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董事會結構，公司治理和銀行系統性風險

Board Structure, Corporate Governance and Bank Systematic Risk

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BOARD STRUCTURE, CORPORATE GOVERNANCE AND BANK SYSTEMIC RISK

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論文題目:董事會結構，公司治理和銀行系統性風險

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中文摘要

本文從 2006 年至 2016 年全球上市銀行的角度考察了董事會結構和公司治理對銀行系統風險的影響。實證結果表明，董事會規模越大，獨立董事和女性董事的比例越高，可以顯著降低銀行的系統性風險。此外，銀行高品質管理，銀行的系統風險就越大。

關鍵詞:公司治理、董事會結構、銀行系統風險

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Abstract

This paper examines the impact of the structure of the board of directors and corporate governance on the systematic risk of banks from the perspective of global listed banks from 2006 to 2016. The empirical results show that the larger the size of the board of directors, the higher the ratio of independent directors and female directors can significantly reduce the bank systemic risk. In addition, the higher the quality of bank management, the more significantly the systematic risk of the bank will be reduced. Our research contributes to promote effective corporate governance by studying and complimenting bank systemic risk.

Keywords: Corporate Governance, Board Structure, Bank Systemic Risk

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CHAPTER 1
INTRODUCTION

1. Research Background and Motivations

Many have believed that 2008 financial crises were the worst systemic crises after the Great Depression that happened around 1930s and researches have pointed out many potential causes for this disastrous phenomenon such as conflict of interest in rating agencies, short term investment horizons such as subprime mortgages, political intervention, assets backed commercial paper, derivatives and credit default swap and so on. However, two of those potential causes; the board structure and corporate governance which have attracted less attention than the others in spite of their importance in making of better regulations for the banking system throughout the world. Nevertheless, the increased close examinations, research papers and academic studies on corporate governance within financial and non-financial firms following 2008 financial crisis inspires us to examine the relationship between bank board structure, female directors have an effect on bank performance. Furthermore, we examine the 2008 global crisis have influenced the relationship between bank performance and their board structure. Malfunction in financial firm's governance has the capacity to initiate damages which are substantial. These types of damages happen for the reason that financial organizations are generally distinctive financial devices connected with the unique functions in the allocation of sources, information flow (Fama, 1985). Additionally, financial firms are considerably extremely

controlled in order to avoid undesirable risks such as systematic risk (Flannery, 1998). Moreover, banks assist facilitates to be well-governed equally in the function as lenders or conversely as shareholders (Caprio and Levine, 2002). Thus, better governed financial firms cannot simply be involved in, but also often be crucial aspects for the most effective conducting of industries other than itself and generally encourage effective distribution of sources in the economy. Board of directors in the banking sector is an essential element in acquiring better board governance. They claim corporate governance by their own directors at the board is usually important as equally scattered investor as well as the market for organization control cannot require better governance. In fact, the board of directors are probably much more crucial as a governance mechanism within banks as compared to what it's within nonbanks, after all banking trustee obligations stretch out way too beyond shareholders to regulators (O'Hara and Macey, 2003). Thus, lawmakers and financial regulators highlight the significance of bank board governance as well. For instance, consultative report named' Enhancing Corporate Governance in the Banking Industry' written on Banking Supervision by the Basel Committee recognizes the board as a crucial element of regulatory refinement for banks. Additionally, their second supervisory evaluation process establishes the responsibility belonging to the board of directors as an essential element of risk management. Such study can be significant considering that the current literature with the board performance and its structure connection is indecisive. For instance, utilizing regression analysis to deal with simultaneity, Sierra et al. (2006) propose ' effective' boards enhance performance of the bank. However, Mehran and Adams (2012) did not determine any relation concerning independent directors and efficiency of banks, they suggest a positive correlation in between bank board size and efficiency utilizing a fixed effects

panel model to deal with unperceived diversification. Nonetheless, they believe that the outcomes might be different in case they regulate for Merger and Acquisition and other sources of endogeneity. Nonetheless, they believe that the outcomes might be different in case they regulate for merger and acquisition, other sources of endogeneity and company structure. In similar manner, Vallelado and Andres (2008) show curved and positive effect of non-executive directors as well as bank board size on performance of banks. However, their pooled ordinary least squares were opposed by their two step system distance-to-default estimation. We examine the effect of board size, gender diversity and its structure on bank performance. Bond and Blundell 's (1998) and Bover and Arellano (1995) powerful panel distance-to-default calculation is ideal for calculating a powerful model, especially when it's challenging otherwise unachievable to obtain' orthogonal' tools to decrease the endogeneity issue in governance variables for example board independence. The technique focuses on a method of two formulas, the first formula of variables are in amounts and the other formula dependent on variables that are distinguished. Wintoki et al. (2012) utilized distance-to-default evaluation approach to deal with all of the significant sources of endogeneity, for example fixed effects, simultaneity, as well as dynamics in other firm characteristics and governance and state that there is absolutely no relation among company performance, board independence and perhaps board size and their results are in line with Ferreira and Adams (2007) on ever-changing board factors. Even though the features of banks can also be related to their boards' structure (Mehran and Adams, 2012), such non-financial results can't be generalized for banks on dual important motives. Firstly, supervisory restrictions may not permit board of directors being both optimal and fittest (Weisbach and Hermalin, 2003). For instance, the number of board directors at a national bank have to contain five to 25 directors. In the same

way, banks have to keep two-thirds of their directors as non-executives and must have seven to thirty board directors in New York State. “Dynamic endogeneity” is acknowlodged by Wintoki et al. (2012) a crucial way to obtain endogeneity which usually has to be managed for in firm performance and corporate governance relation research to have impartial calculations. The idea of' dynamic endogeneity' describes the way an organization 's existing performance has an effect on either its corporate governance or its potential performance. Nonetheless, dynamic endogeneity for banks is significantly less troublesome due to the fact that a bank 's previous performance doesn't influence both its board size and its gender diversity (Skully and Pathan, 2010). Thus, impact of board structure on effectiveness ought to be a little more apparent in banks while employing a distance-to-default evaluation. Using samples of companies which are non-financial, a number of research propose corporate governance has considerably enhanced after the financial crises as calculated via company book market value (Linck et al., 2009). Consequently, these improvements may have ramifications for understanding the way a bank 's performance is affected by board. In addition, the latest financial crisis gives a chance to study the way that well-governed banks carried out their performance throughout the crisis. Research such as these can also be crucial, Francis et al. (2012) demonstrate companies that has better governance conducted perfectly all through the crisis period. Because the financial crises were an external shock for the organization 's funding alternatives, a research on the relation among firm performance and board size, its structure in the crisis will be strong to the endogeneity problems relevant to board structure determinants. Using a sample of 1100 top international banks over the time period of 2006-2016, employing the distance-to-default method, we report a solid inverse relationship involving bank efficiency and its board size. For example, all things being the same

banks which have lesser number of boards perform significantly better. We also discover a proof that the more independent director banks have, the worse they perform. Although, we find that gender diversification in the board of directors enhances bank overall performance in the pre-financial crises (2006-2007), the positive influence of gender degenerates during the post-financial crises (2010-2016) and crisis periods (2008-2009). This outcome is significantly crucial since it shows that the increasing the number of female directors in the boardroom doesn't really enhance bank performance. A particular explanation would be that increased number of female directors past "optimal cap" decrease the chance of the involvement of more competent opposite-sex directors. Lastly, our results supply and expand the other related literatures in a number of essential means. First, it has been assumed that the sample in our study is substantially bigger compared to the samples in earlier research. As a result, I had the possibility of the mobility to employ and also successfully explain the outcomes through system distance-to-default. Comparatively larger sample time period makes it possible for me to examine the influence of the financial crisis on the relation concerning the banks performance along with their board structure. Additionally, we investigate the relation involving female directors in the board and firm performance. The remarkable proof on the significance of female directors is not complemented (Ferreira and Adams, 2009). Nevertheless, the disparities in empirical results might be caused by time periods, divergent samples and industry coverage, and also endogeneity problems. In the light of difficult entry as well as exit barriers, banks receive market power which is high in the type of increased focus in the deposit and bank loan marketplaces, therefore leading to decreased competition. A targeted sector with decreased competition allows financial firms to generate exclusive revenue, and which is far more beneficial compared to bankruptcy expenses to bank owners. In the same way, we

demonstrate that the corporate governance and firm performance linkage tends to be more apparent for banks which are shielded from the risk of outside takeover. We also state that board structure pertains to performance limited to comparatively smaller banks. This outcome indicates that rigorous regulation and monitoring as well as public view might have functioned against discovering any significant relationship involving bank performance and board structure for bigger banks. The study provides strong and linear negative relation of the percentage and board size of independent directors in the boards on firm performance. As stated before, a priori we use the distance-to-default estimation to deal with endogeneity within the explanatory variables as a result of unnoticed reverse causality, simultaneity and heterogeneity. Furthermore, the financial crisis provides a quasi-experimental environment which offers a fairly distinct evaluation of the relationship among firm performance, bank boards and gender diversity, which is strong to any endogeneity issues. Our purpose for this paper is to find an answer for following problems that arises from 4 hypotheses we claim in our study.

- Does board independence have negative effect on bank performance
- Do more than 10 directors have negative effect on bank performance
- Do more female directors have positive effect on bank performance

2.Thesis Structure

The rest of this study has five chapters and arranged as such. Chapter 2 provides literature review on corporate governance, independent directors and female directors and bringing about the development of hypotheses. Chapter 3 presents data and methodology. Chapter 4 describes the empirical results, Chapter 5 presents conclusions and suggestions.

CHAPTER 2
LITERATURE REVIEW

1. Independent directors and bank performance

Board independence is generally considered to be good indications of executives because they highly benefits preserving the personal reputation of theirs in the administration level (Jensen and Fama, 1983). However, the empirical results are blended about the strong relation involving firm performance and independent directors (Black and Bhagat, 2002). An independent director may reduce the expense of debt management (Anderson et al., 2004), could possibly improve credit score (Ashbaugh-Skaife et al., 2006) perhaps decrease systematic risk, idiosyncratic risk and equity cost. Board independence can also be essential for banks, since they are inclined to improve return and give appropriate compensation to executives (Nielsen and Mishra, 2000). Nonetheless, Subrahmanyam et al. (1997) suggest a negative relation involving certain percentage of board independence and abnormal earnings inside banks. They explain this particular outcome as a sign that board independence may be taken place for reasons besides increasing wealth of shareholder. On the other hand, extremely regulated environment may have exacerbated skilled executives from providing service on in the boardroom at the bank. It might be probable that banks may have continuing strategy. In order to motivate every goal to recognize, the bidder calls for several of the executives to participate in the board, and then this kind of additional directors

may not always be impartial. Furthermore, with higher information asymmetry, banks may take advantage of several inside directors, because they have better firm related information (Jensen and Fama, 1983). This is crucial for organizations running business in risky environments, specifically those that have a higher demand for firm specific information. In the light of this issue, Duchin et al. (2011) state affirmative connection involving the firm performance and independent directors of businesses with minimal information asymmetry and the other way round. Raheja (2005) theorize that large information asymmetry in banks ought not rely entirely on watching by external directors. In accordance with prevailing theories about board structure of all firms, we therefore believe the impact of board directors affecting firm performance might be adverse. That is, involvement of independent directors may be not shown in enhanced overall performance. As a result, the first hypothesis is developed as such:

Hypotheses 1: Board independence has adverse effect on bank performance.

2. Bank Performance and Number of Board of Members

The negative relation concerning number of board members and bank performance in non-financial industry literature is a usual discovering (Weisbach and Hermalin, 2003) due to the boards consisting of smaller number of directors, and their reduced interaction and control expenses (Jensen, 1993). Members of boards that are large might as well confront more significant challenges in revealing the opinions of theirs inside short time offered in the course of board meetings (Lorsch and Lipton, 1992).

Therefore, board member's motivation to obtain information plus check executives is reduced in boards that are large (Jensen, 1993). Subsequently, Eisenberg et al. (1998) present a negative relation concerning firm performance and number of board member. Nevertheless, some study demonstrates this relationship hinges on a company's financial setting (Coles et al.,2008). For example, organizations with higher advising requirements might take advantage of big boards. For financial firms, the outcomes are varied. But, Wintoki et al., (2012) state that the results of studies might be undermined whether the empirical approaches cannot completely handle for every pertinent resources of endogeneity. Sizable corporate structure at the boards may possibly mirror its sophisticated organizational structures. A board may also cultivate by adding members to ease information flow from subsidiary companies (Adams and Mehran, 2012). Nonetheless, board structure of a bank is lacking may be shown inside the efficiency of a big board. For example, due to the existence of many organizations for regulating rights and double financial system with a few overlapping obligations and duties in the United States of America, banks are usually structured in a way to benefit regulatory loopholes. These "loopholes" in the financial sector had been displayed by the latest worldwide economic crisis. In the same way, boards generally expand following merger and acquisition actions (Pathan and Skully, 2010) to support extra board members from the merged bank. But, the merging actions of banks may not necessarily be effective. For example, the criticized merger between Bank of America and Merrill Lynch failed to disclose great amount of employee intensives and financial losses of merger. Thus, any sort of inefficiency from such actions of banks might be mirrored in the inefficiency of the large boards. In accordance with the prevailing debate, we have rationale to think that sizeable boards might well represent the existence of ineffectiveness associated with changing of firm structure. This will lead to

decreased firm efficiency. Thus, after managing related resources of endogeneity, we can suppose an adverse relationship concerning number of board directors and firm performance. Thus, the second hypothesis associated with board size could be claimed as such:

Hypotheses 2: More than 10 board directors have an adverse influence on bank performance.

3. Relationship among financial crises, female directors and bank performance

Preceding research papers state that the global financial crises have affected the relationship involving corporate governance and also company book market value, since executives are highly prone to become established and difficult in the global financial crises due to the deterioration within their anticipated financial earnings (Francis et al., 2012). Furthermore, throughout the financial crises, the standard of corporate governance has gained mutual consideration. Therefore, every flaws within the corporate governance of organizations will be obvious, leading to an allocation of financial resources to well governed organizations and therefore reducing the stock prices of inadequately governed organizations. Moreover, Francis et al. (2012) reported that purpose of board of directors will be crucial at points during the crisis as well as the activities will be noticeable when it comes to firm efficiency. As a result, we are able to anticipate that 2008 global financial crises has affected the relationship involving bank performance and board structure. Therefore, we claim the third hypothesis associated with 2008 global financial crises as

such:

Hypothesis 3: The anticipated relationship concerning bank performance as well as board structure is definite after global financial crises of 2008 problems. The gender diversity has gotten greater interest in the public discussion (Ferreira and Adams, 2009). Female directors in the boardroom has gradually elevated as time passes. Catalyst, (2010) find that the typical portion of female representation in the United States of America improved to 15.2 % in 2010 from 5.6 % in 1990. Such surge in the gender diversity at the boards is in line with a perspective which gender diversity is thought that they make value in the firm. Female representation is regarded as being diligent as well as have much better interaction ability, and that increases the improved decision-making and problem-solving capability of the whole board (Dechant and Robinson, 1997). Moreover, females are deemed to obtain increased anticipations relating to the responsibilities of theirs as members of boards and often arrive well prepared for board meetings (Carli and Eagly, 2003). This implies females spend much more time and effort on the tasks and may enhance board efficiency regarding problem-solving and information flow. Nonetheless, preceding studies on the immediate impact of female representation on overall performance happen to be unsatisfactory. In a similar manner, Ferreira and Adams (2009) also report the female representation improves attendance. But, they don't find any immediate result on the size of female representation on bank performance. Hersch and Farrell (2005) discover that female directors have a tendency to be recruited on well operating companies, however, they document insignificant abnormal earnings in the announcement of a female directors joined into a board. Organizations with inadequate governance may benefit by increasing additional female representation (Ferreira and Adams, 2009). However, female directors in the board stays significantly lower compared to non-bank organization. Thus,

presented that banks have less number of female directors, bank may benefit through hiring additional female representation in the board. We are also in line with Carter et al., (2003) on examining if female representation in the board of directors have any impact on firm efficiency after managing potential options of endogeneity as well as implementing different performance steps. In shortage of any traditional principle connecting female directors on the bank board with performance. Grounded on the above studies, the third hypothesis connected with female director is claimed as such:

Hypothesis 4: The more female directors in the board of directors, the better its performance

CHAPTER 3
RESEARCH METHOD

1. Data collecting process, bank performance measurement and explanatory variables

Data used in our study is made up of the top rated 50 banks obtained from the list provided by The Banker Data Base from 2006-2016. Study has 550 bank-year observations across these banks. Bank's financial information are mainly extracted from their annual report and 4th quarter consolidated financial statements. Comprehensive information on female directors, board size and independent directors are manually obtained from the annual reports on their own personal banks site or collected from files in SEC's EDGAR. Market information on banks are obtained from YAHOO FINANCE. Five substitute proxies of firm efficiency are used to explore the relationship involving corporate governance and firm efficiency: Tobin's ratio, return on equity, gross profit margin, return on assets and stock returns. Return on assets is estimated when the ratio of its net income in a particular time on the total value of its assets. Return on equity is estimated by dividing net income by average shareholders, equity. Gross profit margin is estimated by subtracting the cost of goods sold from a company's earnings; and divide by earnings. Stock return is average daily stock returns for 2006-2016. Conclusively, Tobin's ratio is estimated as the market valuation of an organization divided by the replacement value of the firm 's assets. We use three measures of corporate

governance. Independent directors. An independent director is a director at the board whose connection with the firm is his role as an independent director. Female director is the percentage of all directors on the board which are female. Board size is the number of directors within the board.

2. Systemic Default Risk Measures

We utilize contingent claim framework to examine the equity of a company and assets. Hillegeist et al. (2004) points out that the chances of failure to payment is calculated with Merton's model, that is considered the distinction involving the liability and company's value of its asset. Merton's distance-to-default model were found to be decent prognosticator of failure to payment surpassing measures that are accounting based. While the model is generally used to predict company bankruptcy, it's also appropriate to use for banking sector (Merton, 1977). The distance to default model was used in many studies such as Bartram et al. (2007) to assess the bank's default risk. Bartram et al. (2007) used the distance to default design to determine default risk of business banks. Moreover, in comparison with classic risk models in banking sector the distance to default model has various unique advantages. To begin with, this measure is usually revised regularly. Although information on balance sheet for global banks is solely offered at yearly rate, value of stock market can be purchased each day. Next, stock market date is generally futuristic and therefore the measure demonstrates industry perceptions in the long term. Following Campbell et al. (2008) to compute the distance-to-default model, we use the following equation.

$$\mathrm{B_E} = \mathrm{B_A e^{-dt}} N(d_1) - L\mathrm{e}^{-rt} N(d_2) + \left(1 - \mathrm{e^{-dt}}\right)\mathrm{B_A} \qquad (1)$$

$$d_1 = \frac{\log(\frac{B_A}{L}) + \left(r - d + \frac{V_A^2}{2}\right)t}{V_A\sqrt{t}};\ d_2 = d_2 - V_A\sqrt{t} \qquad (2)$$

Bank's market price is denoted as $\mathrm{B_E}$ while the bank's assets is denoted as $\mathrm{B_A}$. Risk-free rate is denoted as r and par value of liability maturing is L and t is time and equals 1 year. The dividend rate is d, $\mathrm{V_A}$ is the volatility of the value of assets and can be found using following equation:

$$\mathrm{V_E} = \frac{\mathrm{B_A e^{-dt}} N(d_1)\mathrm{V_A}}{\mathrm{B_E}} \qquad (3)$$

We concurrently works out the aforementioned formula to identify $\mathrm{V_A}$ and $\mathrm{B_A}$; and employ all the outstanding shares' market price for $\mathrm{B_E}$ and in place of par value of liability L, total debts are substituted.

Because financial data is yearly, we functionally introduce the values for those time-series over the phase. The approximation model has the benefit of staying away from deviations within the implied probabilities the end of the year and generating an asset worth progression. For the sake of risk free rate, we utilize US treasury rate for it. A quantity expressing by how much the daily stock returns differ from the mean value for the others over the past year is $\mathrm{V_E}$. To compute this, bank has to have a minimum of ninety subsequent daily returns over the preceding full year. For above mentioned two equations, we also

employ Newton technique to concurrently solve. About unfamiliar variables' value $B_A = B_E + L$ and $V_A = V_E B_E/(B_E + L)$ is used. We transform the statistics by limiting $B_E/(B_E + L)$ and to decrease the effect of deviations V_E is at both the 95th and 5th percentile ranges. Once we establishes B_A, designate asset return m being the same as the equity premium. So the equation to find distance-to-default measure is given below:

$$d2d = \frac{\log\left(\frac{B_A}{L}\right) + (m - d - V_A^2)t}{V_{A\sqrt{t}}} \qquad (4)$$

The likelihood of default is described as LD = F (-d2d) the typical change in the measure of the method, cumulative distribution function associated with a standard normal distribution is described as F. The likelihood of default certainly is the typical change of the measure of the method which is described as LD = F (-d2d), where F stands out as the cumulative distribution function associated with a standard normal distribution. Referring to previous argument, focus of our study is on systemic risk and how to try to stabilize it. Thus, we analyze the relationship in the bank's risk taking actions, assessed as its way of measuring systemic risk the rsquared extracted from reverting adjustments in bank's failure to payment variation in regular failure to payment of additional banks in a particular place. In estimating rsquared in week d in country u for every bank b in every in year h, we initially calculate Merton's measure ($d2d_{b,u,h,d}$) at weekly basis:

$$\Delta d2d_{b,u,h,d} = \alpha_{b,u,h} + \beta_{b,u,h}\frac{1}{n}\sum_{s=1,s\neq b}^{n}\Delta d2d_{b,u,h,d} + E_{b,u,h,d} \qquad (5)$$

Regression analysis used in Morck et al. (2000) has been followed in our study. To calculate the systemic risk presented by bank b, we transform the logistic of coefficient determination and that is the same as $\log(\mathrm{rsq}_{\mathrm{b,u,h}}/(1\mathrm{rsq}_{\mathrm{b,u,h}}))$, but we require banks to have a minimum of 25 weekly changes in a year. Larger rsquared for a particular bank indicates the bank is subjected to identical resources of systemic risk as the others in the same country and that they're interconnected with each other in the same place. Common exposure and inter dependency to risk creates the information shocks, liquidity problems and financial risk in the banking sector. We evaluate the risk externality on the subject of country numerical mean as bank supervision and regulation occur in its local government, therefore in a view of guideline standpoint, risk externality in given country is pertinent. Moreover, banks can have rewards to handle corresponding risks if the government of the given country made an implied assurance to bailout damages emerge from a risk externality (Acharya., 2009). Global uncertainty decreases the interest for banks to diversify its operation to other countries since bank's registered country's government do not support the bank's branches in overseas (Bertay et al., 2012). We utilize an extra way to measure risk externality for robustness check. We follow Brunnermeier and Adrian (2009) to calculate a Var for each of the banks within samples at risk level by utilizing quantile regressions. This calculate the practical relation among variables at various quantiles and enable precise evaluation of the credit risk co dependence in the course of systemic risk by considering nonlinear relations when there's substantial damaging risk. Var is calculated as such:

$$\Delta \mathrm{d2d}_{\mathrm{b,h}} = \alpha_{\mathrm{b}} + \gamma_{\mathrm{b}} M_{\mathrm{h}-1} + \varepsilon_{\mathrm{b,h}} \qquad (6)$$

$$\Delta Systemd2d_h = \alpha_{\text{system|b}} + \beta_{\text{system|b}}\Delta\text{dd}_{\text{b,h}} \quad (7)$$

For bank b's adjustments in method in week d is denoted as $\Delta\text{d2d}_{\text{b,h}}$ and for country this change is denoted as $\Delta Systemd2d_{\text{h}}$. Lagged change in the 3-month t-bill rate and changes in term spread are denoted as $M_{\text{h}-1}$. The ΔVar variable is then calculated as:

$$\Delta Systemd2d_h = \alpha_{\text{system|b}} + \beta_{\text{system|b}}\Delta\text{dd}_{\text{b,h}} \quad (8)$$

We calculate the ΔVar at q = 1 % per bank within the top 50 banks, to provide time diversifying organization environments during the sample period. ΔVar estimates the chance contribution of a bank, with less values indicating better contribution.

With regard to computing risk co-dependence, using rsquared has benefits across alternate steps as outlined in Pukthuanthong and Roll (2009). In the interim of considerable financial innovation, inter-dependency threats among financial organizations are significant but considerable losses on the banking process happens (Billio et al., 2012). This creates reduced levels of ΔVar which don't effectively catch the significant threat codependence amid economic institutions. We utilize the rsquared as main estimation to measure systemic risk to more efficiently catch differences.

3. Empirical Model

We uses those symbols for country u, bank b 's risk externality for year h as its dependent variable and is the same as the rsquared from regression from both weekly bank changes and country changes in Merton's model not including bank b.

$$\mathbf{Risk_{i,j,t}=\beta_0+\Sigma\lambda_k\times(Board)_{i,j,t-1}+\Sigma\gamma_p\times(Goverance)_{i,j,t-1}+\Omega\times(bank\_control)_{i,j,t-1}}$$
$$\mathbf{+\Psi\times(country\_controls)_{j,t-1}+\alpha_i+\lambda_t+\varepsilon_{i,j,t}}$$

Variables for bank contains non-deposit funds, bank size, earnings, total interest income ration, market-to-book ratio, non-interest income share. To calculate economies of scale, we employ bank size and provisions are used to estimate bank risk while market-to-book ratio is used to estimate prospective growth in future, non-deposit funds are used for calculating bank's structure of fund, incomes that come from non-interest operation are used to calculate its business model. Variables for country consists of both variance and organic logarithm of GDP growth rate and per capita respectively. Bank fixed consequences measures are applied in the regression in order to alleviate the endogeneity issues which are both in systemic risk and bank competition can be forced by exclusion of bank variables that are rather sound with time, such as structure of bank ownership.

CHAPTER 4
RESULT AND ANALYSIS

1. Empirical Results

As Table 3 shown, the mean of VaR estimates for confidence level of 90%, 95%, and 99%, are -11.026, -14.114, and -19.917, respectively. Specifically, mean Value of RDI and RMI are 34.932 and 49.988. Table 4 shows (see Appendix I) the correlation coefficient for the series of variable used in our empirical specification. The negative correlation coefficient of RDI (RMI) is -0.0716 (-0.0744) and statistically significant at 5%.

2. The Impact of Risk Disclosure on VaR

Table 5 (see Appendix I) provides stronger evidences that higher quality of risk disclosure in VaR leads to the decreases in Bank's VaRs with respect to 90%, 95%, and 99%. In addition, there is evidence that larger board size lead to increases in bank's downside risk, but marginally decreasing with board size. A concern with my evidence is that some theories predict that bank risk could fall as board size increases while the number of board is high

enough. Besides, we find significant impacts of total executive compensations and institutional holdings on bank's VaR.

In summary, banks with higher quality of risk disclosure and independent board ratio significantly decline their VaRs. However, larger board size economically enhances bank VaR, while executive compensations and institutional holdings show significant effects on reducing bank VaR. The result is very similar to the finding from 90% VaR. Some of control variables are also robust to show that bank with higher income diversification in a country with higher capital ratio of banking sector would significantly reduce bank VaR.

3. The Impact of Risk Disclosure on VaR

Table 6 (see Appendix I) reports the estimates from regressions in which the dependent variable is used alternatively for VaR of 90%, 95%, and 99%, namely. To capture bank's downside risk, we control for bank level of capital ratio, cost ratio, equity/total assets, ROE, and country level of GDP growth rate and strength of credit, and year and country fixed effects in all specifications. The t-statistics are based on robust standard errors clustered by bank. In the model (1) of Table 6, using 90% VaR, we find that the RMI is negatively related to the VaR. This is consistent with better internal risk control to mitigate bank downside risks.

However, we also recognize that fewer forced CEO departures can be consistent with stronger monitoring. In model (2), the coefficient on the total compensations is significantly positive, indicating that, as the fraction of

executive compensations rises, risk-taking incentives turnover to banks' downside risks also rises. The similar finding also shows the impact of board sizes on bank VaR in model (3); indicating larger boards are positively associated with the higher VaR, because of possible agency problem by insiders. Surprisingly, in model (4) my primary findings for boards with a greater proportion of independent directors could mitigate the bank VaR. Conversely, mode (5) shows the positive effect of institutional holdings on increasing bank downside risk.

Overall, Banks with higher quality of risk management and independent board ratio significantly lower their VaRs. However, larger board size, higher executive compensations and institutional holdings economically enhance bank VaR.

4. Joint Impacts of Risk Disclosure and Risk Management on VaR

We further investigate whether there is a complementary effect of risk management and risk disclosure in mitigating bank's downside risk. Table 7 (see Appendix I) reports the strong and consistent evidence that both internal risk control and risk disclosure significantly decrease bank's VaR of 90%, 95%, and 99%, respectively. All the coefficients of total compensations and institutional holdings are significantly negatively in all specifications, implying higher total compensations and higher institutional holdings motivate bank's VaR.

Hence, banks with higher quality of both risk disclosure and risk management significantly reduce VaR estimates in terms of 90%, 95%, and 99%, respectively. Larger board compensations and higher institutional holdings would inversely increase bank VaR estimates.

CHAPTER 5
CONCLUSIONS

1. Research Conclusion

Using manually collected data on top 50 banks around the world over 2006 to 2016 with global financial crisis and ongoing Eurozone sovereign debt crisis, we empirically assess bank level estimates of Value-at-Risk (VaR) and investigates how VaR risk disclosure, internal risk management, and corporate governance shape bank VaR. We find that the trend of either risk disclosure index or risk management index has been increasing over 2007 to 2011, implicating that global banks have devoted to not only increasing their risk information disclosure in their annual report and but also enhancing internal risk control to avoid the adverse risk effect. Empirical evidences also indicate that banks with higher quality of both risk disclosure and risk management significantly reduce 90%, 95%, and 99% VaR estimates, respectively. Surprisingly, board which has more than 10 directors and higher institutional holdings would be incremental to bank VaR estimates, implying the possible agency problem. Specifically, banks with higher capital ratio in a country with stringent strength of credit significantly reduce bank VaR. However, higher executive compensations of bank and institutional holdings conditionally enhance bank VaR.

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APPENDIX I

Table 1. 1- Descriptive Statistics

VARIABLES	MEAN	SD	MIN.	MAX.
MARKET RISK MEASURES				
VAR90%	-11.026	11.334	-192.265	-0.120
VAR95%	-14.114	14.538	-246.817	-0.147
VAR99%	-19.917	20.558	-349.327	-0.198
RISK DISCLOSURES AND MANAGEMENT				
RISK DISCLOSURE INDEX (RDI)	34.932	41.809	0	100.209
RISK MANAGEMENT INDEX(RMI)	49.988	32.533	20	154.097
CORPORATE GOVERNANCE				
INSTITUTIONAL HOLDINGS	0.201	0.266	0	1
INDEPENDENT BOARD RATIO (%)	0.194	0.242	0	1
INDEPENDENT BOARD RATIO^2 (%)	0.096	0.191	0	1
BOARD SIZE	11.315	3.843	0	30
BOARD SIZE^2	142.795	97.966	0	900
LN (TOTAL BOARD COMPENSATIONS)	12.623	9.072	0	29.586
BANK FINANCIAL CHARACTERISTICS				
INCOME DIVERSIFICATION	0.335	0.188	0	0.998
LN (TOTAL ASSETS)	24.091	1.387	20.002	28.678
CAPITAL RATIO (%)	8.114	3.868	-12.080	38.030
CAPITAL RATIO^2 (%)	80.793	84.690	0.003	1446.281
ROA	0.935	1.137	-13.239	4.579
COST RATIO (%)	56.420	23.088	13.544	503.124
MACROECONOMIC AND BANKING CHARACTERISTICS				
GDP GROWTH RATE	0.641	11.719	-0.144	230.676
BANKING INDUSTRY CAPITAL RATIO	7.439	2.979	-8.500	17.700
STRENGTH OF CREDIT	6.192	2.014	2	10

Table 1. 2 - Correlation Matrix of Variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1)	VaR90%	1																			
(2)	VaR95%	1.0000*	1																		
(3)	VaR99%	1.0000*	1.0000*	1																	
(4)	Risk Disclosure Index (RDI)	-0.0716*	-0.0716*	-0.0717*	1																
(5)	Risk Management Index(RMI)	-0.0744*	-0.0744*	-0.0743*	0.1531*	1															
(6)	Institutional Holdings	-0.0679*	-0.0679*	-0.0678*	0.0990*	0.0596*	1														
(7)	Independent Board Ratio	-0.0228	-0.0227	-0.0227	0.1751*	0.1571*	-0.0301	1													
(8)	Independent Board Ratio^2	0.0154	0.0154	0.0154	0.1373*	0.1112*	-0.0609*	0.9293*	1												
(9)	Board Size	-0.0092	-0.0092	-0.0091	0.2180*	0.1738*	-0.012	0.1376*	0.0961*	1											
(10)	Board Size^2	-0.0227	-0.0227	-0.0226	0.2334*	0.1673*	-0.0182	0.1216*	0.0814*	0.9550*	1										
(11)	Ln (Total Board Compensations)	-0.0315	-0.0313	-0.031	0.0497*	0.1133*	0.1737*	0.1159*	0.0013	-0.0757*	-0.1260*	0.2258*	1								
(12)	Income Diversification	-0.0052	-0.0052	-0.0051	0.1814*	0.1172*	0.1754*	0.1599*	0.1518*	-0.0013	-0.0111	1									
(13)	Ln (Total Assets)	0.0075	0.0073	0.0072	0.3154*	0.0919*	-0.1177*	0.1818*	0.2074*	0.4466*	0.4707*	-0.0138	-0.3035*	1							
(14)	Capital Ratio	0.0448	0.0449	0.0451	0.0209	0.0117	0.1369*	0.0816*	0.0179	-0.1319*	-0.1352*	0.1964*	0.2879*	-0.3745*	1						
(15)	Capital Ratio ^{2}	-0.0037	-0.0036	-0.0034	0.0176	0.0062	0.1050*	0.0561*	0.0074	-0.1127*	-0.1103*	0.1639*	0.2356*	-0.3395*	0.9288*	1					
(16)	ROA	0.2085*	0.2085*	0.2086*	0.0072	0.0223	0.1061*	0.0804*	0.0457*	-0.1215*	-0.1473*	0.2414*	0.2407*	-0.1905*	0.5335*	0.4007*	1				
(17)	Cost Ratio	-0.0599*	-0.0599*	-0.0599*	-0.0113	-0.0483*	-0.0311	-0.1541*	-0.0919*	0.0873*	0.1117*	-0.0920*	-0.1405*	0.0325	-0.3042*	-0.2079*	-0.4767*	1			
(18)	GDP Growth Rate	0.0391	0.0391	0.039	0.0458*	0.0599*	0.0786*	-0.0249	-0.0223	-0.0156	-0.0205	0.0304	0.0249	-0.0534*	-0.0305	-0.0288	0.0111	-0.0178	1		
(19)	Banking Industry Capital Ratio	-0.0459*	-0.0457*	-0.0454	0.1381*	0.0898*	0.1761*	0.0727*	-0.0044	-0.1043*	-0.1025*	0.1264*	0.2938*	-0.2205*	0.4784*	0.3765*	0.3869*	-0.2548*	-0.1063*	1	
(20)	Strength of Credit	0.0449	0.0449	0.0449	-0.1021*	-0.0355	-0.0212	0.0453	0.1167*	-0.0176	-0.0333	0.0691*	-0.0897*	0.0799*	-0.3357*	-0.2941*	-0.2098*	0.1497*	-0.0067	-0.3686*	1

Table 1. 3 - The Impacts of Risk Disclosure on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90%					VaR95%					VaR99%				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	-27.017***	-25.836***	-24.331***	-27.273***	-25.707***	-34.602***	-33.086***	-31.168***	-34.909***	-32.915***	-48.856***	-46.709***	-44.018***	-49.259***	-46.460***
	(-9.068)	(-8.667)	(-7.959)	(-8.503)	(-7.869)	(-9.053)	(-8.656)	(-7.953)	(-8.490)	(-7.859)	(-9.037)	(-8.645)	(-7.948)	(-8.477)	(-7.849)
Risk Disclosure Index (RDI)	-0.016***	-0.016***	-0.014***	-0.013***	-0.012***	-0.020***	-0.020***	-0.018***	-0.017***	-0.016***	-0.028***	-0.028***	-0.025***	-0.023***	-0.022***
	(-4.770)	(-4.734)	(-4.063)	(-3.763)	(-3.542)	(-4.750)	(-4.725)	(-4.073)	(-3.774)	(-3.552)	(-4.733)	(-4.716)	(-4.082)	(-3.784)	(-3.564)
Institutional Holdings		-1.386***	-1.443***	-1.393***	-1.315***		-1.784***	-1.858***	-1.793***	-1.695***		-2.532***	-2.639***	-2.544***	-2.407***
		(-2.873)	(-2.910)	(-2.829)	(-2.658)		(-2.884)	(-2.922)	(-2.838)	(-2.669)		(-2.896)	(-2.934)	(-2.849)	(-2.682)
Independent Board Ratio			-8.559***	-8.812***	-7.859***			-10.959***	-11.285***	-10.074***			-15.468***	-15.934***	-14.237***
			(-6.548)	(-6.633)	(-5.707)			(-6.540)	(-6.626)	(-5.706)			(-6.532)	(-6.620)	(-5.705)
Independent Board Ratio ^{2}			9.616***	9.788***	8.679***			12.298***	12.524***	11.115***			17.338***	17.667***	15.694***
			(6.208)	(6.219)	(5.358)			(6.196)	(6.210)	(5.354)			(6.183)	(6.200)	(5.350)
Board				0.402***	0.449***				0.514***	0.575***				0.726***	0.811***
				(3.359)	(3.703)				(3.357)	(3.697)				(3.355)	(3.691)
Board^2				-0.017***	-0.019***				-0.022***	-0.024***				-0.031***	-0.034***
				(-3.508)	(-3.876)				(-3.500)	(-3.863)				(-3.491)	(-3.849)
Ln (Total Compensation)					-0.037**					-0.047**					-0.066**
					(-2.535)					(-2.512)					(-2.488)
Income Diversification	-2.733***	-2.441***	-2.431***	-2.544***	-2.308***	-3.508***	-3.134***	-3.114***	-3.258***	-2.960***	-4.963***	-4.437***	-4.396***	-4.599***	-4.184***
	(-4.055)	(-3.572)	(-3.427)	(-3.581)	(-3.218)	(-4.054)	(-3.575)	(-3.424)	(-3.577)	(-3.219)	(-4.053)	(-3.577)	(-3.421)	(-3.573)	(-3.220)
Ln (Total Assets)	0.558***	0.527***	0.500***	0.534***	0.464***	0.712***	0.673***	0.640***	0.682***	0.594***	1.002***	0.946***	0.903***	0.961***	0.836***
	(5.312)	(5.027)	(4.614)	(4.646)	(3.914)	(5.283)	(5.004)	(4.605)	(4.629)	(3.900)	(5.254)	(4.980)	(4.595)	(4.610)	(3.885)
Capital Ratio	0.575***	0.537***	0.582***	0.599***	0.596***	0.740***	0.691***	0.745***	0.765***	0.762***	1.048***	0.979***	1.050***	1.078***	1.075***
	(4.821)	(4.429)	(4.735)	(4.848)	(4.813)	(4.833)	(4.443)	(4.726)	(4.837)	(4.802)	(4.842)	(4.456)	(4.718)	(4.825)	(4.791)
Capital Ratio^2	-0.024***	-0.023***	-0.025***	-0.024***	-0.025***	-0.031***	-0.029***	-0.032***	-0.031***	-0.031***	-0.044***	-0.041***	-0.045***	-0.044***	-0.044***
	(-4.732)	(-4.365)	(-4.740)	(-4.660)	(-4.669)	(-4.735)	(-4.374)	(-4.729)	(-4.648)	(-4.658)	(-4.736)	(-4.382)	(-4.719)	(-4.636)	(-4.646)
ROA	1.597***	1.572***	1.585***	1.527***	1.530***	2.044***	2.013***	2.032***	1.959***	1.963***	2.884***	2.842***	2.871***	2.770***	2.774***
	(8.291)	(7.965)	(7.955)	(7.613)	(7.626)	(8.273)	(7.956)	(7.958)	(7.620)	(7.632)	(8.256)	(7.947)	(7.961)	(7.628)	(7.637)
Cost Ratio	0.026***	0.025***	0.022***	0.022***	0.020**	0.034***	0.033***	0.028***	0.028***	0.026**	0.048***	0.046***	0.039***	0.040***	0.037**
	(3.195)	(3.035)	(2.625)	(2.705)	(2.464)	(3.203)	(3.042)	(2.615)	(2.695)	(2.456)	(3.212)	(3.048)	(2.605)	(2.685)	(2.448)
GDP Growth Rate	0.031***	0.033***	0.032***	0.031***	0.031***	0.039***	0.042***	0.041***	0.040***	0.040***	0.056***	0.060***	0.058***	0.056***	0.057***
	(10.230)	(7.922)	(6.835)	(6.768)	(6.860)	(10.248)	(7.947)	(6.859)	(6.791)	(6.883)	(10.267)	(7.973)	(6.884)	(6.815)	(6.907)
Banking Capital Ratio	-0.314***	-0.304***	-0.287***	-0.295***	-0.273***	-0.400***	-0.387***	-0.365***	-0.375***	-0.347***	-0.561***	-0.542***	-0.510***	-0.525***	-0.486***
	(-6.066)	(-5.859)	(-5.386)	(-5.526)	(-5.075)	(-6.001)	(-5.803)	(-5.340)	(-5.483)	(-5.034)	(-5.936)	(-5.746)	(-5.291)	(-5.438)	(-4.992)
Strength of Credit	0.343***	0.330***	0.288***	0.282***	0.301***	0.445***	0.427***	0.372***	0.365***	0.388***	0.638***	0.610***	0.532***	0.521***	0.554***
	(4.918)	(4.717)	(3.935)	(3.850)	(4.070)	(4.975)	(4.762)	(3.970)	(3.882)	(4.102)	(5.033)	(4.807)	(4.008)	(3.917)	(4.136)

Table 1. 4 - The Impacts of Risk Management on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90					VaR95					VaR99				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)

Constant	-21.864***	-21.265***	-20.518***	-23.540***	-22.126***	-28.012***	-27.221***	-26.272***	-30.127***	-28.326***	-39.566***	-38.417***	-37.088***	-42.507***	-39.980***
	(-7.768)	(-7.670)	(-7.214)	(-7.695)	(-7.112)	(-7.758)	(-7.657)	(-7.205)	(-7.682)	(-7.101)	(-7.747)	(-7.644)	(-7.197)	(-7.669)	(-7.091)
Risk Management Index(RMI)	-0.123***	-0.127***	-0.125***	-0.124***	-0.119***	-0.157***	-0.163***	-0.160***	-0.159***	-0.153***	-0.222***	-0.230***	-0.226***	-0.225***	-0.216***
	(-4.049)	(-4.128)	(-4.059)	(-3.984)	(-3.825)	(-4.035)	(-4.122)	(-4.052)	(-3.979)	(-3.821)	(-4.020)	(-4.114)	(-4.044)	(-3.973)	(-3.816)
Institutional Holdings		-1.395***	-1.443***	-1.395***	-1.321***		-1.796***	-1.857***	-1.794***	-1.701***		-2.550***	-2.637***	-2.544***	-2.414***
		(-2.846)	(-2.871)	(-2.795)	(-2.638)		(-2.858)	(-2.882)	(-2.803)	(-2.648)		(-2.870)	(-2.894)	(-2.812)	(-2.658)
Independent Board Ratio			-8.385***	-8.649***	-7.747***			-10.738***	-11.080***	-9.931***			-15.159***	-15.648***	-14.037***
			(-6.452)	(-6.544)	(-5.667)			(-6.446)	(-6.540)	(-5.667)			(-6.439)	(-6.536)	(-5.667)
Independent Board Ratio ^{2}			9.515***	9.736***	8.707***			12.173***	12.462***	11.153***			17.168***	17.586***	15.751***
			(6.475)	(6.487)	(5.623)			(6.465)	(6.481)	(5.621)			(6.455)	(6.474)	(5.619)
Board				0.416***	0.465***				0.533***	0.596***				0.755***	0.843***
				(3.491)	(3.849)				(3.495)	(3.850)				(3.499)	(3.852)
Board^{2}				-0.017***	-0.019***				-0.022***	-0.025***				-0.031***	-0.035***
				(-3.496)	(-3.866)				(-3.495)	(-3.862)				(-3.494)	(-3.859)
Ln (Total Compensation)					-0.037**					-0.047**					-0.066**
					(-2.512)					(-2.493)					(-2.473)
Income Diversification	-2.750***	-2.436***	-2.485***	-2.588***	-2.352***	-3.536***	-3.128***	-3.183***	-3.314***	-3.016***	-5.012***	-4.431***	-4.496***	-4.680***	-4.264***
	(-4.039)	(-3.536)	(-3.499)	(-3.643)	(-3.283)	(-4.049)	(-3.542)	(-3.497)	(-3.640)	(-3.284)	(-4.060)	(-3.550)	(-3.495)	(-3.637)	(-3.286)
Ln (Total Assets)	0.379***	0.365***	0.368***	0.402***	0.337***	0.485***	0.466***	0.471***	0.513***	0.430***	0.683***	0.656***	0.664***	0.722***	0.605***
	(3.847)	(3.780)	(3.698)	(3.684)	(2.996)	(3.833)	(3.762)	(3.687)	(3.667)	(2.983)	(3.817)	(3.744)	(3.676)	(3.649)	(2.969)
Capital Ratio	0.534***	0.521***	0.547***	0.554***	0.557***	0.682***	0.666***	0.699***	0.707***	0.711***	0.961***	0.938***	0.983***	0.995***	1.001***
	(4.340)	(4.219)	(4.395)	(4.424)	(4.436)	(4.324)	(4.209)	(4.380)	(4.409)	(4.422)	(4.307)	(4.198)	(4.364)	(4.393)	(4.406)
Capital Ratio^{2}	-0.024***	-0.024***	-0.024***	-0.024***	-0.024***	-0.031***	-0.030***	-0.031***	-0.030***	-0.031***	-0.043***	-0.043***	-0.044***	-0.042***	-0.043***
	(-4.617)	(-4.510)	(-4.604)	(-4.439)	(-4.486)	(-4.581)	(-4.491)	(-4.585)	(-4.422)	(-4.468)	(-4.545)	(-4.470)	(-4.563)	(-4.402)	(-4.449)
ROA	1.588***	1.556***	1.554***	1.501***	1.503***	2.035***	1.995***	1.993***	1.925***	1.927***	2.875***	2.820***	2.817***	2.722***	2.724***
	(8.380)	(7.981)	(7.883)	(7.545)	(7.556)	(8.370)	(7.982)	(7.889)	(7.554)	(7.562)	(8.359)	(7.983)	(7.895)	(7.562)	(7.568)
Cost Ratio	0.020**	0.020**	0.017**	0.017**	0.015*	0.026**	0.026**	0.021**	0.022**	0.019*	0.037**	0.036**	0.030**	0.031**	0.027*
	(2.460)	(2.404)	(2.040)	(2.088)	(1.852)	(2.458)	(2.400)	(2.030)	(2.079)	(1.844)	(2.457)	(2.397)	(2.021)	(2.069)	(1.836)
GDP Growth Rate	0.028***	0.031***	0.030***	0.030***	0.030***	0.036***	0.039***	0.039***	0.038***	0.039***	0.051***	0.056***	0.055***	0.054***	0.055***
	(8.994)	(7.378)	(6.762)	(6.826)	(6.950)	(9.022)	(7.406)	(6.782)	(6.846)	(6.970)	(9.049)	(7.434)	(6.803)	(6.867)	(6.991)
Banking Capital Ratio	-0.364***	-0.352***	-0.320***	-0.325***	-0.301***	-0.463***	-0.447***	-0.408***	-0.414***	-0.383***	-0.650***	-0.628***	-0.572***	-0.580***	-0.537***
	(-7.088)	(-6.805)	(-6.042)	(-6.115)	(-5.598)	(-7.022)	(-6.753)	(-6.000)	(-6.077)	(-5.561)	(-6.955)	(-6.699)	(-5.956)	(-6.036)	(-5.522)
Strength of Credit	0.340***	0.328***	0.287***	0.280***	0.297***	0.441***	0.424***	0.371***	0.361***	0.383***	0.631***	0.604***	0.528***	0.515***	0.546***
	(4.954)	(4.732)	(3.957)	(3.855)	(4.064)	(5.001)	(4.767)	(3.989)	(3.884)	(4.093)	(5.050)	(4.805)	(4.023)	(3.914)	(4.124)

Table 1. 5- The Joint Impacts of Risk Disclosure and Risk Management on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90					VaR95					VaR99				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	-26.397***	-25.675***	-24.508***	-27.326***	-25.875***	-33.827***	-32.883***	-31.404***	-34.986***	-33.138***	-47.794***	-46.431***	-44.365***	-49.381***	-46.789***
	(-8.844)	(-8.688)	(-8.103)	(-8.542)	(-7.936)	(-8.833)	(-8.678)	(-8.101)	(-8.532)	(-7.929)	(-8.822)	(-8.668)	(-8.098)	(-8.522)	(-7.922)
Risk Disclosure Index (RDI)	-0.015***	-0.015***	-0.013***	-0.012***	-0.012***	-0.019***	-0.019***	-0.017***	-0.016***	-0.015***	-0.027***	-0.026***	-0.024***	-0.022***	-0.021***
	(-4.457)	(-4.419)	(-3.839)	(-3.590)	(-3.432)	(-4.440)	(-4.414)	(-3.851)	(-3.601)	(-3.444)	(-4.424)	(-4.409)	(-3.863)	(-3.613)	(-3.456)
Risk Management Index(RMI)	-0.115***	-0.115***	-0.114***	-0.114***	-0.111***	-0.147***	-0.148***	-0.146***	-0.146***	-0.142***	-0.207***	-0.209***	-0.206***	-0.207***	-0.200***

	(-3.724)	(-3.764)	(-3.731)	(-3.689)	(-3.579)	(-3.713)	(-3.759)	(-3.724)	(-3.684)	(-3.575)	(-3.701)	(-3.754)	(-3.717)	(-3.679)	(-3.571)
Institutional Holdings		-1.327***	-1.341***	-1.301***	-1.230**		-1.710***	-1.727***	-1.674***	-1.584**		-2.430***	-2.452***	-2.375***	-2.250**
		(-2.737)	(-2.724)	(-2.666)	(-2.512)		(-2.751)	(-2.736)	(-2.675)	(-2.523)		(-2.765)	(-2.750)	(-2.685)	(-2.535)
Independent Board Ratio			-7.914***	-8.240***	-7.429***			-10.134***	-10.553***	-9.522***			-14.307***	-14.901***	-13.457***
			(-6.127)	(-6.261)	(-5.461)			(-6.121)	(-6.256)	(-5.460)			(-6.114)	(-6.251)	(-5.460)
Independent Board Ratio ^{2}			9.062***	9.316***	8.377***			11.591***	11.920***	10.728***			16.345***	16.815***	15.146***
			(6.093)	(6.136)	(5.354)			(6.082)	(6.128)	(5.350)			(6.072)	(6.120)	(5.347)
Board				0.417***	0.458***				0.534***	0.586***				0.755***	0.827***
				(3.496)	(3.789)				(3.496)	(3.786)				(3.496)	(3.782)
Board^2				-0.017***	-0.019***				-0.022***	-0.024***				-0.031***	-0.034***
				(-3.517)	(-3.830)				(-3.512)	(-3.821)				(-3.506)	(-3.812)
Ln (Total Compensation)					-0.033**					-0.042**					-0.059**
					(-2.267)					(-2.247)					(-2.226)
Income Diversification	-2.319***	-2.090***	-2.087***	-2.227***	-2.024***	-2.983***	-2.687***	-2.674***	-2.852***	-2.595***	-4.232***	-3.810***	-3.778***	-4.026***	-3.669***
	(-3.441)	(-3.078)	(-2.964)	(-3.151)	(-2.840)	(-3.449)	(-3.085)	(-2.962)	(-3.147)	(-2.842)	(-3.457)	(-3.093)	(-2.961)	(-3.144)	(-2.843)
Ln (Total Assets)	0.559***	0.540***	0.522***	0.543***	0.478***	0.713***	0.689***	0.668***	0.694***	0.612***	1.005***	0.971***	0.943***	0.978***	0.862***
	(5.296)	(5.181)	(4.862)	(4.716)	(4.025)	(5.272)	(5.160)	(4.856)	(4.703)	(4.015)	(5.247)	(5.138)	(4.849)	(4.688)	(4.004)
Capital Ratio	0.546***	0.526***	0.554***	0.571***	0.572***	0.701***	0.676***	0.708***	0.730***	0.730***	0.993***	0.956***	0.997***	1.027***	1.029***
	(4.518)	(4.328)	(4.506)	(4.610)	(4.601)	(4.525)	(4.335)	(4.496)	(4.597)	(4.589)	(4.531)	(4.342)	(4.486)	(4.584)	(4.577)
Capital Ratio^2	-0.024***	-0.023***	-0.024***	-0.024***	-0.024***	-0.031***	-0.029***	-0.031***	-0.030***	-0.031***	-0.043***	-0.041***	-0.043***	-0.043***	-0.043***
	(-4.644)	(-4.416)	(-4.608)	(-4.511)	(-4.539)	(-4.637)	(-4.419)	(-4.595)	(-4.498)	(-4.527)	(-4.627)	(-4.420)	(-4.581)	(-4.484)	(-4.513)
ROA	1.569***	1.533***	1.541***	1.484***	1.488***	2.008***	1.963***	1.975***	1.903***	1.908***	2.834***	2.772***	2.791***	2.690***	2.697***
	(8.183)	(7.811)	(7.795)	(7.444)	(7.464)	(8.166)	(7.805)	(7.799)	(7.452)	(7.470)	(8.149)	(7.799)	(7.802)	(7.460)	(7.476)
Cost Ratio	0.023***	0.022***	0.019**	0.020**	0.018**	0.029***	0.028***	0.025**	0.025**	0.023**	0.041***	0.040***	0.035**	0.036**	0.033**
	(2.769)	(2.660)	(2.357)	(2.431)	(2.211)	(2.778)	(2.662)	(2.348)	(2.421)	(2.203)	(2.787)	(2.666)	(2.339)	(2.410)	(2.195)
GDP Growth Rate	0.033***	0.035***	0.035***	0.034***	0.034***	0.042***	0.045***	0.044***	0.043***	0.044***	0.060***	0.064***	0.063***	0.061***	0.062***
	(8.663)	(8.527)	(8.283)	(8.286)	(8.377)	(8.676)	(8.557)	(8.315)	(8.315)	(8.406)	(8.689)	(8.588)	(8.348)	(8.347)	(8.437)
Banking Capital Ratio	-0.315***	-0.302***	-0.280***	-0.286***	-0.267***	-0.401***	-0.383***	-0.355***	-0.363***	-0.339***	-0.562***	-0.537***	-0.496***	-0.509***	-0.474***
	(-6.163)	(-5.875)	(-5.276)	(-5.364)	(-4.960)	(-6.088)	(-5.813)	(-5.226)	(-5.321)	(-4.919)	(-6.012)	(-5.749)	(-5.174)	(-5.276)	(-4.876)
Strength of Credit	0.326***	0.319***	0.279***	0.281***	0.298***	0.425***	0.413***	0.361***	0.363***	0.384***	0.610***	0.590***	0.516***	0.517***	0.547***
	(4.737)	(4.601)	(3.856)	(3.863)	(4.065)	(4.800)	(4.646)	(3.892)	(3.893)	(4.095)	(4.866)	(4.694)	(3.931)	(3.926)	(4.128)