WorldCom and Parmalat have contributed to the growing need for optimum corporate governance mechanisms. Reforms of these standards have become a hot topic in a national as well as in an international level. International bodies, such as the Organisation for Economic Cooperation and Development (OECD), endeavor to implement new corporate governance standards or meliorate existing ones. Moreover, national governments are trying to strengthen their corporate governance mechanisms especially after the recent economic crisis. This financial slowdown has not only led corporate governance to the center of the global stage, but also altered the emphasis given to it, as prior to global financial crisis, advertence was given only to board performance, while now risk management, internal control and remuneration systems are also deemed to be important.

This change of direction is apparent due to some actions taken by local and “global” governments as mentioned before. In the UK, Turner Review, published in 2009, identifies three causes leading to the recent economic meltdown: “*macro-economic imbalances, financial innovation of little social value and important deficiencies in the key bank capital and liquidity regulation*”. This Review tries to make improvements that focus on a more “macro-prudential” target rather than on specific firms and operations. Similarly, Walker Review, published the same year, makes some notable

recommendations on corporate governance in UK banks and other financial institutions, while it holds ineffective remuneration structures and excessive risk-taking culpable for the awkward predicament of the banking system.

In U.S. much attention has been given also to corporate governance standards long time before global financial crisis, with the publishing of Sarbanes-Oxley Act (SOX) in 2002 being one of the most important steps towards a better system. Ali and Gregoriou, 2006, suggest that the introduction of SOX serves four purposes: *“it creates new structures to regulate both the audit process and the profession, increases the responsibilities and liabilities of corporate boards for failure to insure against future malfunction, provides protection for internal whistleblowers and enhances the authority of the Securities and Exchange Commission (SEC) to police the market”*.

Moreover, as globalization forced countries to act as a whole in order to protect their financial systems against a presumable collapse, many international bodies took action. OECD introduced in 2004 the “OECD Principles of Corporate Governance” in an attempt to provide policy makers, investors, corporations and other stakeholders with *“specific guidance for legislative and regulatory initiatives in both OECD and non-OECD countries”* (Johnston, OECD Secretary-General, 2004). In addition, Basel Committee issued in 2006 guidance in order to promote the adoption of soundness on corporate governance practices in the banking sector, named Basel II. The highlights of this attempt focus most on boards of directors, interest conflicts, transparency, and supervision.

Despite the continuous efforts made by important regulators and researchers, the global financial crisis unfolded significant weaknesses regarding current corporate government standards. Transparency, more efficacious risk management, remuneration practices, and board structure, are some of the attributes that the majority of companies worldwide needed to re-examine and re-structure. We could continue this conversation, however, the above information is enough in order to understand the importance of good corporate governance practices. A thorough literature review follows, with some of the most important researches presented, regarding the connection or not of corporate governance to firm performance.

II. Literature Review

A considerable empirical research has been conducted in order to derive evidence on whether firm performance is related to corporate governance. However, little research has been done regarding the impact of corporate governance on financial firms, especially during the last years, where banks are considered to be liable for the latest financial crisis. In this Section, several important researches and studies follow, in order to report the main streams that other authors have developed regarding corporate governance and the correlation or not with firm performance.

Most of them use financial data in combination to corporate governance practices on their attempt to identify a possible interrelationship with firm performance (Mehran 1995, Demsetz and Lehn 1985). A method that is also followed in this research, where along with corporate governance variables, some financial ratios such as leverage, volatility, firm's size, etc. are examined in their relationship with firm performance. Next follow a brief review of relevant studies and a critical evaluation of their main conclusions:

La Porta *et al.* (1999) are trying to examine the relationship between firm value and corporate governance. Using a sample of 27 countries, they concluded that firms, which belong to countries with higher corporate governance standards, have higher valuation. In addition, they indicated that investors' protection is usually associated with effective corporate governance, while the improvement of this protection and financial markets, depend on the legal structure of each country and in the origin of its law.

Core *et al.* (1999) also tried to find if there is a connection between corporate governance and financial performance by creating a null hypothesis saying that board and ownership structure affect optimal CEO constructing and firm performance. Their sample consisted of 495 observations from 205 publicly traded U.S. firms for a 3 year period. They found that depending on board and ownership structure variables, CEO's gain greater compensation when corporate governance structures are less effective. Generally, they concluded that weaker corporate governance structures create greater agency problems to firms, CEOs receive greater compensation and firm performance gets worse.

Another study that inquires into the relationship between corporate governance and firm performance is that of Klapper and Love (2002). Using corporate governance data from 14 emerging markets, they connect poor corporate governance with countries with weaker legal systems. They also found that better corporate governance is correlated with better operating performance (ROA) and market valuation (Tobin's Q).

An additional study, that of Bauer *et al* (2003).examines companies' quality of governance by using Deminor's corporate governance ratings, covering almost 26 firms from across Europe for a period of one year (2000-2001). The sample is based on 300 different criteria that can be summarized to four major categories: "Rights and Duties of Shareholders", "Range of Takeover Defenses", "Disclosure on Corporate Governance" and "Board Structure and Functioning". They build portfolios consisting of well- and poorly – governed companies and compare their performance, while they also examine the impact of corporate governance on firm valuation. The results showed that these variables have a positive relationship with corporate governance. Moreover, they analyzed the correlation between corporate governance and firm performance by using Net Profit Margin (NPM) and Return on Equity (ROE), finding that these two variables have a negative relationship with corporate governance.

Continuing the empirical research on corporate governance, Gompers *et al.* (2003) constructed a "Governance Index" named "G" with 24 governance rules in order to examine the level of shareholder rights at 1500 U.S. firms during the 1990's. They found that firms with stronger shareholder rights are valued more, have higher profits and sales growth, and lower capital expenditures. They also applied 3 Hypothesis based on Governance provisions and found that weaker shareholders' rights increase agency costs. In addition, they concluded that governance does not affect performance when governance provisions are protective for managers and finally, that when governance provisions are not selected randomly, they do not influence managerial power or agency costs.

Berger and Bonaccorsi di Patti (2003) using a sample of US commercial banks for 1995 try also to identify a relationship between firm performance and corporate governance. They found that corporate governance, specifically agency costs, and ownership structure influence firm performance. In addition, they deduced that higher leverage and lower equity capital ratio have an impact on firm performance.

Leng (2004) wanted also to investigate the relationship between corporate governance and firm performance by using 77 randomly selected publicly listed companies in Malaysia. ROE and Dividend payout are the two dependent variables for measuring financial performance and (1) the proportion of non-executive directors on the board of director, (2) if the chairman of the audit committee is an executive or a non-executive director, (3) if the CEO of the company is also the chairman of the board of directors or not, (4) the proportion of large institutional investors owning shares in the company, (5) the total amount of debt owned by the company divided to total capital (GEAR), (6) the proportion of concentrated ownership of the firm, owned by a single person or few entities and finally, (7) the size of the company in terms of turnover, are the seven independent variables for corporate governance. His results showed that three variables (the proportion of large institutional investors, GEAR and the size of the company in terms of turnover) are significant for firm financial performance by influencing ROE.

Another study is that of Brown and Caylor (2004), who created a summary metric (Gov-Score) in order to measure the strength of firm's governance. They take a sample of 2327 firms starting as of 2003 and base their research on 51 corporate governance provisions, covering eight governance categories: audit, board of directors, charter /bylaws, director education, executive and director compensation, ownership, progressive practices and state of incorporation. They also take six performance measures: ROE, profit margin, sales growth, (regarding operating performance), Tobin's Q (regarding valuation) and dividend yields share repurchases (regarding shareholders payout). Their results indicated that all of firm performance measures have a positive relation with Gov-Score except from sales growth, suggesting that firms, which are poorly-governed, are less profitable, less valuable and pay out less cash to their shareholders. They also concluded that as far as the eight governance categories are concerned, executive and director compensation are highly associated to good performance, while the charter/ bylaws category is the least highly associated.

Sanda *et al.* (2005) attempted to address whether or not corporate governance influences firm performance with a sample of 93 firms from the Nigerian Stock Exchange for the period 1996-1999. PE ratio (Price-Earning), ROE, ROA and Tobin's Q are his dependent variables while directors shareholding, board size, number of outside directors on the board, ownership concentration, leverage, firm size, role of CEO, and if CEO is expatriate or not are the control variables. He inferred that board size and the

separation of the posts of CEO and Chairman are important for firm performance as well as if CEO is an expatriate. In contrast, the proportion of outside directors plays no role on firm performance.

Kajola (2008) seeks to examine also this relationship for Nigerian listed firms between 2000 and 2006. With a sample of 20 non-financial firms and board size, board composition, chief executive status and audit committee as corporate governance variables and ROE and Profit Margin as firm performance measures, he found that ROE has a positive relationship with board size and chief executive status, while the last one is also related to Profit Margin.

Liargovas and Skandalis (2009) conducted a research on which financial determinants can affect firm performance. Using data from Greek industrial firms during the period 1997-2004, they found that leverage affects significantly firm performance, while investments decisions and export activities also contribute to the overall performance of Greek firms.

Peni and Vähämaa (2009) also wanted to examine the relationship between corporate governance and firm performance of the banking industry. Using a sample of 62 large publicly traded US commercial banks and board size and composition as corporate governance variables, they found that banks with higher corporate governance had higher profitability during the year 2008, while they had negative effects on stock market valuations.

Ertugrul and Hedge (2009) examined also the relationship of corporate governance and firm performance. With 4.546 observations available, for years 2003, 2004, 2005 and first six months of 2006, they researched corporate governance ratings by three premier US rating agencies and found that summary scores are poor predictors of firm performance, in contrast to sub-ratings, which provide more reliable results.

Moreover, Cheffins (2009) used a sample of 37 firms that were removed from iconic S&P 500 index during 2008 in order to see if corporate governance practices failed during financial crisis. His overall outcome indicated that corporate governance didn't affect firms' performance significantly, however, some practices, such as institutional shareholders, boardroom practices and executive pay policies revealed problems.

Erkens *et al.* (2010) have also contributed to the empirical research by conducting an empirical analysis using data from 2007-2008 of 296 publicly listed financial firms from 30 countries in order to see if corporate governance influences firm performance. Using cumulative stock returns to measure firm performance and firms' corporate boards and ownership structures to measure corporate governance, they found that firms with higher institutional ownership and more independent boards have worse stock returns during the crisis (2007-08).

Van-Ness *et al.* (2010) examined also the relationship of corporate governance and firm performance for a sample of 200 U.S. companies for a period that covers 2006-2007. They took into account five dimensions of financial performance including: corporate growth, profitability and asset utilization, leverage, market confidence and liquidity, while examining corporate governance by using board composition and more specifically, duality, proportion of outside directors, gender/diversity, boards members average age, average board tenure, board size and occupational expertise. They concluded that boards with a greater number of outside directors have not an influence on performance. On the other hand, duality, occupational expertise, board size and board tenure are variables that are significantly linked to financial performance.

Cheung *et al.* (2011) ran also an empirical research for Chinese companies, and tried to examine the relationship between changes in the quality of corporate governance practices and market valuation of firms for 168 large listed companies in Hong Kong for the years 2002, 2004 and 2005. They found that companies that try to improve their corporate governance practices can increase substantially their market valuation.

Khatab *et al.* (2011) tried also to investigate the connection between corporate governance and firm performance using ROA and ROE to measure financial performance. Based on a sample of 20 listed companies at Karachi Stock Exchange for the period 2005-2009, they concluded that firms with good corporate governance perform better than those with poor corporate governance mechanisms and also that leverage is positively associated with firm performance.

Another empirical study that is considered to be part of the literature that focused on the above relationship is that of Abbas (2011), who focused on Pakistani banks. Taking a sample of 21 Pakistani banks for a period that covers 2006-2009, Abbas found that banks' size and board of directors' size have an effect on financial performance, and

that the number of meetings of board of directors has a negative correlation with financial performance.

An additional contribution is that of Lamport *et al.* (2011). They conducted a cross sectional research for 100 companies in Mauritius in 2009 in order to see if there is a relationship between corporate governance and firm performance. Using 13 variables which they classified into 9 categories (board effectiveness, communication and disclosure, integrated sustainability reporting, audit quality, company secretary, board committee, remuneration, nomination and CEO duality), and by implementing the Z-score from Taffler model in order to measure performance, they found that there is no significant relationship between corporate governance and firm performance.

Last on the list of this literature review is the study of Sakawa and Watanabel (2011), which used 84 Japanese companies from the banking industry during the period 2006-2009 in order to examine the relationship of firm performance and corporate governance. Their results indicated that firm performance (measured by Tobin's Q) has a negative relationship with board size while no connection to outside directors. They also concluded that firm's size is also related to firm performance as the last is affected positively by size.

Generally, previous researches don't conclude in one outcome, the main stream of the majority of them indicates, that higher corporate governance standards have a positive effect on firm performance (Core *et al.*, 1999, Brown and Caylor, 2004, Peni and Vähämää, 2009, Cheung *et al.*, 2011), while some others also nominate that good corporate governance structures are related to the countries' legal systems (La Porta *et al.*, 1999, Klapper and Love, 2002). In addition, when it comes to specific factors of corporate governance that may influence firm performance; it is obvious that a large number of researchers predicate that board size is highly associated to firm performance (Sand *et al.*, 2005, Kajola, 2008, Van-Ness *et al.*, 2010, Abbas, 2011, Sakawa and Watanabel, 2011). However, not a single conclusion can be made on whether or not corporate governance mechanisms affect firm performance in general, as the biggest part of the literature review highlights separate aspects of corporate governance. Other than that, leverage (Liargovas and Skandalis, 2009, Khatab *et al.*, 2011) and firm size (Leng, 2004, Abbas, 2011, Sakawa and Watanabel, 2011) are two variables that are

highly examined in respect to their effect on firm performance and seem to have a relationship with it.

Finally, it is worth mentioning that Tobin's Q, ROA, and ROE are the main variables used to measure firm performance(Leng, 2004, Brown and Caylor, 2004, Sand *et al.*, 2005, Kajola, 2008, Khatab *et al.*, 2011, Sakawa and Watanabel, 2011), with the first variable presenting a strong relationship with corporate governance.

The following research tries to identify a possible relationship between bank performance and corporate governance by using two regression models for each of the dependent variables, including in the first only CGQ Industry rating and in the second only the separated subscores of them regarding corporate governance variables. Only one relative research method was found that of Ertugrul and Hedge (2009), who found the opposite results than that of this study. The rest of the variables are financial ratios that are used extensively on relevant researches, like ROA (Klapper and Love, 2002), ROE (Bauer *et al.*, 2003, Leng, 2004, Brown and Caylor, 2004)) P/E (Sanda *et al.*, 2005), Investment Return and Tobin's Q (Klapper and Love, 2002, Sand et al, 2005, Sakawa and Watanabel, 2011).

Implementing this research, the conclusion expected due to the relevant background, is that corporate governance should effect to some extent bank performance, as better corporate governance practices should lead to a healthier and more stable economic environment.

III. Data and Methodology

Data collection

The sample used in this model, consists of listed U.S. commercial banks in a period of 7 years, starting in 2003 until 2009. The period is of high importance, as during these years significant changes occurred, both in the way financial institutions were managed and regulated, with the implementation of Sarbanes-Oxley Act being one of the main restructurings of the banking regulatory system, regarding U.S. In addition, the 2003-2009 period includes the years the recession struck the U.S. as well as its expansion to the rest of the world, capturing in that way the influence that the economic meltdown had in the performance of banks. The number of banks used in the current research is 169, excluding banks that had limited information regarding corporate governance or accounting data, resulting in 1183 observations. Corporate governance information was extracted from the RiskMetrics Group Inc., while accounting information were gathered from Thomson ONE Banker database.

Corporate governance measurement

Public disclosure documents, press releases and corporate governance websites are the sources of corporate governance data, which are then reviewed by ISS' corporate governance analysts. For US companies, which is the area of this research, data were gathered on 63 different items regarding: 1. Board of directors, 2. Audit, 3. Antitakeover, and 4. Compensation/ownership. CGQ-index and CGQ-industry are the two ranks for the measurements of corporate governance effectiveness, there is also CGQ subscores that provide company's governance measurements in four particular areas: board, takeover defense, executive and director compensation and ownership, and audit. Several researches used CGQ Metrics in order to measure corporate governance effectiveness such as Brown and Caylor (2004), Ertugrul and Hedge (2009).

Firm performance measurement

In order to see if there is a relationship between corporate governance and bank performance, accounting data were extracted from Thomson One Banker, using five measurements, ROA, ROE, P/E, Investment Return, and Tobin's Q for firm performance. The first variable we use in order to determine firm performance is ROA (return on assets). ROA is an important indicator of how profitable the companies' assets are in generating revenue. This ratio has been used widely from researchers that wanted to examine the relationship between corporate governance and firm performance such as Sanda *et al.*(2005), and Khatab *et al.*, (2011). ROE (return on equity), which is also used often as a measurement of firm performance (Bauer *et al.*, 2003, Leng, 2004, Brown and Caylor, 2004, Sanda *et al.*, 2004, Kajola, 2008, Khatab *et al.*, 2011) it measures company profitability in regard to money shareholders invested. P/E (price-earnings) ratio is the third variable being examined and compares the earnings per share with the amount that has been invested on it. P/E ratio reflects the market's confidence in future prospects of the company (Weetman, 2011). Another indicator of firm performance is Investment Return ratio which is a valuable indicator especially for investors helping them to see if their investments were fruitful. The last variable is Tobin's Q, which has been used on several prior studies (Klapper and Love, 2002, Brown and Caylor, 2004, Sanda *et al.*, 2005, Sakawa and Watanabel, 2011) and measures the market value of a firm regarding its assets.

Table 1: Dependent Variables

Variables	Description
ROA	Net Income before Preferred Dividends+((Interest Expense on Debt-Interest Capitalized)*(1-Tax Rate)) / Last Year's Total Assets
ROE	Income Before Dividends-Preferred Dividends) / Total Common Equity
P/E	Current Price / Earnings
Investment Return	Market price Year End + Dividends per Share + Special Dividend-Quarter 1 +

Special Dividend-Quarter 2 + Special Dividend Quarter 3 +Special Dividend Quarter 4) / Last Year's Market price-Year End)*100

Tobin's Q

Market Value / Total Assets

As it is already mentioned corporate governance effectiveness is measured using CGQ rating. In this research we take into account CGQ-Industry, while we run our model once more using this time the five subscores of corporate governance effectiveness (board, takeover defense, executive and director compensation and ownership, and audit), so as to see if there is one or more of these factors that may affect firm performance more than the others. Along with corporate governance variables we examine also some data that are valuable for banks. More specifically, we take into account size by using total assets of banks, capital risk, credit risk, which is measured by several kinds of loans such as non performing loans to total loans, net loan losses to total loans, consumer and installment loans to total loans and commercial and industrial loans to total loans. We also measure leverage by using total debt to total assets, solvency is controlled by total assets to total liabilities and last we control volatility using stock's price.

Table 2. Independent Variables

Variables	Definition
CGQ	Industry Corporate Governance Rating
board	board subscores-industry
takeover	takeover defense subscores-industry
compensation	compensation subscores-industry
audit	audit subscores-industry
capital _risk	Capital Adequacy Ratio- Tier 1
size	Natural logarithm of total assets
credit _risk1	Non Performing Loans / Total Loans

credit_risk2	Net Loan Losses / Total Loans
credit_risk3	Consumer & Installment Loans / Total Loans
credit_risk4	Commercial \$ Industrial Loans / Total Loans
leverage	Total Debt / Total Assets
solvency	Total Assets / Total Liabilities
volatility	Std. Deviation of stock returns
Y2003	A dummy variable with value of 1 if observations are in year 2003 and 0 otherwise
Y2004	A dummy variable with value of 1 if observations are in year 2004 and 0 otherwise
Y2005	A dummy variable with value of 1 if observations are in year 2005 and 0 otherwise
Y2007	A dummy variable with value of 1 if observations are in year 2006 and 0 otherwise
Y2008	A dummy variable with value of 1 if observations are in year 2007 and 0 otherwise
Y2009	A dummy variable with value of 1 if observations are in year 2009 and 0 otherwise
e	Error term

These independent variables that we use in our model are of importance to banks, as financial institutions have a different way of measuring their performance due to their special accounting data. That is one of the reasons that we had to limit our research on financial institutions only, as other companies of the same sector, such as insurances or other diversified financials do not have the same way of measurement, regarding their ratio construction.

Using an Ordinary Least Squared Model, we are going to exam if a relationship exceeds between corporate governance and bank performance, with the difference of running the model twice for each dependent variable, using first CGQ-industry rating for corporate governance effectiveness and second CGQ subscores industry, for periods 2003-2009 and 2007-2009, respectively.

$$\text{Firm Performance} = \beta_0 + \beta_1\text{CGQ} + \beta_2\text{size} + \beta_3\text{cpt}_r + \beta_4\text{nprf_tl} + \beta_5\text{nl_tl} + \beta_6\text{cns_tl} + \beta_7\text{cmm_tl} + \beta_8\text{leverage} + \beta_9\text{solvency} + \beta_{10}\text{volatility} + \beta_{11}\text{Y2003} + \beta_{12}\text{Y2004} + \beta_{13}\text{Y2005} + \beta_{14}\text{Y2007} + \beta_{15}\text{Y2008} + \beta_{16}\text{Y2009} + e$$

$$\text{Firm Performance} = \beta_0 + \beta_1\text{brd_in} + \beta_2\text{tkd_in} + \beta_3\text{cmp_in} + \beta_4\text{ad_in} + \beta_5\text{size} + \beta_6\text{cpt}_r + \beta_7\text{nprf_tl} + \beta_8\text{nl_tl} + \beta_9\text{cns_tl} + \beta_{10}\text{cmm_tl} + \beta_{11}\text{leverage} + \beta_{12}\text{solvency} + \beta_{13}\text{volatility} + \beta_{14}\text{Y2003} + \beta_{15}\text{Y2004} + \beta_{16}\text{Y2005} + \beta_{17}\text{Y2007} + \beta_{18}\text{Y2008} + \beta_{19}\text{Y2009} + e$$

$$\text{Firm Performance} = \beta_0 + \beta_1\text{CGQ} + \beta_2\text{size} + \beta_3\text{cpt}_r + \beta_4\text{nprf_tl} + \beta_5\text{nl_tl} + \beta_6\text{cns_tl} + \beta_7\text{cmm_tl} + \beta_8\text{leverage} + \beta_9\text{solvency} + \beta_{10}\text{volatility} + \beta_{11}\text{Y2008} + \beta_{12}\text{Y2009} + e$$

$$\text{Firm Performance} = \beta_0 + \beta_1\text{brd_in} + \beta_2\text{tkd_in} + \beta_3\text{cmp_in} + \beta_4\text{ad_in} + \beta_5\text{size} + \beta_6\text{cpt}_r + \beta_7\text{nprf_tl} + \beta_8\text{nl_tl} + \beta_9\text{cns_tl} + \beta_{10}\text{cmm_tl} + \beta_{11}\text{leverage} + \beta_{12}\text{solvency} + \beta_{13}\text{volatility} + \beta_{14}\text{Y2008} + \beta_{15}\text{Y2009} + e$$

Table 3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	1182	-5,80	3,95	1,15	0,94
ROE	1182	-4883,76	38,85	3,38	143,41
P/E	1182	2,00	1037,00	20,90	39,30
Inv_return	1182	-94,31	245,50	2,93	32,87
Tobin's Q	1182	-0,68	0,28	-0,03	0,10
CGQ	1182	0,20	100,00	56,21	27,90
board	1182	0,00	5,00	3,26	1,39
compensation	1182	0,00	5,00	3,36	1,39
takeover	1182	0,00	5,00	3,06	1,44

audit	1182	0,00	5,00	3,35	1,44
size	1182	4,98	14,07	7,47	1,54
capital_risk	1182	0,03	38,40	11,75	3,13
credit_risk1	1182	0,00	0,26	0,01	0,02
credit_risk2	1182	-0,01	0,06	0,00	0,01
credit_risk3	1182	0,00	0,52	0,11	0,98
credit_risk4	1182	0,00	0,87	0,22	0,17
leverage	1182	0,00	0,67	0,16	0,09
solvency	1182	1,00	1,67	1,10	0,04
volatility	1182	10,16	61,11	20,88	5,54

The above table presents the descriptive statistics of both dependent and independent variables that we are going to use in this model. It contains the number of observations, minimums, maximums, Means and standard deviation of the variables. Interpreting the table we can see that banks in this seven year period did not perform well with an average ROA of almost 1%, meaning that banks didn't utilize effectively their assets to generate profit. Similar results we see also on ROE with a Mean of about 3%, connoting small profits in comparison to the total amount shareholders invested. Continuing with descriptive statistics, the Mean of P/E ratio, almost 21%, shows relative good earnings, meaning that the market believes in the prospects of banks. However, this ratio should better be compared among firms that belong to the same industry and not to the whole industry, in this case financial industry, because the purpose of the price-earnings ratio is to see how a company performs in relation to another company of the same sector. Investment Return Mean of almost 3% also means that returns on investments of banks are more than their costs, however, this doesn't mean that shareholders and other interested parts in banks investments can be sure of the risk that these decisions have. Tobin's Q on the other hand, with a Mean close to 0 indicates that banks' cost of replacing their assets is generally greater than the value of their stock. Meaning that their stocks are undervalued. This ratio is very crucial when it comes to investments and is widely used for this kind of decisions. The next variable under examination on the table is CGQ-industry rating, its Mean of 56 in relation to its minimum and maximum

score, indicates a moderate performance of banks regarding their corporate governance practices, suggesting that there is a lot of space for improvement. More specifically, if we take a look on the Means of CGQ subscores, we can see that all of them are around 3, with the highest score of 3,3553 on compensation and the lowest on takeover defenses with a Mean of 3,0601. As the Maximum on all of the sub-scores corporate governance rating is 5, companies could try to increase their averages in an attempt of improving their general picture, regarding corporate governance. Next on the table is the size of banks, which has been calculated according to the assets of them, and their natural logarithm. As we can see the average size of the banks that are included on the research are of medium size with a Mean of almost 7,5 and a minimum and maximum of 4,98 and 14,07, respectively. Regarding capital risk on banks, it seems that banks do not have extreme chances of losses that would affect financial institutions' capital base, while regarding credit risk, which especially for banks is measured based on several loans, the first two indicators of credit risk, non performing loans to total loans and net loan losses to total loans, seem to be very low, but consumer & installment loans to total loans and commercial & industrial loans to total loans indicate that a relatively high proportion of borrowers is not able to repay both principal and interest. This is in accordance to one of the main reasons of the US financial crisis, as thousands of people couldn't meet their obligations to banks. Moving on, seems that most of banks have financed their assets based on debt rather than equity, while they seem to respond well to their obligations. Finally, it seems there is a fluctuation in securities' values, however, there are no changes that spread out over a large range of values.

Correlation Matrix

The table below introduces the correlation of the variables used in the model. Based on theory, correlation is measured on a scale equal to 1 when there is a perfect positive correlation meaning that if one variable is increasing then the other is also increasing, equals to -1 when there is a perfect negative correlation with one variable increasing and the other decreasing, and zero when there is no correlation between them. According to our correlation matrix, our dependent variables, ROA, ROE, P/E and Tobin's Q do not seem to have a very strong correlation with the independent variables. More specifically, while ROA presents a negative correlation with volatility (-0,324), and two of the credit risk indicators, credit _risk1 (-0,591) and credit _risk2 (-0,608), no other connection seems to be appreciable enough. The same happens with the next dependent variable ROE, as none of the independent variables are strong correlated to it. Interesting is P/E variable which shows no important relationship with any of the independent variables, and especially with corporate governance, which is our primary variable under investigation. On the other hand, Investment Return shows a relatively stronger negative relationship with non performing loans and net loan losses (credit risk 1 & 2) compared to P/E variable, but once more its correlation to corporate governance is negligible. Finally, Tobin's Q seems to have the higher positive relationship with CGQ, although it is nonessential (0,009). It is also has a stronger negative correlation leverage (-0,59), and with almost all predictors of credit risk apart from commercial and industrial loans to total loans (credit _risk4). However, regression analysis is needed, in order to inquire into the possible relationship between firm performance and the independent variables of the model. The next part presents the models for every dependent variable, examined both for CGQ-Industry and corporate governance sub-scores, separately, for the periods 2003-2009 and 2007-2009, respectively.

Table 4: Correlation Matrix

	ROA	ROE	P/E	Inv_ Retur n	Tobin 's Q	CGQ	board	comp ensat ion	takeo ver	audit	size	lever age	solve ncy	volati lity	Capit al _risk	cred_ risk1	cred_ risk2	cred_ risk3	cred_ risk4	
ROA	1,00 0																			
ROE	0,24 4**	1,00 0																		
P/E	- 0,19 3	- 0,00 8	1,00 0																	
Inv_ _retu rn	0,47 9**	0,13 0**	- 0,02 8	1,00 0																
Tobin 's Q	0,30 8**	0,04 1	- 0,02 6	0,37 5**	1,00 0															
CGQ	0,04 1	0,02 5	0,01 0	- 0,03 3	0,09 8**	1,00 0														
board	0,01 9	0,00 5	0,01 4	- 0,03 0	0,06 4*	0,82 1**	1,00 0													
comp ensat ion	0,01 2	0,02 7	0,00 6	- 0,04 5	- 0,01 2	0,42 4**	0,19 5**	1,00 0												
takeo ver	0,00 6	0,02 5	0,00 1	- 0,02 9	0,10 5**	0,22 0**	0,08 7**	- 0,01 7	1,00 0											
audit	- 0,00 5	0,04 5	0,04 6	- 0,01 1	- 0,02 4	0,43 3**	0,35 8*	0,10 5**	- 0,01 1	1,00 0										
size	0,06 2*	0,01 3	- 0,03 3	- 0,07 3*	0,01 4	0,44 9**	0,41 4**	0,27 8**	- 0,06 6*	0,18 3**	1,00 0									
lever age	0,16 6**	0,03 7	- 0,07 3*	- 0,04 5	- 0,59 0	0,06 4*	0,07 5**	0,07 7**	- 0,12 5**	0,04 1	0,24 0**	1,00 0								
solve ncy	0,11 4**	0,09 3**	0,11 5*	- 0,04 8	0,15 4**	0,09 3**	0,05 8*	0,07 9**	0,07 2*	0,04 7	0,06 3*	- 0,22 3	1,00 0							
Volati lity	- 0,32 4**	- 0,16 3**	0,04 3	- 0,03 1	- 0,17 4**	0,03 7	0,09 9**	- 0,06 3*	0,04 7	0,04 7	0,08 6**	0,09 1**	- 0,06 5*	1,00 0						
Capit al _risk	0,11 4**	0,12 0**	0,07 8**	0,09 5**	0,06 4	- 0,06 3*	- 0,05 5	- 0,05 4	0,07 5**	- 0,05 0	- 0,29 6**	- 0,01 1	- 0,49 1**	- 0,03 3	1,00 0					

Con t'd	ROA	ROE	P/E	Inv_ Retur n	Tobin 's Q	CGQ	board	comp ensati on	takeo ver	audit	size	lever age	solve ncy	volati lity	Capit al _risk	cred_ risk1	cred_ risk2	cred_ risk3	cred_ risk4		
credit _risk 1	- 0,59 1**	- 0,23 6**	0,07 6**	- 0,33 9**	- 0,27 5**	- 0,00 4**	- 0,00 3**	- 0,03 1	0,02 2	0,01 0	0,00 1	- 0,04 9	- 0,08 8**	0,34 9**	- 0,04 6	1,00 0					
credit _risk 2	- 0,60 8**	- 0,17 2**	0,21 8**	- 0,29 4**	- 0,21 4**	0,11 5**	0,11 3**	0,05 9*	0,03 4	0,03 3	0,17 8**	- 0,06 6*	0,00 8	0,35 7**	- 0,01 0	0,56 0**	1,00 0				
credit _risk 3	0,11 9**	0,03 8	- 0,04 9	0,06 6*	0,04 3	0,16 5	0,16 8**	0,07 5**	- 0,03 6	0,05 3	0,26 1**	0,08 5**	- 0,05 8*	- 0,10 3**	- 0,08 3**	- 0,08 8**	0,03 4	1,00 0			
credit _risk 4	0,032	0,037	- 0,029	0,032	0,207 **	0,153	0,129 **	0,046	0,101 **	- 0,011	0,178 **	- 0,179 **	0,060 *	- 0,057	- 0,129 **	- 0,029	0,000	0,153 **	1,000		

IV. Data Analysis and Discussion

In order to see if there is a relationship between firm performance and corporate governance, five variables are examined, measuring firm performance: ROA, ROE, P/E, Investment Return, and Tobin's Q. For each of these variables two regression models are going to be run, so as to see if corporate governance affects bank performance. First, CGQ is going to be the independent variable, which wants to see if it affects dependent variables. Second, corporate governance subscores: board, takeover defense, executive and director compensation and ownership, and audit will be the independent variables that are going to be tested on their possible impact on firm performance. Tables that follow present the statistical analysis of the equations and the Hypothesis we are examining, first for the years 2003-2009 and then for 2007-2009:

$H_0 = CGQ$ does not affect firm performance (ROA, ROE, P/E, Inv_return, Tobin's Q)

$H_1 = CGQ$ affects firm performance (ROA, ROE, P/E, Inv_return, Tobin's Q)

Table 5: Regression Analysis of firm performance regarding CGQ for 2003-2009:

Variables	ROA	ROE	P/E	Inv_return	Tobin's Q	VIF
	t (Sig.)	t (Sig.)	t (Sig.)	t (Sig.)	t (Sig.)	
(Constant)	-1,780 (0,075)	-0,757 (0,449)	-2,345 (0,019)	0,012 (0,991)	3,925 (0,000)	
CGQ	0,762 (0,446)	0,388 (0,698)	0,384 (0,701)	-0,886 (0,376)	3,025 (0,003)	1,281
size	5,176 (0,000)	1,190 (0,234)	-1,940 (0,053)	0,845 (0,398)	10,720 (0,000)	1,783
leverage	5,531 (0,000)	0,905 (0,366)	-0,422 (0,673)	-2,119 (0,034)	-32,959 (0,000)	1,313
solvency	2,403 (0,016)	0,380 (0,704)	3,082 (0,002)	0,030 (0,976)	-4,986 (0,000)	1,625
volatility	-3,349 (0,001)	-2,795 (0,005)	-0,667 (0,505)	2,452 (0,014)	-0,023 (0,982)	1,308
capital_risk	4,087 (0,000)	3,357 (0,001)	-0,153 (0,878)	1,279 (0,201)	7,620 (0,000)	1,692
credit_risk1	-9,298 (0,000)	-4,694 (0,000)	-1,237 (0,216)	-6,206 (0,000)	-3,442 (0,001)	1,729
credit_risk2	-15,495 (0,000)	-1,550 (0,121)	7,651 (0,000)	-6,535 (0,000)	-5,255 (0,000)	1,769
credit_risk3	2,523	1,970	-1,346	1,294	-0,103	1,140

	(0,012)	(0,844)	(0,179)	(0,196)	(0,918)	
credit_risk4	0,735	1,210	-0,809	0,774	2,726	1,128
	(0,463)	(0,227)	(0,419)	(0,439)	(0,007)	
Y2003	2,147	0,692	-0,350	13,298	2,615	1,829
	(0,032)	(0,489)	(0,727)	(0,000)	(0,009)	
Y2004	-0,349	0,272	0,293	1,597	3,293	1,765
	(0,727)	(0,786)	(0,770)	(0,111)	(0,001)	
Y2005	0,169	0,142	0,180	-4,732	0,633	1,726
	(0,866)	(0,887)	(0,857)	(0,000)	(0,572)	
Y2007	-2,010	0,480	-0,670	-11,926	-5,209	1,728
	(0,045)	(0,631)	(0,503)	(0,000)	(0,000)	
Y2008	-7,592	1,271	-1,044	-10,062	-9,513	1,817
	(0,000)	(0,204)	(0,297)	(0,000)	(0,000)	
Y2009	-3,749	0,452	-1,128	-2,845	-8,981	2,152
	(0,000)	(0,651)	(0,260)	(0,005)	(0,000)	

	ROA	ROE	P/E	Inv_return	Tobin's Q
Adjusted R-square	0,555	0,071	0,062	0,510	0,615
F- value	93,023	6,652	5,889	77,848	118,980

where,

CGQ = Industry corporate governance rating,

$size$ = natural logarithm of Total Assets,

$leverage$ = Total Debt / Total Assets,

$solvency$ = Total Assets / Total Liabilities,

$volatility$ = Std. Deviation of stock returns,

$capital_risk$ = Capital Adequacy Ratio – Tier 1,

$credit_risk1$ = Non performing loans / Total loans,

$credit_risk2$ = Net loan losses / Total loans,

$credit_risk3$ = Consumer & Installment loans / Total loans,

$credit_risk4$ = Commercial & Industrial loans / Total loans,

$Y2003$ = A dummy variable taking 1 if observations belong to year 2003 and 0 otherwise,

$Y2004$ = A dummy variable taking 1 if observations belong to year 2004 and 0 otherwise,

$Y2005$ = A dummy variable taking 1 if observations belong to year 2005 and 0 otherwise,

$Y2007$ = A dummy variable taking 1 if observations belong to year 2007 and 0 otherwise,

$Y2008$ = A dummy variable taking 1 if observations belong to year 2008 and 0 otherwise,

$Y2009$ = A dummy variable taking 1 if observations belong to year 2009 and 0 otherwise.

Regression Analysis helps us understand how the value of one variable (dependent) changes when one of the independent variables changes, while the others remain fixed. In this research, first is examined the value of ROA regarding the independent variables that were presented and explained earlier, with CGQ being the variable which will reveal to us its possible impact on ROA. Adjusted R-square shows the relative predictive power of the model we use. Adjusted R-square for ROA is 0,555, thus, we can say that almost 56% of the dependent variable is explained from the controlled variables, which indicates a successful regression model. More specifically, table 5 shows that CGQ rating along with credit_risk4, Y2004, and Y2005 have a relative low t-value, indicating no impact of these variables on ROA, especially for CGQ, t-value equals to 0,762. In addition, the confidence interval of the model is 5%, while the above variables have Sig values that exceed 0,05. This means that CGQ, credit_risk4, Y2004, and Y2005 cannot reject the Null Hypothesis. In contrast, the rest of the variables and especially size, leverage, volatility, capital _risk, credit_risk1, credit_risk2, , and the last two years of the examined period have a great impact on ROA, with Sig values $\leq 0,05$ leading to the rejection of Null Hypothesis.

In contrast to ROA Regression Analysis Model, the predictive power of ROE Model is not strong enough, with Adjusted R-square of 0,071. This means that only 7% of the dependent variable can be explained by the control variables. Here also, CGQ, which is the main variable under investigation, doesn't have an impact on ROE with t-value = 0,388 and Sig. value = 0,698, keeping the same confidence interval of 5%. Thus, Null Hypothesis cannot be rejected by CGQ and the majority of control variables. Nevertheless, there are volatility, capital _risk, and credit_risk1, that have a strong impact on ROE, with Sig. values of no more than 0,005, but once more CGQ, which is the variable that concerns us more, isn't included in them. We should however keep in mind that results are not a good indicator, as Adjusted R-square is very low.

Like on ROE regression model, Adjusted R-square for P/E, is also very low, with only 6,2% of the dependent variable being explained by the control variables, this model, like the previous does not have strong predictive power. Likewise, CGQ doesn't have an impact on P/E with t = 0,384, and Sig. value = 0,701, followed by the rest of the variables. Only two of them, solvency and credit_risk1 have strong relationship to P/E with the first having t = 7,651, a relatively high value, and Sig. value = 0, and the second with t = 3,082 and Sig. value = 0,002, keeping p-value of 0,05. Although these

two variables seem to have a strong impact on P/E, the variable that is under examination, CGQ doesn't exhibit any effect on firm performance, thus, it cannot reject Null Hypothesis. It is important to mention, that the two previous examined variables, ROE and P/E, which unveiled not an important relation to the control variables, have actually a low predictive power.

Continuing with the regression analysis, this time with Investment Return as the variable that measures firm performance, we see that the Adjusted R-square of this model equals to 0,510, showing that almost half of the sample of the dependent variable, 51% can be explained by the independent variables. CGQ also here seems not to have an impact on firm performance, as t-value equals to 0,886, in absolute value and Sig.-value that equals to 0,376, which exceeds p-value of 0,05. Once more, CGQ cannot reject Null Hypothesis, meaning that it doesn't have an impact on Investment Return. However, leverage, volatility, credit_risk1, credit_risk2, and all the examined years except for 2004 have relatively high t-values and very small p-values that do not exceed 0,05. These variables have a strong impact on Investment Return, so they can reject Null Hypothesis. Nevertheless, once more, corporate governance doesn't seem to have an impact on firm performance.

The last dependent variable under investigation is Tobin's Q. This model, which according to Adjusted R-square of 0,615, has a quite strong predictive power as 61% of the sample is explained by the control variables, shows that CGQ has an impact on Tobin's Q, with $t = 3,025$ and Sig. value = 0,003 much lower than that of confidence interval of 0,05. The same happens to the majority of the control variables with most of them having very high t-values and quit low Sig. values, such as size (Sig. = 0), leverage (Sig. = 0), solvency (Sig. = 0), capital _risk (Sig.=0), credit _risk1 (Sig.= 0,001), credit _risk2 (Sig.=0), Y2008 (Sig. = 0) and Y2009 (Sig. = 0). Therefore, most of the independent variables have an effect on Tobin's Q, rejecting in that way Null Hypothesis. Exceptions are credit_risk3 and volatility which have very high Sig. values that exceed confidence interval. Noteworthy is that Tobin's Q seems to be the only factor of firm performance that is affected by corporate governance within a model that represents 61% of the sample. More specifically, it seems that CGQ increases the value of Tobin's Q, in contrast to the years 2007, 2008, and 2009 during which Tobin's Q is continuously decreasing. This is not surprising, as these years are the most crucial of the recession period, and a decline on firm performance was expected to occur. The

model should also be checked for Multicollinearity. Results show no concerning signs, as VIF is much lower than 10.

Next on the research is Regression Analysis with independent variables of corporate governance, the subscores of the industry for board, takeover defense, executive and director compensation and ownership, and audit. The method that is followed here is the same as the previous, including all the other independent variables.

Table 6: Regression Analysis of firm performance regarding corporate governance subscores for 2003-2009:

H_0 = corporate governance subscores do not affect firm performance (ROA, ROE, P/E, Inv_return, Tobin's Q)

H_1 = corporate governance subscores affect firm performance (ROA, ROE, P/E, Inv_return, Tobin's Q)

Variables	ROA t (Sig.)	ROE t (Sig.)	P/E t (Sig.)	Inv_return t (Sig.)	Tobin's Q t (Sig.)	VIF
(Constant)	-1,888 (0,059)	-0,798 (0,425)	-2,318 (0,021)	0,014 (0,989)	3,755 (0,000)	
board	-0,155 (0,887)	-0,780 (0,436)	0,085 (0,932)	-0,662 (0,508)	1,601 (0,110)	1,418
compensation	-0,557 (0,557)	0,157 (0,875)	0,070 (0,944)	-0,233 (0,8160)	0,435 (0,663)	1,124
takeover	1,821 (0,069)	1,154 (0,249)	-0,761 (0,447)	0,629 (0,529)	1,140 (0,255)	1,053
audit	-0,442 (0,659)	1,779 (0,076)	1,708 (0,088)	-0,478 (0,633)	-1,494 (0,136)	1,177
size	5,742 (0,000)	1,364 (0,173)	-2,112 (0,035)	0,887 (0,375)	11,377 (0,000)	1,796
leverage	5,653 (0,000)	0,976 (0,329)	-0,477 (0,633)	-2,044 (0,041)	-32,709 (0,000)	1,325
solvency	2,435 (0,015)	0,271 (0,786)	3,012 (0,003)	0,032 (0,974)	-4,857 (0,000)	1,635
volatility	-3,452 (0,001)	-2,793 (0,005)	-0,655 (0,513)	2,429 (0,015)	-0,144 (0,885)	1,338
capital_risk	4,016 (0,000)	3,416 (0,001)	-0,056 (0,956)	1,225 (0,221)	7,542 (0,000)	1,704
credit_risk1	-9,328 (0,000)	-4,717 (0,000)	-1,241 (0,215)	-6,208 (0,000)	-3,403 (0,001)	1,732
credit_risk2	-15,482 (0,000)	-1,509 (0,131)	7,706 (0,000)	-6,550 (0,000)	-5,240 (0,000)	1,773
credit_risk3	2,608	0,261	-1,382	1,318	0,024	1,144

	(0,009)	(0,794)	(0,167)	(0,188)	(0,981)	
credit_risk4	0,584	1,262	-0,609	0,655	2,622	1,142
	(0,559)	(0,207)	(0,543)	(0,513)	(0,009)	
Y2003	2,179	0,555	-0,469	13,237	2,793	1,844
	(0,030)	(0,579)	(0,639)	(0,000)	(0,005)	
Y2004	-0,321	0,235	0,251	1,592	3,387	1,765
	(0,748)	(0,814)	(0,801)	(0,112)	(0,001)	
Y2005	0,177	0,166	0,195	-4,735	0,644	1,727
	(0,860)	(0,868)	(0,846)	(0,000)	(0,520)	
Y2007	-2,007	0,399	-0,739	-11,888	-5,091	1,734
	(0,045)	(0,690)	(0,460)	(0,000)	(0,000)	
Y2008	-7,467	1,180	-1,150	-9,980	-9,306	1,831
	(0,000)	(0,238)	(0,250)	(0,000)	(0,000)	
Y2009	-3,655	0,405	-1,190	-2,808	-8,847	2,176
	(0,000)	(0,685)	(0,234)	(0,005)	(0,000)	

	ROA	ROE	P/E	Inv_return	Tobin's Q
Adjusted R-square	0,555	0,072	0,063	0,509	0,613
F- value	78,535	5,832	5,164	65,454	99,459

where,

board = sub-score of board corporate governance rating,

compensation = sub-score of executive and director compensation and ownership corporate governance rating,

takeover = sub-score of takeover defenses corporate governance rating,

audit = sub-score of audit corporate governance rating,

size = natural logarithm of Total Assets,

leverage = Total Debt / Total Assets,

solvency = Total Assets / Total Liabilities,

volatility = Std. Deviation of stock returns,

capital_risk = Capital Adequacy Ratio – Tier 1,

credit_risk1 = Non performing loans / Total loans,

credit_risk2 = Net loan losses / Total loans,

credit_risk3 = Consumer & Installment loans / Total loans,

credit_risk4 = Commercial & Industrial loans / Total loans,

Y2003 = A dummy variable taking 1 if observations belong to year 2003 and 0 otherwise,

Y2004 = A dummy variable taking 1 if observations belong to year 2004 and 0 otherwise,

Y2005=A dummy variable taking 1 if observations belong to year 2005 and 0 otherwise,
Y2007=A dummy variable taking 1 if observations belong to year 2007 and 0 otherwise,
Y2008=A dummy variable taking 1 if observations belong to year 2008 and 0 otherwise,
Y2009=A dummy variable taking 1 if observations belong to year 2009 and 0 otherwise.

This time ROA is examined on whether it is affected by separated corporate governance practices, including board, takeover defenses, executive and director compensation and ownership, and finally, audit. The model has a good predictive power for the first dependent variable, corresponding to the previous model of ROA, with Adjusted R-square of 0,555, indicating 55% of the sample being explained by control variables. However, none of the corporate governance variables has an impact on ROA, with all of them having very small t-values and large Sig. values ranging from 0,069 to 0,877 with confidence interval of 5%. This denotes that corporate governance variables cannot reject Null Hypothesis, thus, they do not affect firm performance (ROA). However, size, leverage, solvency, volatility, capital risk, credit risk (except credit_risk4), and all years under investigation except for 2004 and 2005 seem to have an impact on ROA with the majority of them having a Sig. value close to zero. These variables, although they can reject Null Hypothesis, they increase or decrease ROA by little. Results here are the same as on the previous model of ROA, showing no impact of corporate governance on firm performance.

Regression Analysis for ROE seems to have little predictive power, with Adjusted R-square of only 0,072, indicating that only 7,2% of the dependent variable can be explained by the control variables, following the previous model of ROE which also had limited predictive power. However, some of the results are worth to be mentioned. Here again corporate governance variables do not affect ROE as all of them have Sig. values that exceed p-value of 0,05, with minimum equals to 0,076 (audit) and maximum of 0,875 (director compensation and ownership). Consequently, as CGQ didn't have any impact on ROE, here also our model can't find any of the corporate governance variables to have an influence on it, making them unable to reject Null Hypothesis. However, capital risk seems to affect firm performance as it has a positive relationship with ROE. The next variable that rejects the Null Hypothesis is credit_risk1, with Sig. value no more than the confidence interval and t-value of 4,717 in absolute value. Finally, volatility with a Sig. value of 0,005 shows to have an effect on ROE too, as it doesn't exceed p-value. Results just confirm the previous ROE regression model which

also had a small predictive power and the same control variables to influence ROE, with corporate governance not being included in them.

Like ROE model, P/E regression analysis doesn't have a satisfactory predictive power as its Adjusted R-square is only 0,063, meaning that only 6% of the sample can be explained by control variables. The results here follow those of the previous model of P/E showing no effect of corporate governance variables on firm performance. In fact the only variables that could reject Null Hypothesis with a confidence interval of 5%, are, size which has a Sig. value that equals 0,035, credit_risk2 with a Sig. value of zero, and solvency with a Sig. value of 0,003. None of the rest of the independent variables seems to have an impact on P/E and particularly on corporate governance practices, which are the main variables under investigation. Also this model couldn't show any effect on firm performance as did the previous one, and neither doesn't it have a strong predictive power. Thus, results may not be representative enough.

Interpreting the above table, it is obvious that results follow the same logic with the previous model of Investment Return. Adjusted R-square shows that almost 51% of the sample is explained by independent variables. In addition, it should be underlined that here corporate governance variables do not have an impact on firm performance as none of them has a lower p-value than that of confidence interval (5%). The variables that could reject Null Hypothesis are credit_risk1 and credit_risk2 with Sig. values of zero, leverage with p-values of 0,041, volatility with Sig. of 0,015, and last, all years when the dummy variable is 1 for each of them except for 2004. Nevertheless, corporate governance variables are not part of those that affect Investment Return confirming in that way the first results that CGQ had highlighted.

Last of the tested variables on the statistical analysis is that of Tobin's Q. In this one, a strong predictive power is expected along with an impact of corporate governance on firm performance, as the previous regression analysis of table 5. As it was predicted, the results of this model are credible enough, as the Adjusted R-square is 0,613, which displays that 61% of the sample can be explained by the control variables, similarly to the previous Tobin's Q model. However, in contrast to CGQ, the sub-scores of corporate governance don't have an impact on Tobin's Q, as all of them exceed the confidence interval of 5%. Rest of the results follow the interpretation of the previous Tobin's Q model, with size, leverage, solvency, capital risk, credit risk (except

credit_risk3), and years 2003, 2004, 2007, 2008, and 2009 having an impact on firm performance as all of them have Sig. values smaller than 0,05. Therefore, despite the fact that the majority of the variables affect Tobin's Q, corporate governance subscores seem to have no impact on it, in contrast to CGQ. Regarding Multicollinearity, these models seem to have no problem, as for one more time $VIF \leq 10$ for all variables.

The overall outcome of the above regression analysis models showed no important relationship between firm performance and corporate governance, apart from Tobin's Q, which seems to be affected by CGQ. However, it is worth noticing what the results are, especially for the last three years of the examined period, as these are considered to be the most crucial years regarding the global financial crisis. Tables that follow present regression analysis only for the years 2007, 2008, and 2009, keeping the same dependent and independent variables:

Table 7: Regression Analysis of firm performance regarding CGQ for years 2007-2009:

$H_0 = CGQ$ does not affect firm performance during years 2007 to 2009

$H_1 = CGQ$ affect firm performance during years 2007 to 2009

Variables	ROA t (Sig.)	ROE t (Sig.)	P/E t (Sig.)	Inv_return t (Sig.)	Tobin's Q t (Sig.)	VIF
(Constant)	-2,641 (0,009)	-1,478 (0,140)	-2,382 (0,018)	-1,576 (0,116)	3,685 (0,000)	
CGQ	0,049 (0,961)	0,438 (0,662)	0,808 (0,419)	0,157 (0,875)	1,109 (0,268)	1,392
size	2,067 (0,039)	0,992 (0,322)	-0,642 (0,521)	1,216 (0,225)	3,963 (0,000)	1,975
leverage	4,616 (0,000)	1,403 (0,161)	-0,580 (0,562)	1,114 (0,266)	-21,056 (0,000)	1,471
solvency	2,686 (0,007)	1,000 (0,318)	2,522 (0,012)	0,904 (0,366)	-3,260 (0,001)	1,832
volatility	-4,906 (0,000)	-3,017 (0,003)	-0,454 (0,650)	-5,727 (0,000)	-4,845 (0,000)	1,696
capital_risk	3,659 (0,000)	3,670 (0,000)	-0,079 (0,937)	3,310 (0,001)	1,982 (0,048)	1,732
credit_risk1	-4,453 (0,000)	-1,476 (0,141)	-0,379 (0,705)	-2,243 (0,025)	-3,015 (0,003)	1,746
credit_risk2	-11,204 (0,000)	-0,817 (0,414)	3,726 (0,000)	-4,535 (0,000)	-1,980 (0,048)	1,936
credit_risk3	0,806	-0,756	-1,133	1,711	0,796	1,157

	(0,421)	(0,450)	(0,258)	(0,088)	(0,426)	
credit_risk4	1,459	1,229	-0,765	0,920	0,759	1,147
	(0,145)	(0,220)	(0,445)	(0,358)	(0,448)	
Y2008	-3,749	0,673	-0,157	2,432	-3,706	1,408
	(0,000)	(0,501)	(0,876)	(0,015)	(0,000)	
Y2009	-0,219	0,053	-0,311	8,224	-3,408	1,858
	(0,827)	(0,958)	(0,756)	(0,000)	(0,001)	

	ROA	ROE	P/E	Inv_return	Tobin's Q
Adjusted R-square	0,585	0,113	0,043	0,298	0,583
F- value	45,665	5,042	2,427	14,482	45,432

where,

CGQ = Industry corporate governance rating,

size = natural logarithm of Total Assets,

leverage = Total Debt / Total Assets,

solvency = Total Assets / Total Liabilities,

volatility = Std. Deviation of stock returns,

capital_risk = Capital Adequacy Ratio – Tier 1,

credit_risk1 = Non performing loans / Total loans,

credit_risk2 = Net loan losses / Total loans,

credit_risk3 = Consumer & Installment loans / Total loans,

credit_risk4 = Commercial & Industrial loans / Total loans,

Y2008 = A dummy variable taking 1 if observations belong to year 2008 and 0 otherwise,

Y2009 = A dummy variable taking 1 if observations belong to year 2009 and 0 otherwise.

The above table presents results for the last three years of the examined period. For the first dependent variable, ROA, the predictive power of the model is almost 59%, with Adjusted R-square equals to 0,585. Once more corporate governance doesn't affect firm performance, with Sig. value close to 1 exceeding by much the confidence interval of 5%. However, the year 2008 seems to affect ROA negatively, with t-value equals to 3,749 in absolute value and Sig. value of zero, in contrast to 2009, which shows no relationship to ROA. Other than that, volatility, credit_risk1 and credit_risk2 affect negative ROA with Sig. values equal to zero, while size, leverage, solvency and capital_risk have a strong positive relationship with firm performance.

The second examined variable, ROE with a small predictive power of only 11%, seems only to be affected negatively by volatility and positive from capital _risk with Sig. values of almost zero. However, none of the years exhibit to have a relationship with firm performance, as their p-values exceed the confidence interval of 5%. In this case too, CGQ is not related to firm performance, just like in previous regression models for ROE.

Third on the table is the P/E regression model. Its Adjusted R-square is only 0,043, which indicates a small predictive power. In contrast to previous variables, this one shows no relationship with any of the years 2008, and 2009. However, solvency and credit _risk2 seem to affect positive firm performance with Sig. values of 0,007 and zero, respectively. Again, firm performance seems not to be affected by CGQ, which is the main variable under investigation, along with the specific examined period.

Investment return Regression Model with Adjusted R-square of 0,298 indicates a relatively poor predictive power. In addition, it seems that volatility, credit _risk1 and credit _risk2 have a strong negative relationship with it, however, the years under investigation have a positive relationship with Investment return as both of them have Sig. values that do not exceed the confidence interval (5%). Once more, CGQ is not included in the variables that affect firm performance.

Last on the table is Tobin's Q model with a strong predictive power of 58% (Adjusted R-square = 0,583). Tobin's Q seems to be affected the most by the independent variables, however, in contrast to the previous Tobin's Q model on table 5, this time it is not related to CGQ. Nevertheless, this variable has a strong negative relationship with the majority of the rest independent variables and particularly with leverage, solvency, volatility, credit _risk1 and credit _risk2, years 2008, and 2009, with Sig. values not higher than 0,007, while size and capital _risk affect firm performance positive. Multicollinearity test showed no worrying signs, as VIF is low, for all of the variables. Next follows a regression analysis, this time having subscores of corporate governance ratings, examining only the years 2007, 2008, and 2009.

Table 8: Regression Analysis of firm performance regarding subscores corporate governance for years 2007-2009:

H_0 = corporate governance subscores do not affect firm performance during years 2007 to 2009

H_1 = corporate governance subscores affect firm performance during years 2007 to 2009

Variables	ROA t (Sig.)	ROE t (Sig.)	P/E t (Sig.)	Inv_return t (Sig.)	Tobin's Q t (Sig.)	VIF
(Constant)	-2,668 (0,008)	-1,488 (0,137)	-2,422 (0,016)	-1,493 (0,136)	3,650 (0,000)	
board	-0,161 (0,872)	-0,757 (0,450)	0,383 (0,702)	0,907 (0,365)	-0,205 (0,838)	1,556
compensation	-0,518 (0,605)	0,291 (0,771)	0,005 (0,996)	0,770 (0,442)	0,602 (0,547)	1,290
takeover	1,266 (0,206)	1,097 (0,273)	-0,422 (0,674)	0,657 (0,511)	1,161 (0,246)	1,067
audit	1,045 (0,296)	1,835 (0,067)	0,597 (0,551)	-0,391 (0,696)	1,118 (0,264)	1,227
size	1,930 (0,054)	0,845 (0,398)	-0,582 (0,561)	0,698 (0,486)	3,777 (0,000)	2,133
leverage	4,723 (0,000)	1,538 (0,125)	-0,561 (0,575)	1,101 (0,272)	-20,854 (0,000)	1,477
volatility	-5,060 (0,000)	-3,076 (0,002)	-0,402 (0,688)	-5,771 (0,000)	-4,847 (0,000)	1,739
solvency	2,662 (0,008)	0,923 (0,357)	2,540 (0,011)	0,810 (0,419)	-3,298 (0,001)	1,844
capital_risk	3,612 (0,000)	3,688 (0,000)	-0,066 (0,948)	3,267 (0,001)	1,976 (0,049)	1,739
credit_risk1	-4,443 (0,000)	-1,477 (0,140)	-0,436 (0,663)	-2,136 (0,033)	-2,989 (0,003)	1,754
credit_risk2	-11,125 (0,000)	-0,709 (0,479)	3,757 (0,000)	-4,575 (0,000)	-1,892 (0,059)	1,940
credit_risk3	0,803 (0,423)	-0,674 (0,501)	-1,095 (0,274)	1,603 (0,110)	0,902 (0,367)	1,157
credit_risk4	1,334 (0,183)	1,220 (0,223)	-0,688 (0,492)	0,918 (0,359)	0,786 (0,433)	1,159
Y2008	-3,593 (0,000)	0,652 (0,515)	-0,179 (0,858)	2,411 (0,016)	-3,692 (0,000)	1,434
Y2009	-0,076 (0,939)	0,093 (0,926)	-0,304 (0,761)	8,125 (0,000)	-3,371 (0,001)	1,890

	ROA	ROE	P/E	Inv_return	Tobin's Q
Adjusted R-square	0,585	0,113	0,043	0,298	0,583
F- value	45,665	5,042	2,427	14,482	45,432

where,

board = sub-score of board corporate governance rating,

compensation = sub-score of executive and director compensation and ownership corporate governance rating,

takeover = sub-score of takeover defenses corporate governance rating,

audit = sub-score of audit corporate governance rating,

size = natural logarithm of Total Assets,

leverage = Total Debt / Total Assets,

solvency = Total Assets / Total Liabilities,

volatility = Std. Deviation of stock returns,

capital_risk = Capital Adequacy Ratio – Tier 1,

credit_risk1 = Non performing loans / Total loans,

credit_risk2 = Net loan losses / Total loans,

credit_risk3 = Consumer & Installment loans / Total loans,

credit_risk4 = Commercial & Industrial loans / Total loans,

Y2008 = A dummy variable taking 1 if observations belong to year 2008 and 0 otherwise,

Y2009 = A dummy variable taking 1 if observations belong to year 2009 and 0 otherwise.

Results follow those of the previous regression analysis models. Here also, there seems to be no relation between corporate governance and firm performance, as none of the subscores have a Sig. value lower than the confidence interval (5%) for each of the dependent variables. In addition, ROA model, which again has a strong predictive power (Adjusted R-square = 0,585), shows to have a negative relation with volatility, credit_risk1, credit_risk2 and years 2008, and 2009, same as before, while size, leverage, solvency and capital_risk have a positive effect on it. Corporate governance subscores do not affect at all ROA, with relative high Sig. values, exceeding confidence interval of 5%.

ROE follows exactly the same path as in the previous model. With a low predictive power with the Adjusted R-square equal to 0,113, it tells us that none of the corporate governance variables in any way affect ROE, while volatility has a negative effect on it and capital _risk a strong positive relation. Years 2008 and 2009 seem to have no relation to ROE, just like the corporate governance subscores mentioned earlier.

The next variable of firm performance is P/E where again the Adjusted R-square shows a low predictive power. Only 4,3% of the sample is explained by control variables. For P/E only solvency and credit _risk2 show to have an effect on it, while neither corporate governance nor years 2008, and 2009 influence P/E, just like corporate governance subscores.

For Inv _return Adjusted R-square points out that almost 30% of the dependent variable is explained by independent variables. This variable, although it shows no relation to corporate governance subscores, it has a negative relation with volatility, credit _risk1, credit _risk2, where all three variables have Sig. values of almost zero, indicating a strong relationship to Investment return. Analyzing the Sig. values of 0,001, 0,016 and zero of Capital _risk, and the years 2008, and 2009, respectively, it is apparent that they have a strong positive relation to Investment return.

However, the most interesting of the dependent variables is once more Tobin's Q model, which has a quite strong predictive power of 58% and the majority of the variables are related to it, but not corporate governance subscores. Here, all the years under investigation have a very strong negative relationship with Tobin's Q as the Sig. value is zero. In addition, leverage, solvency, volatility, credit _risk1 are also related negatively to this variable, while size and capital _risk positively. Multicollinearity appears not to be alarming in these models either, as VIF is again much lower than 10.

The last two regression models indicated no relation on bank performance either with CGQ or with corporate governance subscores. However, some of the dependent variables, such as ROA, and Tobin's Q showed a strong negative relation with the years 2008, and 2009. These variables have after all regression models with strong predictive power, showing to capture the tense atmosphere of the specific period. The rest of the dependent variables are either positive affected by the years 2008, or 2009, such as Investment return, or are not affected at all, such as ROE, and P/E. However, it is worth

mentioning, that their regression models appeared to have a relatively small or even poor predictive power.

The results of this research suggest that corporate governance doesn't seem to have an impact on firm performance in general, except for Tobin's Q, which shows to be positively affected by CGQ, findings which are in accordance with previous researches (Klapper and Love, 2002, Brown and Caylor, 2004, Sanda *et al.*, 2005, Sakawa and Watanabel, 2011) However, the majority of the other independent variables, which are financial variables, seem to affect firm performance, as in both of our models, most of them reject Null Hypothesis.

More specifically, capital risk, the majority of credit risk indicators, such as non performing loan to total loans and net loan losses to total loans, leverage, solvency, and volatility all have a significant impact on performance. This can be explained from the fact that financial ratios are connected to each other and possible fluctuations or changes to one of them can affect one another.

Other than financial ratios, dummy variables for years 2007, 2008, and 2009 affect firm performance, as we saw both in regression analysis of all seven years, and especially for the last of them, where for most of the dependent variables, especially the years 2008 and 2009 showed a strong link with them. This is not surprising, as during these years the recession deepened. Nevertheless, it is worth mentioning that especially for ROA and Tobin's Q the relationship between them and the last years is increasing negatively. However, due to the limited previous research, we cannot compare these results to other empirical studies, although many economists and financial analysts have already stated that these years were the worse of the recent economic crisis, especially in US.

In addition, size shows to have an impact on three out of five variables of firm performance, ROA, ROE, and Tobin's Q. These three variables have a positive relationship with size, as they increase when the size of banks increases. This finding is in accordance to the results of Abbas (2011), Leng (2004), and Sakawa and Watanabel (2011) who found that bank's size has a positive effect on firm performance.

Focusing on leverage and bank performance, findings exhibit a relationship between them, as for ROA, leverage has a positive impact on it, while for Investment Return and Tobin's Q a negative one and especially for the last, which has a negative correlation of

almost 60%. These findings are in consistence to the results of Berger *et al.* (2002), who suggest that leverage affects firm performance and specifically that of banks. Another research that of Liargovas and Skandalis (2009) also confirms this relationship, indicating that leverage affects firm performance in small markets such that of Greece. Khatab *et al.*(2011) inferences also confirm this relationship, as they found leverage to be positively related to firm performance.

Continuing with the results, the other financial indicator that is related to firm performance is solvency, as it did in Sels *et al.* (2006), who reported that the higher the solvency, the better the firm performs as it has more substantial foundations in case of difficult times. Here also, solvency seems to have positive correlation with all five variables, with Tobin's Q being affected the most.

Regarding volatility, findings show that ROA, ROE, and Investment Return are affected by volatility, with all three of them having a negative correlation with it. Since there is no prior research on this variable, it is worth saying that the first two variables are affected negative by it, while Investment Return positive.

Concerning capital risk, which also seems to have an impact on three of the dependent variables, ROA, ROE, and Tobin's Q, we see that all of them are positively correlated to it. This was expected since the lower the capital risk, the higher the market value of the company, and thus its return on assets, and equity. Although, no research have found to examine capital risk of banks to their performance, the results of this research are also supported by the consensus that better capital organization increases firm's value, in general.

Next on independent variables that had an effect on firm performance is capital risk. However, as our sample consists only of banks, it was important to include financial ratios that would reflect credit risk regarding the banks' reality. Thus, non performing loans to total loans, net loan losses to total loans, consumer and installment loans to total loans, and commercial and industrial loans to total loans were included. From these, the first two are important for four out of the five dependent variables of firm performance, with ROA, ROE, Investment Return, and Tobin's Q having a negative correlation to them. As we don't have any previous research to compare our results with, we could suggest that their negative relationship with credit risk was expected, as

the higher credit risk the lower the profitability of a bank, especially for the last years of the period under examination.

Last on the interpretation is left the primary variable under investigation, corporate governance. The first model showed no effect on firm performance variables except for Tobin's Q. Although their correlation is not strong enough, the statistic results show a positive relation between them, as CGQ helps firm performance to increase, for the period 2003-2009. This is in accordance to Klapper and Love(2004), who found that better corporate governance is highly correlated with better market valuation (Tobin's Q). However, something similar doesn't seem to occur when it comes to corporate governance subscores rating. Here, none of the dependent variables are influenced by corporate governance practices for both of the examined periods, a conclusion that is in contrast to the findings of Ertugrul and Hedge (2009) who viewed sub-ratings to be more informative than summary corporate governance scores. It is also opposite to the La Porta *et al.* (1999) results, who suggest that countries with higher corporate governance standards have higher firm performance. Nevertheless, they coincide with the findings of Lamport *et al.* (2011), who found no significant relationship between corporate governance and firm performance. In addition, the inferences of this research, regarding ROE, appears also to be in contradiction to previous researches, as that of Len (2004), who detected a positive relation of this variable to corporate governance. Concluding, the overall outcome of this research is in accordance to previous literature (Cheffins, 2009, Lamport *et al.*, 2011), discouraging a strong association of corporate governance to bank performance, an only one of the five dependent variables presented a relationship with corporate governance.

V. Conclusion

The present investigation was motivated by the increasing attention drawn by corporate governance over the last years and a possible association of the implicated mechanisms to international firm performance that dictated the recent global financial crisis. The importance of corporate governance is widely recognized by both, academics and economic practitioners. Transparency and disclosure of a company's information, protection of shareholders' rights, adequate stakeholders participation in "decision making", the boards accountability and its structure, remuneration practices and adequate supervision of managers by the board, reflect the foundation of any sound corporate authority. However, corporate governance is characterized by a general lack of principles and an inability of the system to enforce legislative guidelines. These very shortcomings of corporate governance are considered by many to have fostered the current recession.

This study represents a systematic attempt in unveiling evidence on whether or not corporate governance mechanisms affect banks performance, by using corporate governance total ratings as well as their subscores, along with several financial measures. The research was based on 169 publicly traded US banks, examined over a seven-year period (2003-2009).

The findings suggest there is no considerable relationship of corporate governance and banks performance, regardless their ratings, being in accordance to OECD's conclusion (OECD, 2010) that "*existing corporate governance principles provided a good basis to adequately address the key concerns that have been raised and that there was no urgent need for them to be revise, rather than to be implemented better*". A careful observation of the results contradict, that even though there is no dependency of ROA, ROE, P/E, and Investment Return either to CGQ rating nor to their subscores, Tobin's Q seems to exhibit a positive relationship with CGQ Industry rating, as it increases market value (Tobin's Q) during 2003-2009. However, no other evidence indicates that better governed banks operate superiorly than the rest, despite the fact that recent years have shown an emerging interesting for better corporate governance practices, their direct implementation, and control by stricter regulations. The foregoing analysis denoted a negative relationship of the variables ROA, and Tobin's Q to bank performance especially over the period of 2006-2009. This was however expected, as these years

connote the critical period of the global economic crisis, thus performance would foreseeable be affected negatively.

When considering possible limitations of this investigation, insufficient financial and corporate governance data could/should be indicated, as these led to the selection of 169 banks over thousands of US publicly traded financial institutions. Increasing the number of banks in the used sample would provide a general view. Furthermore, the research was limited to the US, a fact that may have impaired our ability to redact the results to a global scale. The US is however considered as the origin of the crisis and hence a mature candidate to act as a representative sample capable of unveiling general conclusions. Moreover, a wide range of corporate governance measures was reflected within this investigation, thus increasing reliability, as only trustworthy databases, such as Thomson One Banker and Corporate Governance Quotient were considered.

To the best of our knowledge, this research is one of few exploring the relationship of corporate governance and bank performance using both summary ratings and sub-scores, over both, a seven years followed by a sub-three year period. In this way, the buildup of the financial crisis as well as its peak was properly captured.

Further research and better corporate governance implementation, might reveal a potential correlation of CGQ Industry ratings to bank performance, thus contributing to the prevention a future economic meltdown.

VI. References

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DATABASES:

Corporate Governance Quotient

EBSCO

Thomson One Banker