

Bank corporate governance and its performance during the crisis of 2007-2008: evidences from 74 banks in Europe

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ABSTRACT

The financial crisis of 2007-2008 questions the corporate governance of financial institutions. This paper investigates whether the bank corporate governance before the crisis has effect on the bank performance during the crisis period of 2007-2008. Using dataset of 74 banks in Europe, identifying the crisis period from January 1, 2007 to December 31, 2008, this paper has found that 1) ownership concentration and board independence have negative effects on bank performance during the crisis 2) CRO presence in board has positive effect on bank performance during the crisis. In overall, this paper confirms the correlation of bank corporate governance and bank performance during financial hardship.

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Keywords

Corporate governance, Global crisis, ownership concentration, board independence, CRO presence, ROE

1. INTRODUCTION

“Throughout the world, the global financial economy was severely damaged all along of year 2007 to 2008, which is widely known as the global financial crisis of 2007-2008”¹ and it was acknowledged by Ackermann (2008) as the worst and largest financial crisis since the Great Depression in the history. Consequently, “many financial institutions collapsed or were bailed out by national governments” (Erkens et al, 2012), and experienced unexpected downturn of stock market (Gokay, 2009). Moreover, the influence of financial recession expanded rapidly from US to other advanced countries (Ackermann, 2008; Baglioni and Morana, 2012; Eichengreen et al, 2009) and ultimately grounded the financial distress globally.

In the meanwhile, the financial institution is considered as the most suffering industry which bears enormous risks (Peni and Vähämaa, 2012). Notably, a 158-year old investment bank – Lehman Brothers went bankrupt and many other stock-broking firms such as Merrill Lynch were challenged to be taken over (Gokay, 2009). Bank related financial subjects are extensively discussed in academic researches for the purpose of practical implications. It is impressive that a lot of scholars approved that there is an association between bank corporate governance and bank performance in the crisis², together with some literatures of examining non-financial sector³, these studies stress the effect of corporate governance on firm performance. Furthermore, it is believed by Peni and Vähämaa (2012) that poor bank corporate governance practices are the trigger of the financial crisis which imply that well-organized corporate governance may contribute to a stable and healthy financial world. Therefore, the rising initiative of exploring the effect of bank corporate governance on bank performance during crisis period is possible to strengthen further bank performance either as an individual or as an entire financial system (Ackermann, 2008).

The prior studies were examining banks either in a global scale or in US country only. Yet there is few relevant literatures discussed the same issue for banks in Europe. Given the fact that Europe, as the one of the largest economy in the world, its financial institutions were also seriously affected by the global crisis of 2008⁴ (Hodson and Quaglia, 2009) which stimulates the re-thinking of bank corporate governance for that particular zone. Therefore, this paper aims to investigate whether or not in Europe, the regulated bank corporate governance before the crisis has effects on bank performance during crisis of 2007-2008. Hence, the research question to be answered is: *to what extent does bank corporate governance in European banks*

¹The accommodative US monetary policy fuelled the US real estate market which allowed borrowers with impaired credit histories and low incomes to buy property. However, the growth of “high margin, higher-risk asset” financial form converted the financial regulation as a huge failure since many financial institutions collapsed. What’s worse, the crisis quickly spread to other countries and cause globally seriously economic risks (Ackermann, 2008).

² See Caprio et al, (2007); Corett et al, (2009); de Andres and Váallelado (2008); Hanazaki and Horiuchi (2003); Jiraporn and Chitrakarn (2009); Laeven and Levine (2009); Macey and O’Hara (2003); Mishra and Nielsen (2000); Pacini et al, (2005); Sierra et al, (2006); as well as Webb Cooper (2009)

³See Ammann et al, (2011); Bebchuk et al, (2009); Cornett et al, (2009); as well as Cremers et al, (2010)

⁴German government was forced to bail out IKB Deutsche Industriebank due to its huge losses; BNP Paribas decided to suspend three of its investment funds in US market in order to ensure its liquidity (Hodson and Quaglia, 2009)

influences bank performance amidst the financial crisis of 2007-2008?

This paper is evolved from prior studies of Erken et al, (2012), Peni and Vähämaa (2012), Beltratti and Stulz (2012) and Aebi, Sabato and Schmid (2012), which will not only investigate the correlation of bank corporate governance and bank performance, but also question the reasons behind in order to make contribution to the practical recommendation of effective corporate governance amongst crisis. In particular, three risk-related corporate governance factors are determined as main independent variables, namely *ownership concentration* (Mülberr, 2009; Laeven and Levine, 2009; Thomsen and Conyon, 2012), *CRO presence* (Aebi et al, 2012; Liebenberg and Hoyt, 2003) and *board independence* (Thomsen and Conyon, 2012; Erkens et al, 2012; Eilon, 1980; Wearing and Li, 2010) since the chosen variables have strong connections with risk management in a crisis era. Accordingly, the bank performance will be measured in terms of its profitability by evaluating the return on equity during the crisis period of 2007-2008.

The sample carries the dataset of 74 banks across 18 European countries. These samples only include banking industry, which are all come out from Europe, contain necessary information for analysis, meet the certain criteria such as have total asset overweight US \$ 10 billion and publicly traded, which will represent the banks in the Europe.

This paper finds bank with concentrated ownership leads worse bank performance during the crisis because once happens the financial crisis, the largely-hold shareholders will experience greater loss than widely-hold shareholder (Thomsen and Conyon, 2012). Moreover, bank with concentrated ownership operates under higher risk since large shareholders have the right to influence the managerial decision (Sullivan and Spong, 2007). Next to that, bank with more non-executive board member perform worse during the crisis as they act in their own interests when the turbulence come (Erkens et al, 2012). Lastly, bank with CRO present in the board improve bank performance during the crisis because a CRO will foster risk discussions in a board (Liebenberg and Hoyt, 2003).

The remainder of the study proceeds as follows: in section 2, the underlying theories will be presented as well as prior researches. In section 3, the using methodology of this research will be explained along with the using data. The section 4 carries the results of the study. In the section 5, analysis of results will be discussed to investigate the association between bank corporate governance and performance amidst crisis 2007-2008. The conclusion and paper limitation will be provided in section 6.

2. LITERATURE REVIEW

A literature matrix is provided in the appendix section: table 1, which summarizes similar studies of bank corporate governance affect bank performance in financial turbulence.

2.1 Definition of bank corporate governance

The highly leveraged banking industry differs substantially from others, especially because of its inherent vulnerability, which operates under certain risks to increase profit through compensating for taking a maturity mismatch of a premium charged to creditors (Mülberr, 2009) that highlight the initiative of exploring corporate governance for this specific industry.

Basel Commitment (2006, p.4) gives the definition of corporate governance in the banking industry perspective, which states

that bank corporate governance “involves the manner in which the business and affairs of banks are governed by the board of directors and senior management which, inter alia, affect how they:

- Set corporate objectives;
- Operate the bank’s business on a day-to-day basis;
- Meet the obligation of accountability to their shareholders and take into account the interests of other recognized stakeholders (including, inter alia, supervisors, governments and depositors);
- Align corporate activities and behavior with the expectation that banks will operate in a safe and sound manner and in compliance with applicable laws and regulations; and
- Protect the interest of depositors.”

The definition of bank corporate governance implicates the importance of board structure and management issues.

In order to answer the research question of *to what extent does bank corporate governance in European banks influences bank performance amidst the financial crisis of 2007-2008?* The determining corporate governance factors need to be identified. In the context of financial crisis, the corporate governance proxies should be selected with the characteristics of risk controlling. Hence, three main risk-related corporate governance proxies are determined for this research and their relevancies to this study will be detailed discussed in the following sub-section respectively:

2.2 Ownership concentration

2.2.1 Underlying theory

The corporate governance in ownership structure suggests the way how it composed affects the ability of owners to influence corporate risk-taking (Mülbert, 2009; Laeven and Levine, 2009; Thomsen and Conyon, 2012). It can be explained from one key element of ownership structure, which is ownership concentration (Thomsen and Conyon, p.123, 2012). The owner concentration refers to the distribution of shareholders, whether they widely held shares (institutional shareholder) or they are dispersed (individual shareholder) according to Laeven and Levine (2009).

It is stated that institutional owners with greater percentage of shares usually have greater incentive to monitor managers for the purpose of maximizing the firm performance, and they have more power to shape the corporate behavior in their own interests (Thomsen and Conyon, p.123, 2012; Laeven and Levine, 2009) although there may exist confliction between owners and managers if control and ownership are separated (Iannotta et al, 2007). To be more specify, managers who have bank-specific human capital or pursuing private benefits of control will be less risk taking than owners because they tend to control the risk for good governance, while managers with low lower rights may be powerless to against larger owners which allow the poor decisions from large institutional owners (Laeven and Levine, 2009; Sullivan and Spong, 2007). Furthermore, argued by Thomas and Conyon (p.124, 2012) that owners’ portfolio risk increase as the larger ownership since the risk aversion becomes more and more serious as an increasingly unbalanced portfolio (over-concentrated, over-power granted ownership). Laeven and Levine (2009) explain the tension between owners and managers in the point of that larger owners hold substantial cash flows can influence the managers to increase risk taking capacities, with significant cash flows which can decrease firm valuation by taking unsuccessful ventures (Sullivan and Spong, 2007).

To sum up, theories of ownership structure on ownership concentration indicate the larger ownership is accompanied by higher risks which potential will lead to unintended consequences which may negatively influence firm performance.

2.2.2 Empirical evidences and the hypotheses

Laeven and Levine (2009) examine the jointed influences of ownership structure and regulations on bank performance, and they highlighted the important role of ownership structure that more powerful (concentrated) owners tend to take greater risks in order to maximize shareholder value in their own interests. Moreover, larger ownership general associate with higher risks because of the substantial cash flow rights which may altering firm valuation significantly. Furthermore, it is found that lack attention of ownership structure would lead to misguided decisions of capital regulations, deposit insurance and activity restrictions on bank risk taking (Laeven and Levine, 2009). Consistent with Erkens et al (2012), their study confirm the higher institutional ownership attains more risks before the happening of the crisis since larger shareholder may encounter larger losses if the crisis would occur.

In the contrary, in the study of Iannotta et al (2007), there is no difference of profitability observed between dispersed ownership and concentrated ownership.

Combing the discussion of underlying theory and empirical results, the hypothesis is proposed as follows:

H1: Banks in Europe with concentrated ownership would experience greater losses during the crisis of 2008.

2.3 CRO presence

2.3.1 Underlying theory

The world public policy makers had questioned the effectiveness of corporate governance in terms of the board composition in financial institution since the global crisis happened, and the risk management is heavily stressed (Basel Committee on Banking Supervision, 2008; FSA, 2008; IIF, 2007) to combine with corporate governance in order to deal with risks proactively. Board composition not only concerns about the proportion of inside and outside directors in the board, but also concerns about the influences of managerial position of board members (Thomsen and Conyon, 2012). It is stressed by Aebi et al (2012) that the presence of chief risk officer in board can significantly minimize the risks when facing crisis. Because the responsibilities of a CRO include indentifying, assessing, reporting and supporting the management of risk issues as well as recognizing and evaluating total corporate risk of a firm (Liebenberg and Hoyt, 2003). These characteristics highlight the role of a CRO as a risk champion. Unlike risk managers, when a CRO present in the board (these individuals usually hold high level of technical expertise) can foster the risky communication within the board and their board-level identity allows the CRO to report directly to the CEO or CFO, and thus can influence the decision-making in certain degree (Liebenberg and Hoyt, 2003).

The proposed underlying theory of CRO present in board implies lower risk exposures in general and thus less being affected during the crisis period.

2.3.2 Empirical evidences and the hypotheses

In the study of Aebi et al (2012), confirm that the bank with the presence of chief risk offer (CRO) in the directive board or CRO gains sufficient power to reports directly to board of directors perform better in the crisis. The reason is explained by Hamid et al (2011) that CRO presence in board lower the exposure to private-label mortgage backed securities and risky

trading assets, which implies lower default rate on loans in overall. Besides that, powerful CRO position as executive director in the board can balance the personal risky interest from other executive directors (Aebi et al, 2012).

Together with the theory, coming the second hypotheses as:

H2: Bank in Europe with CRO present in the board performs better during the crisis of 2007-2008.

2.4 Board independence

2.4.1 Underlying theory

Board independence is the most frequently discussed aspect in terms of board structure. Board of directors are responsible for accepting/auditing/rejecting the business proposals from management team, if the majority of the board members have executive rights of the firm, they will hardly reject the proposals that put forward by themselves (Thomsen and Conyon, 2012). For effective monitoring purpose, firms are suggested to increase the percentage of non-executive directors⁵ to improve the board independence (Thomsen and Conyon, 2012). Non-executive director is categorized as a board member who possesses specific knowledge and is allowed to bring a critical but unbiased viewpoint (Eilon, 1980), which explains that more non-executives directors with more unbiased judgments will contribute to a greater independent board from management team. Wearing and Li (2010) believe that non-executive directors play a role in risk assessment, evaluation and monitoring as non-executives directors composed the risk committee, which is mainly in charge of the risk management. Non-executives directors with risk-analysis capacity potentially averse risky business from management team (Wearing and Li, 2010).

The theory states that more independent board with majority non-executive directors results in better bank performance since they can not only bring fairly judgments but also capacities of risk management (Eilon, 1980; Wearing and Li, 2010).

2.4.2 Empirical evidences and the hypotheses

Erkens et al (2012) conduct the factor of board independence and find the negative abnormal stock return with more independent directors in the crisis, which lead to the conclusion that more independent board cause worse performance because they intent to raise equity capital during the crisis to ensure capital adequacy to reduce the risk of going bankruptcy.

In contrary, Wearing and Li (2010) find that independent board with large percentage of non-executive directors present in risk committee highlight the importance of risk predicting and thus decrease the possibilities of experiencing crisis.

It is interesting that Beltratti and Stulz (2012) and Duchin et al (2010) argues that there is no relationship between corporate governance in board independence since there is no difference among bank performances amidst the crisis after they have tested their studies.

In order to keep consistent with the relative study of Erkens et al (2010), the third proposed hypotheses is:

H3: Bank with board of the majority of independent directors performs worse during the crisis of 2007- 2008.

3. METHODOLOGY AND DATA

In this section, first, the time period of the financial crisis will be determined, followed by the explanations of the using

methodology for testing the hypotheses and measurements of independent/dependent/control variables, and then ends with the methods of collecting data.

3.1 Crisis period

Different studies have different opinions towards to the crisis period. Erkens et al (2012) set their investigation of crisis period as from January, 2007 to September, 2008; while Aebi et al (2012) measure their study of bank performance over the time period of July 1, 2007 to December 31, 2008 which is the same as the study of Beltratti and Stulz (2012).

This study would like to take the beginning of 2007 as the start point of the financial crisis because Ryan (2008) states the first real hit happened on February 7th of 2007 when The 2nd largest subprime mortgage originator in US claimed it losses on that day, HSBC also announced its losses due to the subprime mortgage at the same date (Guillen, 2011). Furthermore, many financial institutions realized the stresses and actively intend to stop the declining stock price at the beginning of 2007 (Erkens et al, 2012). This study takes the end of 2008 as the ending point of crisis period since Beltratti and Stulz (2012) argue that banks still perform poorly by the 1st quarter of 2009.

Due to the limitation of acquirable information (bank usually publishes their document about corporate governance in a yearly base not a quarter base). Therefore, in this case, the crisis period for measuring bank performance is determined from *the fiscal year of January 1, 2007 till the fiscal year of December 31, 2008*. Bank performance will be measured in this period. As for the corporate governance mechanisms, they will be measured as December 31, 2006 since year 2006 here is recognized as the year before the crisis.

3.2 Methodology

This paper examines the relation between bank corporate governance and bank performance during the crisis by estimating the return on equity (ROE) during the crisis on independent and control variables, the regression model is composed as follow,:

$$\text{Firm performance (ROE)} = \alpha + \beta_1 (\text{Institutional ownership}) + \beta_2 (\text{CRO presence}) + \beta_3 (\text{boa}$$

Where:

ROE: Net income over the year 2007 and 2008 dividend by the end of the book value of equity as of year 2006

Institutional ownership: The greatest percentage of institutional ownership, as of December 2006

CRO presence: A dummy variable equal t 1 if a bank has a CRO present in the board

Board independence: The percentage of non-executive directors as of December year 2006

Bank size: Total assets as of December year 2006

Leverage: Total liabilities divided by the total assets as of December year 2006

ROE (lagged): Net income of year 2006 dividend by the end of the book value of year 2006

Board size: Total number of board directors as of December year 2006

Risk committee: A dummy variable equal to 1 if a bank has a risk committee

⁵For this study, independent directors are the same as non-executive directors since some criteria to identify an independent director is too difficult to study, such as personal tie, and this paper will not discuss this issue in detail.

3.3 Measuring corporate governance

The first independent variable is ownership concentration (Mülbart, 2009; Laeven and Levine, 2009; Thomsen and Conyon, 2012), which presumes that concentrated ownership would experience greater losses amidst crisis. Erkens et al (2012), Laeven and Levine (2009) have studied this proxy before and they measure ownership concentration as a dummy variable equal to 1 when institutional ownership over 10%. However, this paper questions the cutoff rate of 10% and prefers to measure its ownership concentration as the greatest percentage of institutional ownership in December 2006.

The second independent variable is CRO presence (Aebi et al, 2012; Liebenberg and Hoyt, 2003). It is notable that having CRO present in board will influence the bank value since CRO accompanied with the function of risk management. This paper follows the method of Aebi et al (2012) which examining The CRO presence in the board of director through measuring a dummy variable equal to 1 if there is a CRO present in the board of director no matter what the CRO is executive or non-executive director. Information can be hand-collected from the annual reports of 2006.

The third independent variable is board independence (Thomsen and Conyon, 2012; Erken et al, 2012; Eilon, 1980; Wearing and Li, 2010). The board independence gives the definition of the amount of non-executive directors out of total board members, and thus it is measured as the percentage of non-executive directors in the board alike the study of Erkens et al (2012). The data can be gathered by calculating the values through observing the relevant information from annual reports of 2006.

3.4 Measuring bank performance

The bank performance is reflected by the bank profitability, where the profitability can be measured as return on equity (ROE) (Aebi et al, 2012; Stuart and Turnbull, 2002). It is explained by Turnbull (2002) that the goal of most banks is maximizing their shareholders' equity, so that using ROE as the profitability indicator to measure the bank performance is appropriate. Moreover, similar study of Aebi et al (2012) also takes the ROE as one of their bank performance measurements. For this research, ROE is defined as the bank's cumulative net income over the year 2007 and 2008 dividend by the end of the book value of equity as of year 2006. The using data can be collected manually by checking up the annual report of each sample bank from year 2006 to year 2008.

3.5 Financial control variables

In the regression, five control variables are introduced as additional bank characteristics in order to control the result of the bank performance during the crisis of 2008. The choice of control variables is base on the studies of Erken et al (2012), Aebi et al (2012) and Laeven and Levine (2009).

Bank size is introduced as the first control variable since control the bank to a similar size could control the differences in total assets which may significantly influence of the result (Erken et al, 2012; Aebi et al, 2010), which is measured in terms of its total assets at the end of 2006. Data can be obtained manually from the annual reports.

The variable of leverage is included in order to "control the differences in balance sheet characteristics and capital requirements across different European countries" (Erken et al, 2012). The leverage in this context is measured as the total liabilities divided by the total assets at the end of year 2006 which is able to be acquired from the annual reports.

ROE (lagged) is controlled in order to eliminate the possible extensive influences of bank performance before the crisis period reflects on the bank performance during the crisis period (Aebi et al, 2012). Here, ROE (lagged) is measured as net income of year 2006 dividend by the end of the book value of year 2006 where can be collected from annual reports and other online resources.

Board size is strongly connected with how complex the operations are (Erkens et al, 2012). When a bank holds more business with more complex operations, they naturally equip with larger board (more board members) and they may perform worse in the crisis (Erken et al, 2012). Thus, this paper wants to control this variable in order to control the correlation of the expecting consequences. Board size is measurement as the total number of board directors. Data can be gathered from their corporate governance documents

Risk committee has the similar functions as CRO, which responsible for accessing/evaluating/monitoring risky business. Banks have risk committee strongly influences the discussion making of the board and thus influences the bank performance. Therefore, it needs to be controlled. Relevant data can be observed from their annual reports of their risk management methods.

3.6 Sample selection

The selected samples is second-hand data which are obtained from the study of Erken et al (2012) by following criteria: first, the samples are restricted as financial institutions worldwide (banks, brokerages and insurance companies) which are publicly traded at the end of 2006; then the samples are filtered with total assets greater than US \$10 billion since large financial institutions help in obtaining necessary information of variables such as ownership structure; third, some samples are dropped away because of the unavailable necessary information.

For this specific study of examining European banks, additional criteria are applied that narrow down the sample size. Firstly, the samples from Europe continent need to be manually picked out. Second, all bank-holding companies, insurance companies and pension funding are eliminated since this study intends to concentrate on the banking industry only.

All of these criteria yield the target dataset of 74 banks across 18 European countries.⁶ The full sample contains 666 firm-year observations over 3 years.

4. RESULT

The first part of the 4th section summarizes the descriptive statistics and the second part shows the empirical results of testing the regression model.

4.1 Descriptive statistics

Table 3 presents an overview of collected statistics, which involves the number of objective, mean, median, stand deviation, minimum and maximum values across year 2006-2008. Panel A shows descriptive statistics on ROE with 74 bank observations. Panel B reports descriptive statistics on three main independent variables and five control variables.

As shown in panel A, the observed negative value of mean (-0.08) and median (-0.09) ROE fully interprets the poor performance of European banks in the financial hardship. When comparing the ROE with ROE (lagged), it is more obvious that the ROE mean (-0.08) during 2007-2008 is much

⁶ See detailed list of banks in the appendix section: table 2

lower than ROE (lagged) (0.12) in year 2006. The worst sample experienced -0.25 rate of equity return in the crisis period. However, it is interesting to mention that the maximum ROE value of 0.35 demonstrates at least one bank had not suffered from the financial stress. These figures are even lower as compared to the study of Aebi et al (2012), which have their ROE mean (0.08) and median (0.013) with examining global 337 objectives. It implies that banks in Europe were severely hurt during the crisis of 2007-2008.

The results regarding to the corporate governance and control variables in Panel B reports high average ownership concentration with mean (0.65) and median (0.45), which are greater than the reports of Erkens et al (2012), whereas the high board independence with mean (0.77) and median (0.61) and high leverage is consistent with prior studies. The differences may occur because of different data resources, this research paper mainly collect data manually while other scholar may take available date from specific data stream. There is about average 0.65 of banks have CRO present in the board and 0.83 of banks have set risk committee, which indicate proactive awareness of risk management of European banks in general.

4.2 Empirical results

Appendix section of table 4 provides the results of this study, with Colum (1) to column (3) contains the result of one corporate governance factor at a time and control variables and Colum (4) represents the full regression model. The table 4 shows the coefficients on ownership concentration and board independence are negatively significant, with two detailed P-value < 5%. The analysis also reports the positive significant coefficient between CRO presence and ROE, with two detailed P-value < 5%.

5. REGRESSION ANALYSIS

The first hypotheses test the relationship between concentrated ownership and bank performance. In the column (1) which shows that negative correlation with $p = -0.33$, which is statistically significant within a two-tailed 95% confidence interval ($P < 5\%$) Therefore, the H1: Banks in Europe with concentrated ownership would experience greater losses during the crisis of 2008 should not be rejected.

The second hypotheses examine the effect of board independence one bank performance, where can be found in the column (2) that negative correlation value with $p = -0.46$, which statistically significant within a two-tailed 95% confidence interval ($P < 5\%$). Hence, the H2: Bank in Europe with CRO present in the board performs better during the crisis of 2007-2008 should also not be rejected

The last hypotheses studied the correlation of CRO presence in board and bank performance. The results from the column (3) shows significant positive correlation, when $p = 0.56$ ($p < 5\%$). Consequently, the H3: Bank with board of the majority of independent directors performs worse during the crisis of 2007-2008 should not be rejected.

The last column test all of the three independent variables, which show the negative significant correlation of bank corporate governance (ownership concentration, CRO presence, board independence) and bank performance (ROE). It seems that the $p = -0.36$ ($P < 5\%$).

6. CONCLUSION AND LIMITATION

This paper answers the research question of *to what extent does bank corporate governance in European banks influences bank*

performance amidst the financial crisis of 2007-2008? Three corporate governances are selected as the proxies to test the ROE during the crisis period of 2007-2008. This study has found that positive correlation relationship between CRO presence and ROE, negative correlation relationship between ownership concentration, board independence and ROE. The results answers the three hypotheses that 1) bank with concentrated ownership leads worse bank performance during the crisis 2) bank with more independent board perform worse during the crisis 3) bank with CRO present in the board level acts better during the crisis.

Several limitations are listed to encourage further investigation: 1) due to the hand-collected data, the data accuracy may concerns as a problem since some subjective opinions of using data are unavoidable 2) more or other corporate governance mechanisms also flexible to examine the bank performance during the crisis period 3) other bank performance measurements are allowed instead of ROE 4) the determination of crisis period may influence the consequences, different crisis period may yields different consequences.

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8. APPENDIX

Table 1: literature matrix of the influences of bank corporate governance on bank performance during crisis 2007-2008

	Sample	Corporate governance factors	Bank performance measurement	Correlation	Implication
Erken, Hung and Matos (2012)	Dataset of 296 of the world's largest financial institutions across 30 countries (publicly listed at the end of December 2006)	Measured as December 2006: Board independent Institutional ownership The presence of large shareholders	Stock return during the crisis of 2007-2008	More independent boards and greater institutional ownership experienced worse stock return.	Corporate governance had an important impact on firm performance during the crisis through firms' risk-taking and financial policies.
Peni and Vähämaa (2012)	62 large, publicly traded US commercial banks	The strength of governance in year 2005 which is measured by Gov-Score corporate governance index ⁷	From 2005-2008: Profitability Market valuation Stock return	Stronger corporate governance mechanism had higher profitability, while it had negative effects on stock market valuations. Nevertheless, stronger corporate governance practices had substantially higher stock return after the crisis.	Good governance may have mitigated the adverse influence of the crisis on bank credibility
Beltratti and Stulz (2012)	Dataset of 503 financial institutions with assets excess of \$10 billion at the end of 2006 across 32 countries.	Two proxies: one is the ownership structure and the other one is the fragility of bank capital	The relative stock return during the period from the beginning of July 2007 to the end of December 2008.	Banks with more deposits and less exposure to US real estate perform better in the crisis. While there is no supportive evidence to attribute the role of ownership structure since the expected better performed shareholder-friendly board turned out to be worse in the crisis.	Macroeconomics imbalances are related to bank performance in the crisis. Governance may not affect bank performance in the crisis
Aebi, Sabato and Schmid (2012)	Dataset of 372 US banks	Measured in year 2006: CRO is a member of executive board Risk committee in a bank	Stock return from July 1, 2007, to March 31, 2009. Profitability over year 2007 to 2008	Positive correlation between CRO presence in board and risk mitigation.	Suggest to be better prepared to face the next financial crisis by significantly improve the quality and profile of risk management

⁷The Gov-Score index is based on 51 different firm-specific governance attributes that used to measure the strength of governance, which present both internal and external governance of firm (Peni and Vähämaa, 2012).

	Board size	function, and also
	Board independence	embed the appropriate risk governance having
	Percentage of directors with experience as an executive officer	CEO and CRO at the same level, ideally both reporting to the board of directors.

Sources from: See Erken et al, (2012); Peni and Vähämaa (2012); Beltratti and Stulz (2012); as well as Aebi, Sabato and Schmid (2012).

Table 2: list of banks (74 samples)

Bank name	Country	Bank name	Country
Aareal Bank Ag	Germany	ABN AMRO HldgsNv	Netherlands
Allied Irish Banks	Ireland	Alpha Bank A E	Greece
Atebank	Greece	Banca Cr Firenze Spa	Italy
Bancaltalease Spa	Italy	BancaMps	Italy
BancaPopolareDell'emilia Romagna Scarl	Italy	BancaPopolareDi Milano	Italy
BancaPopolare SondrioScarL	Italy	Banco Bpi Sa	Portugal
Banco Comercial Portugues Sa	Portugal	Banco Espirito Santo Sa	Portugal
Banco Guipuzcoano Sa	Spain	Banco Pastor Sa	Spain
Banco PopularEspanol Sa	Spain	Banco Sabadell Sa	Spain
Banco Santander Sa	Spain	Banesto-Banco Espanol De Credito Sa	Spain
Bank of Cyprus	Cyprus	Bank of Ireland	Ireland
Bank of Piraeus Sa	Greece	Bankinter Sa	Spain
Banque Cantonale De Geneve	Switzerland	Banque Nationale De Belgique	Belgium
Bayerische Hypo-Und Vereinsbank Ag	Germany	BBVA Sa	Spain
BHW holding Ag	Germany	BNP Paribas	France
Capitalia Spa	Italy	Commerzbank Ag	Germany
Danske Bank A/S	Germany	Depfa Bank Plc	Ireland
Deutsche Bank Ag	Germany	Deutsche Postbank Ag	Germany
Dexia Sa	Belgium	IKB Deutsche Industriebank Ag	Germany
ING Groep Ag	Netherlands	Intesa Sanpaolo Spa	Italy
Investec Plc	United Kingdom	Efg Eurobank Ergasias Sa	Greece
Emporiki Ban of Greece Sa	Greece	EuroHypo	Germany
HSBC Hldgs	United Kingdom	HSBC Trinkaus & Burkhardt Ag	Germany
Jyske Bank A/S	Denmark	Kaupthing Bank Hf	Iceland
KBC Group Nv	Belgium	Landesbank Berlin Hldg Ag	Germany

Landsbanki Islands Hf	Iceland	Liechtenstein Landesbank Ag	Liechtenstein
Lloyds Banking Group Plc	United Kingdom	Marfin Popular Bank Public Co Ltd	Cyprus
Mediobanca Spa	Italy	National Bank of Greece Sa	Greece
Natixis	France	Neue Aargauer Bank Ag	Switzerland
Nordea Bank Ab	Sweden	Raiffeisen International Bank Holding Ag	Austria
Royal Bank of Scotland Group Plc	United Kingdom	Sberbank	Russia
Svenska Handelsbanken Ab	Sweden	Swedbank Ab	Sweden
Sydbank	Denmark	Tt Hellenic Postbank Sa	Greece
UBS Ag	Switzerland	Unicredit Spa	Italy
Unione Di Banche Italiane Scpa	Italy	Van Lanschot Nv	Netherlands
Skandinaviska Enskilda Banken	Sweden	SNS Reaal Groep Nv	Netherlands
Societe Generale	France	Standard Chartered Plc	United Kingdom

Table 3: summarize of statistics

This table contains all variables that are used in the analysis for examining the bank corporate governance effect on bank performance during the crisis of 2008-2008. Panel A carries the bank performance measurement on ROE, which evaluated by the net income over the year 2007 and 2008 dividend by the end of the book value of equity as of year 2006. Panel B consists of main independent variables and control variables, where institutional ownership means the greatest percentage of institutional ownership, as of December 2006; CRO presence is A dummy variable equal t 1 if a bank has a CRO present in the board; board independence is the percentage of non-executive directors as of December year 2006; Bank size valued by total assets as of December year 2006; leverage is total liabilities divided by the total assets as of December year 2006; ROE (lagged) is the net income of year 2006 dividend by the end of the book value of year 2006; board size is total number of board directors as of December year 2006; risk committee is a dummy variable equal to 1 if a bank has a risk committee

Panel A: Summary statistics of firm performance during the crisis of 2007-2008						
	N	Mean	Median	Std.dev	Max	Min
Return on equity	74	-0.08	-0.09	0.18	0.35	-0.26
Panel B: Summary statistics of corporate governance mechanisms and control variables in year 2006						
	N	Mean	Median	Std.dev	Max	Min
Ownership concentration	74	0.65	0.45	0.52	0.70	0.09
CRO presence	74	0.57	0.00	0.48	1.00	0.00
Board independence	74	0.77	0.61	0.22	0.82	0.52
Bank size	74	11.34	78.67	2.34	331.13	0.09
Leverage	74	0.92	0.85	0.17	1.00	0.76
ROE (lagged)	74	0.12	0.11	0.08	0.25	0.02
Risk committee	74	0.83	0.00	0.33	1.00	0.00

Table 4: relationship between bank profitability (ROE) and bank corporate governance

Panel C: examining ROE				
	(1)	(2)	(3)	(4)
Ownership concentration	-0.32**			-0.36**
	[-3.22]			[-3.67]

CRO presence		0.56**		0.02
		[1.78]		[1.34]
Board independence			-0.46**	-0.48**
			[-3.58]	[-3.76]
Bank size	-0.04***	-0.04***	-0.04***	-0.004***
	[-2.65]	[-2.7]	[-2.64]	[-2.65]
Leverage	-0.33	-0.24	-0.21	-0.27
	[-1.42]	[-0.67]	[-1.52]	[-0.85]
ROE (lagged)	-0.03	-0.04	-0.02	-0.05**
	[-0.34]	[-0.27]	[-0.31]	[-0.56]
Risk committee	0.78	0.78	0.78	0.80
	[1.46]	[1.33]	[2.05]	[1.45]
N	74	74	74	74
Adj-R ²	0.13	0.14	0.11	0.13

*, **, ***, indicate significance at 10%, 5% and 1% level (two-tailed)