

# HOW BANKS' INTERNAL GOVERNANCE MECHANISMS INFLUENCE RISK REPORTING

*Mohammad Jizi\**

## Abstract

Banks were the center of the recent financial crisis that results in a sharp decline in security prices and banks' market capitalization. The content of information in general, and risk information in particular, provided to capital markets was vital to reduce the uncertainty levels left in the markets and encourage trading. Examining the impact of the internal corporate governance mechanisms on the content of risk management disclosures using a sample of US national banks in the wake of the financial crisis shows that banks having larger board size and higher proportion of independent directors are more inclined toward disclosing wider content of risk management information. The results also suggest that CEO duality impacts positively on risk management disclosures content to provide signals toward CEO objectivity and judgment in running business operations aligned with shareholders' interest.

**Keywords:** Corporate Governance, Risk Management Disclosures, Content Analysis, US banks

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*\*Lebanese American University, School of Business, P.O. Box: 13-5053 Beirut 1102 2801 Lebanon  
Tel: +961 3 833 755*

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## 1 Introduction

Banks' risk exposure and corporate image are two debatable issues, especially after the recent financial crisis. The banking sector was the center of the recent financial crisis, which was the largest shock to the financial system since 1930, costing trillions of US dollars of losses in stock market (Cornett et al., 2009; Grove et al., 2011; Brunnermeier, 2009). Most of the security prices and banks' market capitalization declined sharply, and the volatility in financial markets was at a peak (Ivashina and Scharfstein, 2010).

The confusion in the financial markets and the shrink in trading activities were partially driven by the lack of information that limited asset evaluation (Gorton 2009; Acharya et al., 2011). Being transparent and informative in disseminating information is important in the management of the information asymmetry left in the market. Indeed, since companies satisfy the demand for information to assess their future position and uncertainties by voluntarily disclosing information (Meek et al., 1995), that reflects firms' transparency and reduces investors' vagueness (Pashakwale and Curtis 2005). Managing uncertainty levels and reducing the degree of information asymmetry are most likely to be reflected on a firm's performance (Kothari et al., 2009).

The enhancement to the disclosure practice and the volume of information provided to capital markets reduce the uncertainty gap and encourage trading,

which in turn improves stock performance (Kim and Verrechia, 1994). Diamond and Verrechia (1991) found that informed investors are more confident in placing large orders in the market. In contrast, higher return is asked by uninformed investors to compensate for the higher risk resulting from the lack of information (Easley and O'Hara, 2004). The flow of information in general, and risk environment information in particular, is a focal point in managing agency conflicts (Lajili and Zeghal, 2005). However, a look at the US banks' risk management, shows the need for improving their risk disclosure practice as stakeholders are not receiving adequate risk management information (Lewis, 2006). By disclosing risk management (hereafter RM) information investors will be more able to diagnose bank risk and assess future risk (Abraham and Cox, 2007; Helbok and Wagner, 2006) and evaluate management effectiveness (Lajili and Zeghal 2005).

As risk management disclosures (hereafter RMD) are intended to provide information on how firms will meet the increasing challenges and reduce the possibility of failure (Solomon et al., 2000), RMD are likely to be of higher concern after the recent financial crisis due to the increasing risk levels (Cornett et al., 2009). It is quite reasonable to argue that RMD by businesses in general, and banks in particular, have significantly increased following the recent global financial crisis. Arguably, financial statements are not sufficient to provide a complete picture of a bank (Scholes, 2000). To complete this

picture and, more importantly, to improve their image after the financial crisis, it would be expected that banks' management are led to disclose more RM information (Cornett et al., 2011; Helbok and Wagner, 2006; Hubbard, 2002). Building on the importance of risk information to all parties interested in the firm in order to assess its risk profile (Hirtle, 2007; Linsley et al., 2006), one might expect that a bank with more effective corporate governance, in particular higher board independence, larger board size and CEO duality, will encourage better content of RMD. Indeed, boards of directors can exercise a vital role in providing quality reporting (Cohen et al., 2004).

Consequently, the current paper seeks to examine whether boards of directors and audit committees structures influence the content of RMD in US-listed national commercial banks' annual reports. To my knowledge, the drivers of RMD are understudied areas, where further researches are recommended to uncover important insights. The study examines a unique sample of US-listed national commercial banks in the wake of the recent financial crisis and uses a content analysis technique to measure the content of RMD, contrary to the studies that used mixed samples or examined financial information in general. Moreover, traditionally one or two internal corporate governance attributes were addressed in isolation without considering a comprehensive set of variables reflecting both the board of directors, and the audit committee structures (Chen and Jaggi, 2000). Therefore, the study contributes to the literature by providing a further understanding of the intersection between bank internal corporate governance mechanisms and bank reporting strategy concerning their risk profile.

Examining a sample of US national commercial banks' annual reports, indicates that banks with larger board size, higher independence and CEO duality are more inclined to communicate their RM practices through enhanced content of RMD in annual reports. The diversified experiences and backgrounds characterising boards with larger size and higher independence (Guest, 2009; Ibrahim et al., 2003) enhance their quality of monitoring and advice (Lee et al., 2004) and consequently promote higher transparency. The results suggest that CEOs with dual role are more concerned to disclose wider content of RMD to communicate their courtesy toward managing bank risk. Moreover, the results also suggest that the frequency of audit committee meetings positively influence the content of RMD. A lens on the findings, one might also conclude that bank's leadership might use RMD not only to promote bank risk management practices but also to signal bank's governance quality.

The following sections provide a review of the literature and theoretical framework followed by the research design and the hypotheses testing. This is followed by the results discussion section. Finally, the conclusions and research limitations are discussed in the last section.

## 2 Literature review and theoretical framework

Corporate governance could be seen as the mechanism of managing the internal and external network of relationships (Aguilera et al., 2006). It was defined by Donnelly and Mulcahy (2008) as "a set of control mechanisms that is specially designed to monitor and ratify managerial decisions, and to ensure the efficient operation of a corporation on behalf of its stakeholders". Corporate governance is likely to enhance the monitoring level, which in turn provides higher assertions to shareholders (Chen and Nowland, 2010) and assists in the management of agency conflicts, to maximise shareholders' value (Gill, 2008). Its effectiveness provides assurance to shareholders that management is acting to the best of their interest, maintaining acceptable values and operations will sustain in the long-term. Consequently firms with better corporate governance are likely to be less risky and have better firm's value (Chen et al., 2010). In contrast, weaknesses in governance might influence firms' transparency and lead to poor financial reporting (Cohen et al., 2004).

In promoting confidence and illustrating current and prospected achievements or goals, companies disseminate information to the public, addressing several business dimensions and reflecting firms' transparency. The need for information to assess a firm's position and lower uncertainty level might be satisfied by disclosing voluntarily information beyond what is required (Meek et al., 1995). Providing information beyond what is required assists in lowering information asymmetry (Laksmana, 2008). The voluntarily aspect could be also found in mandatory disclosures, as the comprehensiveness and the level of disclosed information is determined by management (Kent and Stewart, 2008). Therefore, the level of disclosed information reflects companies' transparency and provides different users with needed information, which assists in lowering the level of uncertainty and decreasing investors' vagueness (Poshakwale and Curtis, 2005). With higher transparency, the monitoring ability is likely to enhance and shareholders could assume more reliability (Foraker, 1992).

Disclosing information concerning firm's legitimacy can reduce monitoring and consequently agency cost might decrease (Watson et al., 2002). According to the agency theory, management discloses more information to present their success and convince shareholders of their proper leadership (Watson et al., 2002). Risk disclosure is particularly important in the banking sector as banks are mostly seen as opaque to main stakeholders; however, risk disclosure in the banking sector is an understudied area (Hirtle, 2007). The article by Lewis (2006) pointed out that banks are not adequately disclosing RM information to their stakeholders, and that their current risk disclosure practices need improvement.

For example, only half of the banks disclosed the methods used in computing their risk ratios; yet Moody's recommends banks to disclose more RM information due to its importance in deriving credit rating. Indeed, enhanced RMD by disclosing voluntarily information concerning bank risk and capital adequacy, can be used as a mechanism to discipline the market and complement the regulators' supervision without one replacing the other (Hirtle, 2007; Estrella, 2004). Examining a sample of US commercial banks, Ahmed et al. (2004) concluded that maturity gap disclosure could be more informative than the information presented in the bank's financial statements.

The lack of risk disclosure studies in the banking sector was noticed by Linsley et al. (2006) triggering them to investigate the practice of risk disclosure in a sample of the United Kingdom (UK) and Canadian banks' annual reports. They argue that risk information is important to any party interested in the firm in order to be able to assess its risk profile. The importance of risk disclosure is derived from its ability to be used as a market stabilizer to discipline banks with poor performance and risk profile, as well as encourage banks with adequate risk management. Moreover, they mentioned that Basel committee recommended the enhancement of bank transparency through the disclosure of six categories that include risk management and risk exposure as two significant categories. The influence of risk disclosures on markets mentioned by Linsley et al. (2006) was examined by Penas and Tumer-Alkan (2010). They find that shareholders and stock participants are negatively impacted by the financial indicators such as maturity gap and non-performing loans, which reflect bank performance and future profit. Similarly, Hirtle (2007) examines the impact of disclosing information on market making activities and 'forward-looking estimates of market risk exposure' in bank holding companies, showing that greater disclosure enhances risk adjusted return and reduces firm risk. Within the same context, Perignon and Smith (2010) show that value at risk disclosure is beneficial in forecasting the change in the future trading return and the relation between them is likely to be linear.

To maintain their reputation; non-executive directors on the board encourage management to provide more information above what is required (Lim et al., 2007). The higher the percentage of independent directors on the board, the higher the influence will be on management to provide more information and to show transparency (Chen and Jaggi, 2000). In contrast, inside directors have different motivations to provide information resulting from the link between their compensation and firm performance. Therefore, executive directors might be interested in disseminating information to demonstrate their performance and proper decision taking. This protects the firm from stock undervaluation and minimizes the risk of unseemly valuation.

As RMD research is lacking in the literature, a broader view on the voluntary disclosure literature will shed-light on the association between corporate governance and the disclosure practice. Previous research refers to the influence of board independence on the voluntary disclosure level as an external monitoring tool assisting in the decrease of the agency cost (Patelli and Prencipe, 2007). Cheng and Courtenay (2006) show that the level of voluntary disclosure is related to the proportion of independent directors contrary to board size and CEO duality. A study conducted by Chau and Gray (2010) supports the influence of board independence on disclosure level but found that the impact of independent directors on the board was mitigated by the effect of separation between the CEO and Chairman responsibilities. Similarly, Donnelly and Mulcahy (2008) find positive correlation between the level of voluntary disclosure and board independence as well as non-CEO duality. These results oppose Haniffa and Cooke (2002), suggesting that the executive chair might consider more voluntary disclosure to satisfy the need for monitoring.

By contrast, Eng and Mak (2003) argue that the enhanced level of monitoring provided by the higher proportion of independent directors replaces the need for more disclosure. This relationship was supported by Barako et al. (2006), evidencing a negative association between the board independence and the level of voluntary disclosure. On the other hand, Labelle (2002) shows absence of consistent association between the disclosure level and board independence as well as CEO duality. Moreover, Ho and Shun Wong (2001) find that the level of voluntary disclosure is not influenced by the proportion of independent directors and CEO duality, while a positive relationship exists between the presence of an audit committee and the extent of voluntary disclosure. The characteristics of the audit committees in relation with the disclosure level were also examined by Kent and Stewart (2008), showing that audit committee size is negatively correlated with the extent of disclosure, while the audit committee independence has no influence. Kent and Stewart conclude that effective governance, aiming for quality monitoring, discloses more voluntary disclosure.

Building on the above, if reporting wider content of RMD enhances performance and manages stakeholders' expectations (Kothari et al., 2009; Hubbard, 2002; Perignon and Smith, 2010; Lajili and Zeghal, 2005) one might expect that banks with more effective corporate governance structure will disclose more RM information than banks with less effective corporate governance.

### 3 Research design

#### 3.1 Sample selection and data collection

The present study seeks to examine the effect of corporate governance on the content of RMD presented in the US national commercial banks' annual reports in the wake of the 2007-2008 financial crisis, i.e. years 2009 and 2010. The focus on annual reports rather than other reporting channels is since they are more controlled by firm management (Johnson and Greening 1999; Bear et al. 2010) and the most scrutinised documents by both inside and outside stakeholders. To have a coherent sample subject to the same regulations and disclosure requirements, only the US national commercial banks were selected and credit unions, saving institutions and central reserve depositories were excluded. The initial obtained sample comprises 193 banks with total assets varying from US\$ 48 million to US\$ 2.2 billion. The banks were then sorted according to their total assets as per the 2009 figures and the largest 100 banks were selected to examine banks with relatively similar size and complexity as well as engaging in similar transactions and trading portfolios. Data on the corporate governance variables was collected from banks' annual reports and proxy statements and financial data from *Thomson One Banker*. Due to missing data, the final examined sample comprises of 177 observations for years 2009 and 2010.

#### 3.2 Risk management disclosures

Understanding bank risk requires a look beyond the static balance sheet, which is limited in detailing the entity risk (Scholes, 2000). Management discussions on risk management are important to understand bank-risk dynamics and the impact of economic changes, such as interest rate or liquidity risk (Beaver et al., 1989; Scholes, 2000). Therefore, the risk disclosures

in the management discussion and analysis section of the banks' annual reports were used to measure the content of RMD. The management discussion and analysis is a window for management to discuss their financial condition and operational results.

A thought paper issued by the Committee of Sponsoring Organizations (COSO) highlighted for firms' boards and executive management the core elements to manage enterprise risks, and mentioned the main risk categories that include among others the financial risk, market risk, operational risk, reputation risk, strategic risk and compliance risk. The paper, within the discussion of the improvement opportunities regarding risk management after the time of crisis, referred to comments by the chairman of the Security and Exchange Commission on more consideration to RMD: 'the Commission will be considering whether greater disclosure is needed about how a company and the company's board in particular manages risks'. Scholars such as Linsley et al. (2006) examined the content of risk management disclosure by dividing it into six risk categories: "credit risk, market risk, interest rate risk, operational risk, capital structure and adequacy risk and risk management framework". Moreover, Ahmad et al. (2004) used a single risk-type disclosure, the interest rate risk disclosures, to explore its efficiency in the US banks. Therefore, we classify the RMD into six categories according to the risk types. They cover information disclosed regarding the management of the credit risk, interest rate risk, liquidity risk, market risk, operational risk, and legal and compliance risk.

The RMD score is computed as the ratio of points awarded across the six risk categories over the maximum points a bank could achieve, i.e. thirty. For example, if the bank obtains fifteen points across the six risk categories then the disclosure score is equal to fifteen over thirty, i.e. 0.5.

$$\text{RMDS} = \text{points obtained} / \text{maximum points a bank can achieve} \quad (1)$$

Where  $\text{RMDS} = \sum \text{points of risk types (credit risk, liquidity risk, interest rate risk, market risk, operational risk, legal and compliance risk)} / 30$

Holder-Webb et al. (2009) defined the content analysis as "a way of codifying text and content of written narratives into groups or categories based on selected criteria, with the end goal of transforming the material into quantitative scales that permit further analysis" (Holder-Webb et al., 2009, p.504). Consequently, the narrative content of each risk type disclosure is assessed and scored from zero to three according to the information communicated in each of the corresponding risk indicators (see appendix). Therefore, the narrative disclosure is given a score according to the availability and comprehensiveness of risk definition, framework and techniques used and the underlying assumptions. In addition to the

narrative score, a point is given if the disclosure is supported by quantitative figures and another point if the quantitative figures are compared with previous years.

#### 3.3 Disclosure score reliability

The inter-code reliability of disclosure score is considered a significant principle when using content analysis to ensure that the assigned scores are reproducible and reliable. However, reliability testing could not provide full assurance regarding scoring objectivity, (Linsley et al., 2006).

Previous scholars used Krippendorff's alpha when testing score reliability where an alpha value above 0.70 was considered a good indicator of score reliability (Newson and Deggan, 2002, Hasseldine et al., 2005; Holder-Webb et al., 2009). To ensure the reliability of the computed RMD scores, a randomly selected sample of twenty banks' annual reports covering 10% of the examined banks was selected. The corresponding annual reports of the selected sample were provided to two independent coders along with the scoring sheet and training on the approach followed. The provided scores along with the score computed by the author were used to test the scoring process reliability, i.e. the inter-coding agreement using Krippendorff's. The test of reliability reported an alpha value of 81.5% from the second round. Since the first reliability test was below 75%, reconciliation between the three scores was performed. The scores with variation greater than 30% were selected and the coding was analyzed to identify the reason behind such differences. After agreeing on the adjusted scores another reliability test was performed and the reported alpha was 81.5%.

### 3.4 Independent variables

Boards differ in their monitoring role as they are appointed for a limited tenure and they need to balance between various responsibilities (Van den Berghe and Baelden, 2005). The level of board monitoring is related to the level of delegation granted to management and the more delegation, the more the board effort to perform in monitoring management activities (Van den Berghe and Baelden, 2005). Pathan and Skully (2010) examine a sample of 212 US bank holding companies for the period between 1997 and 2004 to explore board of directors' determinants. They found that powerful CEOs are not able to influence board size and independence, arguing that this result might be due to the highly regulated nature that limits CEO power. Pathan (2009) used the same sample to evidence that board composition and CEO power influence risk taking.

From a US governance perspective, the intent behind passing the Sarbanes-Oxley (SOX) Act was to enhance companies' control system and to provide higher assurance to stakeholders. The audit function was given the responsibility to assess the adequacy and effectiveness of control mechanisms adopted by management, while the CEO is responsible for the design, the adequacy and the implementation of the internal control system. SOX section 302 states that the audit committee has a vital role in maintaining a proper internal control system and acts on behalf of the board of directors as well as the shareholders to ensure an adequate control environment, governance practices and prevent shareholders from management dishonest behavior. Moreover, Section 302 of SOX requires the disclosure of internal control information and holds the CEO responsible for proper disclosure

and mandates the CEO certification on these disclosures.

#### 3.4.1 Board size

The main role of the board is to provide advice to the CEO and senior management and to ensure that management activities are in the best interest of the shareholders (Guest, 2009). The board of directors acts on behalf of the shareholders overseeing management activities to ensure alignment with shareholders' interest, and discipline inefficient management practices (Li et al., 2008). Boards with a relatively large size may benefit from diversified expertise and increased monitoring ability due to the increase in board members (Guest 2009; John and Senbet 1998). Having an adequate number of directors on the board assists in having proper distribution of responsibilities, which influences the effectiveness of decisions (Laksmana, 2008). Therefore, the size of the board is an independent corporate governance driver (Beiner et al., 2004) reflecting firms' complexity (Krishnan and Visvanathan, 2009). However, the drawback of large boards is the communication complexity and the potential disagreement in decisions and setting firms' strategies. In this regard, research by Beiner et al. (2004) conclude that the accumulated management capabilities in boards having a large number of directors might compensate the weaknesses in coordination and communication. Consequently, the effectiveness of companies' boards of directors strengthens the firms' competitiveness and influences strategic decisions (Ibrahim et al., 2003).

While Donnelly and Mulcahy (2008) conclude that board size significantly associates with the level of disclosures, Ahmed et al. (2006) analyze a sample of 604 New Zealand firms showing that earning informativeness is inversely related to board size and directly correlated with smaller board size, as they can benefit from more effective communication and coordination. In contrast, Cheng and Courtenay (2006) find that board size is not associated with the level of voluntary disclosure.

As board size may vary according to firms' characteristics, industry and complexity (Guest, 2009; Pathan, 2009; Krishnan and Visvanathan, 2009), and knowing the complexity of commercial banks and the wide range of regulations they are subject to, it is expected that boards with relatively larger size will benefit from more diversified experience and better work-load allocation (Ahmed et al., 2006) and encourage management towards more RMD.

*H1. The larger the board size the higher the risk management disclosures score.*

#### 3.4.2 Board independence

Issues of corporate governance rose as a result of the separation between firm ownership and management, which generates conflict not only between the

management and the shareholders, but also with debt holders and regulators (John and Senbet, 1998). The degree of board independence is essential in determining the effectiveness of the boards of directors in performing the monitoring role (John and Senbet, 1998). The governance structure varies across companies due to the difference in the agency problems and companies' performance (Dey 2008). Firms facing high agency conflict enhance their governance structure by having independent board of directors (Dey, 2008) to rectify the agency conflict through the composition of the board (Barnea and Rubin, 2010).

Scholars argue that independent directors can assess management performance more objectively than inside directors as they are not monitoring themselves. The diversified experience and background of the independent directors and being less dominated by the CEO enable them to better discipline management inefficient activities (Guest, 2009). Boards with a higher independence are characterised by low conflict of interest, wise assessment in case of disagreement with management and act according to shareholders' interest (Laksmana, 2008). Therefore, a board of directors with a higher proportion of independent directors is expected to lead to more effective monitoring and controlling as well as safeguarding shareholders' interests (Ahmed et al., 2006; Cheng and Courtenay, 2006). Furthermore, a low proportion of independent directors on the board is considered a weakness in the firm's governance and this deficiency might offset the benefit of having a well-structured audit committee (Krishnan and Visvanathan, 2009).

Eng and Mak (2003) examine the effect of board composition on voluntary disclosure arguing that independent directors are less aligned with management and avoid withholding information; however they found that firms with higher board independence disclose less voluntary disclosure. Similarly, a study conducted by Barako et al. (2006) shows that the proportion of the independent directors on the board is negatively related to the level of voluntary disclosure. In contrast, and as transparency is likely to enhance a firm's long-term benefit, firms with a higher proportion of independent directors are expected to encourage more disclosures. Indeed, research by Cheng and Courtenay (2006) find that a higher proportion of independent directors results in a higher level of voluntary disclosure. Moreover, Donnelly and Mulcachy (2008) and Chau and Gray (2010) provide evidence on the positive relationship between board independence and disclosing voluntarily information.

As independent directors encourage management to provide more information above what is required in order to maintain their reputation (Lim et al., 2007) and reflect their appreciation to stakeholders (Li et al., 2008), it is expected that boards with a higher

proportion of independent directors consider disclosing better RMD content.

*H2. The higher the degree of board independence the higher the risk management disclosures score.*

### 3.4.3 CEO duality

From an agency theoretical point of view, CEOs who also hold the position of the chair of the board of directors (CEO duality) might suffer from conflicts of interests (Li et al., 2008; Krishnan and Visvanathan, 2009). Chairs have the ability to set the board's agenda, influence the information provided to the other board members and possibly impact on the appointment of other directors to the board. Consequently, CEOs who also act as chairs might abuse their position in order to hide crucial information, or to influence board appointments in their favour (Finkelstein and D'Aveni, 1994; Haniffa and Cooke, 2002). Moreover, non-executive directors might be more likely to accept managerial decisions against their better judgement, because they try to avoid confrontations with powerful CEOs, e.g. in order to retain their place on the board (Dey, 2008).

An agency theoretical perspective of managerial power would, therefore, suggest that firms with CEO duality provide less disclosure, since the provision of information increases the effectiveness of external control by informed investors, financial analysts, the business press etc. (Healy and Palepu, 2001; Li et al., 2008; Beyer et al., Walther 2010). Indeed, empirical research by Donnelly and Mulcahy (2008) and Chau and Gray (2010) suggest that the level of voluntary disclosure is positively related to the separation of the roles of chair and CEO.

However, prior research also highlights that, particularly in the context of banks, powerful CEOs might have a strong incentive to limit their firm's risk exposure against the interests of short-term oriented shareholders (Laeven and Levine, 2009; Barry et al., 2011) in order to protect their human capital (Fama and Jensen, 1983; Pathan, 2009). As banks' risk exposure can not only be reduced via finance and investment strategies (Pathan 2009), but also through transparency (Poshakwal and Courtis, 2005; Healy and Palepu, 2001; Jennings and Starks, 1985), powerful CEOs might have interest in disclosing wider content of risk management disclosures to increase transparency.

Indeed, the findings of empirical research into the relationship between CEO duality and voluntary reporting are by no means unanimous. Research by Li et al. (2008) and Cheng and Courtenay (2006) find no association between CEO duality and voluntary disclosure, while Haniffa and Cooke's (2002) findings indicate a positive relationship between CEO duality and voluntary disclosure.

Therefore, in the context of banks, we expect that CEOs with dual role are more inclined toward disclosing better content of RMD.

*H3. CEO duality is positively related to risk management disclosures score.*

### 3.4.4 Audit committee

The role of the audit committee is to monitor the integrity of the companies' financial statements, to review its internal financial control and risk management systems and to monitor and review the external auditor's independence and effectiveness (Goh, 2009; Sherman et al., 2009; Beasley et al., 2009; Krishnan and Visvanathan, 2009). Agency theory suggests that independent, effective audit committees tend to enhance the reliability of the reporting processes and to reduce information asymmetry between the management and outside investors and other stakeholders (McMullen, 1996).

Knowing the complexity and work load of audit committees, particularly in the banking sector, larger audit committees are expected to be more effective and to put more pressure on managers to disclose better information content to increase transparency (Melis, 2004; Barako et al., 2006; Li et al., 2008; Goh, 2009). Given their complex and risky business operations (Laeven and Levine, 2009; Pathan, 2009) we expect that larger audit committees are particularly beneficial for banks.

Moreover, the literature on disclosure and disclosure quality suggests that audit committee members with financial expertise tend to have a positive impact on the extent and reliability of corporate reporting (Bédard et al., 2004; Karamanou and Vafeas, 2005; Chen and Zho, 2007; Hoitash and

Hoitash, 2009). Consequently, audit committee size and the number of financial experts on the committee are expected to have a positive influence on disclosure content.

*H4. The size of the audit committee is positively related to risk management disclosures score.*

*H5. The number of financial experts in the committee is positively related to risk management disclosures score.*

### 3.4.5 Control variables

To avoid model misspecification, a set of control variables is introduced into the examined model to control for board and audit committee activity as well as the firm's profitability and risk. The frequency of meetings, as a measure of diligence, reflects persistent work and effort which might reflect effective monitoring (Lee et al., 2004). Kent and Stewart (2008) mention that the frequency of audit committee meetings, which reflects activeness, reduces reporting problems. They show evidence that the frequency of board and audit committee meetings result in a higher level of disclosures. We, therefore, control for board and audit committee meeting frequency. Furthermore, in line with the existing disclosure literature a set of financial characteristics are used to control for bank performance and risk level (Flannery and Sorescu, 1996; Haniffa and Cooke, 2002; Lim et al., 2007; Acharaya et al., 2011; Allen and Moessner, 2011, Hirtle, 2007).

### 3.4.6 Regression model

Based on our earlier discussion, the following regression model is employed

$$RMDS = \alpha_0 + \beta_1 BS + \beta_2 BI + \beta_3 DUAL + \beta_4 ACS + \beta_5 ACFE + \beta_6 BM + \beta_7 ACM + \beta_8 ROA + \beta_9 Lev + \beta_{10} Beta + \beta_{11} LPL + \beta_{12} LA + \beta_{13} Y + \hat{\epsilon} \quad (2)$$

Where: RMDS = risk management disclosure score measured as the ratio of the points obtained on the content of risk management disclosure over the maximum points a bank can achieve

$\alpha$  = the intercept

$B_1 \dots B_n$  = the regression coefficients

$\hat{\epsilon}$  = the error term

## 4 Data analysis and interpretation

### 4.1 Descriptive statistics

All banks' annual reports examined in the sample disclosed information related to their risk management with clear variation in the comprehensiveness and informative level of the disclosed information. The variation is not only in the level of information disclosed but also in the discussed types of RM. The highest RMD score is 27 points out of 30 across the defined risk types, i.e. a ratio of 0.9 and the lowest score is five points, i.e. a ratio of 0.17. Forty percent of the examined banks obtained a RMD score

above the mean (14.17). The standard deviation is 3.33 and the mode is 15 reflecting the score of 14% of the examined annual reports.

All banks disclosed information related to their liquidity risk management and 99% disclosed information related to their interest rate risk and credit risk management. Information related to market risk management was disclosed by 59% of the examined banks' annual reports but not as comprehensive as the liquidity, credit and interest rate risk disclosures. The lowest intention was given to the operational risk and legal & compliance risk management discussions. 26% of the reviewed annual reports disclosed legal and compliance risk management and 25% disclosed their operational risk management.

National US banks, regulated and supervised by the office of the Controller of the Currency (OCC), have a board size that ranges between five and 25 directors. The selected sample reports board size that varies between five and 21 directors having a mean of (12.5). This is aligned with Pathan and Skully's (2010) findings showing that bank holding companies had board size between five and 31 directors with a mean of (12.92). The difference in board size range compared to Pathan and Skully (2010) might be

explained by the difference in the selected sample, as bank holding companies are not subject to OCC regulations. The results obtained also coincide with the study conducted by Yermack (1996) using 452 non-financial US companies. They found that the board size mean was 12.25 and ranged from four to thirty-four directors, mentioning that some US firms such as General Motors and IBM shifted to smaller board size to avoid overhauls in their corporate governance structure.

**Table 1.** Independent variables measurement

Variable name	Variable code	Variable descriptions	Predicted sign
Board size	BS	The number of board members	+
Board Independence	BI	The number of independent directors to the total number of board directors	+
Audit committee	ACS	The number of members on the audit committee	+
Audit committee financial experts	ACFE	The number of financial experts on the audit committee	+
Chairman /CEO role duality	DUAL	Binary dummy variable: "0" if the chair of the board in not acting as a CEO and "1" otherwise	+
Board meetings	BM	Number of meetings held by the board	+
Audit committee meetings	ACM	Number of meetings held by the audit committee	+
Profitability	ROA	Net income over total assets	+
Leverage	Lev	Total debt over assets	-
Beta	Beta	Bank systematic risk	+
Loss provision to loans	LPL	The ratio of loan loss provision to total loan portfolio	+
Loans to assets	LA	The ratio of total loans to total assets	+
Year	Y	Binary dummy variable: "0" if 2009 Annual year report, "1" if 2010 Annual report	

A lens on the board independence shows that the proportion of independent directors on the board has a mean of (0.81) and varies between 55% and 94% with a standard deviation of (0.1). This is in line with the NASDAQ standards requiring that the majority of the directors on the board should be independent. Compared to Pathan and Skully (2010), they found that in US bank holding companies the board independence in years 1997-2004 varied between 10% and 96% with a mean of 64.55%. The difference could be explained by the increased pressure on listed companies to increase board independence. According to section 303A of the NYSE's Listed Companies Manual, most listed firms were required from 2004 onward to have a majority of independent directors on their boards.

Around 55% of the examined banks separated the role of the chairman from the role of the CEO, compared to 42% reported by Pathan and Skully (2010). This might be due to the pressure exercised by shareholders to abandon CEO duality if company performance is poor (Hermalin and Weisbach, 1998; Linck et al., 2008).

The audit committee size of the selected sample varies from three members to a maximum of nine members. The most common audit committee size is four members, which is the size of 43% of the examined banks. The median of the audit committee size is four and the mean is (4.53) with a standard deviation of (1.18). Compared to Cornett et al. (2009) research, they reported; based on exploring the 100 largest US bank holding companies between 1994 and 2002, that audit committee size varied between zero and thirteen with a mean of (5.15).

Section 407 of the Sarbanes Oxley Act 2002 required the disclosure of whether a financial expert is serving on the audit committee. The financial expert should have audit experience or equivalent and companies should disclose their financial experts' names and their independence of management. On the other hand, companies that fail to have financial experts in their audit committees should disclose the reason behind not having such experts. Seven percent of the banks covered in the selected sample failed to have a financial expert on their audit committee. The remaining banks have at least one expert and at most seven.



**Table 2.** Summary risk management disclosures descriptive statistics

Description	Total RM score	Credit risk	Liquidity risk	Interest rate risk	Market risk	Operational risk	Legal and compliance risk
<b>Banks disclosed RM</b>	195 100%	193 99%	195 100%	194 99%	115 59%	48 25%	50 26%
<b>Maximum disclosure score</b>	27 (0.9)	5	5	5	5	5	3
<b>Minimum disclosure score</b>	5 (0.17)	0	1	0	0	0	0
<b>Mode</b>	15 (0.5)	5	4	4	0	0	0
<b>Mean</b>	14.17 (0.47)	4.19	4	4.07	1.12	0.44	0.34
<b>Standard deviation</b>	3.33	0.89	0.92	0.91	1.41	0.89	0.66
<b>Zero score</b>	0	2 1%	0	1 0.5%	80 41%	147 75.4	145 74.4
<b>Score of "1"</b>		1 0.5%	5 2.56%	4 2%	75 38.46%	21 10.77%	36 18.46%
<b>Score of "2"</b>		1 0.5%	8 4.1%	7 3.6%	8 4.1%	21 10.77%	11 5.64%
<b>Score of "3"</b>		32 16.41%	28 14.36	19 9.74%	10 5.13%	3 1.54%	3 1.54%
<b>Score of "4"</b>		76 38.97%	98 48.72%	101 51.8%	13 6.67%	2 1%	0
<b>Score of "5"</b>		83 42.56%	60 30.77%	63 32.31%	9 4.62%	1 0.5%	0

Note: data for disclosure ratio in brackets

**Table 3.** Corporate governance summary descriptive statistics

	Board size	Board independence	CEO role duality	Board meetings	Audit committee size	Audit committee financial experts	Audit committee meetings	ROA	Leverage	Beta	Loss provision to loans	Deposits to assets
<b>Maximum</b>	21	0.94	1	34	9	7	21	3.69	1.00	11.03	0.15	0.89
<b>Minimum</b>	5	0.50	0	4	3	0	3	-9.53	0.80	-1.32	0.001	0.37
<b>SD</b>	3.2	0.10	0.5	5.12	1.18	1.29	3.55	1.88	0.06	1.66	0.02	0.15
<b>Mean</b>	12.5	0.81	0.44	11.1	4.53	1.8	8.46	-0.032	0.90	0.50	0.03	0.60
<b>Median</b>	12	0.82	0	11	4	1	8	0.4	0.90	0.17	0.02	0.65
<b>Skewness</b>	0.27	-0.81	0.24	1.52	1.11	1.43	0.65	-1.88	-10.60	3.70	2.24	-1.64
<b>Kurtosis</b>	2.99	2.90	1.06	7.05	4.40	5.36	2.82	6.91	135.9	19.16	10.50	6.94

**Table 4.** Spearman correlations matrix

Variables	VIF	BS	BI	DUAL	BM	ACS	ACFE	ACM	ROA	Lev	Beta	LPL	LA	Year
<b>BS</b>	1.48	1.00												
<b>BI</b>	1.16	-0.07	1.00											
<b>DUAL</b>	1.10	0.07	-0.01	1.00										
<b>BM</b>	1.40	-0.20	-0.05	-0.23	1.00									
<b>ACS</b>	1.36	0.39	0.31	0.09	-0.10	1.00								
<b>ACFE</b>	1.13	0.13	-0.01	0.07	0.12	0.00	1.00							
<b>ACM</b>	1.10	0.12	0.08	-0.03	0.17	-0.01	0.20	1.00						
<b>ROA</b>	1.70	0.06	0.12	0.10	-0.28	0.08	-0.06	-0.07	1.00					
<b>Lev</b>	1.10	-0.13	-0.25	-0.09	0.04	-0.10	-0.02	-0.20	-0.18	1.00				
<b>Beta</b>	1.19	-0.12	0.13	0.05	0.16	-0.08	-0.02	0.13	-0.10	0.16	1.00			
<b>LPL</b>	1.80	-0.03	-0.06	-0.02	0.23	-0.07	0.20	0.14	-0.70	-0.70	0.16	1.00		
<b>LA</b>	1.22	-0.17	-0.05	-0.04	0.05	0.03	-0.06	0.14	-0.18	-0.18	0.04	0.04	1.00	
<b>Year</b>	1.13	-0.06	0.06	-0.01	-0.08	-0.09	0.01	0.00	0.16	-0.09	0.11	-0.01	-0.12	1.00

#### 4.2 Test of hypotheses

As some of the dependent variable observations are clustered at a limiting amount, TOBIT regression model (Tobin, 1958), which is commonly used in examining censored data (McDonald and Moffitt, 1980), is employed to estimate the relationships.

TOBIT regression provides more robust results than other regressions since it makes use of all observations regardless if they are at the limit or above. The study also uses the OLS regression with robust standard error to test the sensitivity of the obtained regression results.

**Table 5.** TOBIT and linear analysis with robust standard error of the relationship between risk management disclosures and governance structure

Independent variables	Model I. <i>Board structure</i>		Model II. <i>Audit committee structure</i>		Model III. <i>Full Model</i>	
	<i>TOBIT</i>	<i>OLS</i>	<i>TOBIT</i>	<i>OLS</i>	<i>TOBIT</i>	<i>OLS</i>
	Coeff. t- value	Coeff. t- value	Coeff. t- value	Coeff. t- value	Coeff. t- value	Coeff. t- value
Constant	0.168 <b>1.84**</b>	0.167 <b>1.78*</b>	0.442 <b>7.47***</b>	0.443 <b>7.33***</b>	0.173 <b>1.95*</b>	0.173 <b>1.87*</b>
Board size	0.005 <b>2.46**</b>	0.005 <b>2.38**</b>			0.005 <b>2.10**</b>	0.005 <b>2.01**</b>
Board independence	0.194 <b>2.84***</b>	0.196 <b>2.81***</b>			0.195 <b>2.65***</b>	0.197 <b>2.59***</b>
CEO duality	0.041 <b>2.92***</b>	0.041 <b>2.83***</b>			0.040 <b>2.87***</b>	0.040 <b>2.76***</b>
Board meetings	0.003 1.06	0.002 1.03			0.002 0.74	0.002 0.71
Audit committee size			0.002 0.42	0.002 0.42	-0.007 -1.23	-0.007 -1.18
Audit committee financial expert			0.011 <b>1.96*</b>	0.010 <b>1.90*</b>	0.008 1.49	0.007 1.42
Audit committee meetings			0.007 <b>2.99***</b>	0.007 <b>2.93***</b>	0.006 <b>2.62**</b>	0.006 <b>2.54**</b>
ROA	0.017 <b>2.24**</b>	0.017 <b>2.18**</b>	0.015 <b>2.31**</b>	0.015 <b>2.25**</b>	0.015 <b>2.18**</b>	0.015 <b>2.10**</b>
Leverage	-0.021 -0.48	-0.020 -0.45	-0.080 <b>-1.74*</b>	-0.080 <b>-1.70*</b>	-0.029 -0.70	-0.028 -0.65
Beta	-0.001 -0.27	-0.001 -0.27	-0.001 -0.03	-0.001 -0.03	-0.001 -0.16	-0.001 -0.16
Loss provision to loans	1.627 <b>2.50**</b>	1.616 <b>2.43**</b>	1.410 <b>2.44**</b>	1.40 <b>2.38**</b>	1.394 <b>2.38**</b>	1.384 <b>2.29**</b>
Loans to assets	-0.008 -0.13	-0.010 -0.15	-0.059 -1.03	-0.060 -1.3	-0.020 -0.34	-0.022 -0.35
Year	0.055 <b>3.77***</b>	0.056 <b>3.66***</b>	0.051 <b>3.34***</b>	0.051 <b>3.24***</b>	<b>0.053</b> <b>3.61***</b>	0.052 <b>3.47***</b>
Prob.	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
F-test	5.38	5.15	5.46	5.22	4.80	4.47
Adj. R- squared		0.23		0.22		0.23

\*P < 0.1, \*\*P < 0.05, \*\*\*P < 0.01

The Spearman correlations matrix and VIF are used to test for the existence of multi-collinearity between the examined independent variables. Table (4) shows the correlations between the independent variables and the results do not suggest any serious collinearity between the examined variables. The autocorrelation and heteroscedasticity were tested using the Durbin Watson test and White's test. Both report no threat of autocorrelation or heteroscedasticity.

The impact of corporate governance on the content of RMD in banks' annual reports is examined in three stages. The objective behind following such an approach is to estimate the effect of each group of corporate governance attributes, i.e. board characteristics and audit committee characteristics separately in order to isolate the effect of one on the other. In doing so, the relation between the board characteristics and the content of each of RMD is examined first. Second, the relation between the audit committee characteristics and the content of RMD is estimated. Finally, both the board and audit committee characteristics as well as the control variables are introduced into one model to estimate the integrated impact on RMD score.

The TOBIT regressions estimating the association between the content of RMD and the governance structure, table (5), show that the three examined models are significant at ( $p < 0.01$ ). The three board variables (board size, role duality and board independence) examined in model (I) are statistically significant and positively impacting the content of RMD. The board size is significant at ( $t = 2.46, p < 0.05$ ), while the CEO duality and board independence are significant at ( $t = 2.92, p < 0.01$ ) and ( $t = 2.84, p < 0.01$ ). The coefficients magnitudes of the significant variables, with the exception of board independence, are not high suggesting their marginal impact on the variation in the content of RMD.

The results of analysing the relationship between the audit committee and the content of RMD suggest that the number of audit committee financial experts and the frequency of audit committee meetings relate to RMD content. The audit committee financial experts' variable is significant at ( $t = 1.96, p < 0.1$ ), while the number of audit committee meetings is significant at ( $t = 3.99, p < 0.01$ ). In contrast, the audit committee size shows no statistical relationship with the RMD score.

Estimating the relationships for the complete set of corporate governance variables, i.e. the board of directors and the audit committee structures in addition to the control variables, reports generally consistent results as in model (I) and model (II). The three significant board variables in model (I) remain significant in the full model, while the audit committee financial experts variable turns to be insignificant. With respect to the control variables, the reported results show positive association to ROA at ( $t$

$= 2.18, p < 0.05$ ), loan loss provision to total loans at ( $t = 2.38, p < 0.05$ ) and year at ( $t = 3.61, p < 0.01$ ).

The reported results support hypothesis (1) suggesting that banks with larger board size tend to disclose more RMD. The results indicate that in highly-regulated and complex industries (Grove et al., 2011) larger board size, with diversified experience (Beiner et al., 2004; Guest, 2009) and ability to distribute responsibilities and workload among board members (Ahmed et al., 2006; Dey, 2008), are more likely to influence the quality of monitoring and advice. Consequently, boards with larger size encourage management to reveal risk management information effectively to promote their risk management strategies to key stakeholders. The obtained results are in line with previous studies conducted on the relationship between board size and voluntary disclosures. Lim et al. (2007) showed the relationship with the level of forward looking and strategic voluntary disclosures. Similarly, Donnelly and Mulcachy (2008) found positive association between board size and the level of voluntary disclosures. Kent and Stewart (2008) also evidenced a direct relation between board size and the level of financial information when examining a transitional financial reporting standard period in Australia.

Hypothesis (2) suggesting that higher percentage of independent directors on the board leads to better content of RMD is supported by the regression results in both model (I) and (III). Boards with a higher percentage of independent directors provide diversified experience (Ibrahim et al., 2003), which might be more able to monitor the content, quantity and quality, of disclosed risk management information (Ahmed et al., 2006; Cheng and Courtenay, 2006). The positive association between the board independence and the content of RMD suggests that boards with higher independence are more capable of expressing the need and convincing management to be more transparent in communicating their risk-management practices, which aim to maintain acceptable risk levels and safeguard stakeholders' rights. In other words, independent directors on the board are likely to facilitate the alignment of management interest with investors' interest (Li et al., 2008; Guest, 2009), through higher transparency in disseminating risk management procedures and related figures. In doing so, they are providing assurance to both shareholders and stakeholders that they are efficiently monitoring bank-risk exposure by maintaining proper risk levels and operating within acceptable risk appetites. On the other hand, providing comprehensive disclosures might improve transparency and minimize stockholders cost to obtain information that will help them in monitoring management activities. This will help in the management of the agency conflict and lower uncertainty levels regarding the risk management strategies and adopted practices.

Chen and Jaggi (2000) found similar results showing that independent directors on the board enhance transparency and the comprehensiveness of financial disclosures. Similarly, Cheng and Courtenay (2006) and Donnelly and Mulcacky (2008) found positive association between board independence and voluntary disclosures. On the other hand, Eng and Mak (2003) provided opposing results that show negative association between the level of voluntary information and the presence of independent directors on the board. One of the explanations of the contradicting results might be the difference in the ownership structure. Eng and Mak (2003) examined a sample of Singapore firms having a high level of block-holder ownership (the mean was 62%), which relaxed the need for information transparency, since they may have direct access.

The CEO duality is positively associated with the content of RMD. Banks' CEOs with dual role seem to give more attention to the content of RMD than CEOs with separated roles. The role duality seems to trigger CEOs to be more concerned about the content of RMD and be willing to communicate their courtesy toward managing bank risk exposure in order to limit the firm's risk and the interest of short-term shareholders (Laeven and Levine, 2009; Barry et al., 2011). This was exercised by a comprehensive discussion on how the bank is considering policies and procedures to manage various risk types facing the bank in particular or the banking sector in general. Moreover, the sensitivity of handling the two key positions in the bank is likely to encourage higher transparency and better disclosure content, where RMD mechanism offers suitable channel to communicate management practices and behaviour toward risk issues. The comprehensive content of RMD is assumed to minimize the gap between the shareholders and management, and consequently achieves their acceptance and reduces agency conflicts.

Some previous studies found evidence supporting the association between CEO duality and the level of voluntary disclosures as did Haniffa and Cooke (2002). Others, such as Chau and Gray (2010) found a negative relationship between the CEO duality and the level of voluntary disclosures, while Forker (1992) found a negative relation between CEO duality and share option disclosures.

The audit committee has an important role in overseeing the process of preparing and issuing the financial reports (Krishnan and Visvanathan, 2009), as well as judging and maintaining the integrity of the disclosed financial information (Sherman et al., 2009), however the frequency of committee meetings is the only significant variable. This suggests that the frequency of meetings enables the audit committee to move from what should be disclosed, in order to comply with the regulatory requirements, to what is better to be disclosed. This is in line with the audit

committee role in maintaining the quality of financial reporting (Goh, 2009).

The results reconcile with the findings of Kent and Stewart (2008) indicating a positive relationship between the number of audit committee meetings and the quantity of financial disclosures. Mangena and Pike (2005) as well, investigated the effect of audit committee characteristics on the financial disclosures and found that audit committee size was neutral and not significant with the level of disclosure, while the financial expert enhances the extent of disclosed information.

The full model results indicate that banks with better performance and higher loan loss provisions are more inclined to disclose comprehensive information when discussing their risk management policies, risk exposure, as well as monitoring and measurement procedures. The higher returns locate bank's management in a comfort zone helping them feel more confident about the effectiveness of the adopted risk management practices and safe to communicate them, while the higher loan loss provisions encourage higher disclosure level to defend their case.

Employing the OLS regressions with robust standard error to check the robustness of the estimated relationships reported consistent results with the TOBIT results. Board size, board independence and CEO duality variables examined in model (I) remain significant explaining 19% of the variation in the RMD scores. The audit committee financial experts and audit committee meetings are significant at ( $t = 1.96, p < 0.1$ ) and ( $t = 2.99, p < 0.01$ ) respectively and explaining 18% of the variation in the RMD scores. The full model reports significance for the board size, board independence, CEO duality, audit committee meetings, ROA, loan loss provision to total loans and year, explaining 23% of the variation in the RMD scores.

## 5 Conclusion

The 2008 financial crisis was an important turning point to financial markets. The crisis was centred on the banking sector, but its negative impacts shadowed on all other industries (Barth and Landsman, 2010). The wide umbrella of the financial panic was not a surprise, since banks are the backbone of the economy and play a crucial role in supplying money and linking between depositors and investors (Howells and Bain, 2008). The panic in the financial markets was partially driven by the lack of information which stressed on the asset pricing (Gorton, 2009; Allen and Moessner, 2011).

Attracting investors as well as depositors turns to be more difficult when facing increasing levels of uncertainty and risk. Generally, investors seek information to understand firms' risk profile and balance between the investment risk and the expected return (Linsley et al., 2006). This means that banks providing poor risk-related information will neither be

able to convince investors to be shareholders, nor depositors that their wealth is safeguarded (Hubbard, 2000; Merton, 1987). Having effective communication with stakeholders might share in reducing uncertainty levels, enhancing transparency and providing a clear image on how the bank is being managed (Meek et al., 1995; Poshakwale and Courtis, 2005). Therefore, banks' management should maintain safe risk exposure and be transparent in communicating their practices seeking acceptable risk levels, wise portfolios and off-balance sheet transactions. However, RM is expected to reduce information asymmetry and provide more stability (Poshakwale and Courtis, 2005; Linsley et al., 2006), to my knowledge few studies have investigated the impact of the internal corporate governance mechanism on RMD content.

Examining a sample of US national commercial banks' annual reports employing the content analysis, suggests that banks having larger board size and higher proportion of independent directors are inclined toward disclosing more comprehensive RM information. The diversified experience and backgrounds of directors (Guest, 2009; Ibrahim et al., 2003) as well as directors' diligence (Lee et al., 2004) encourage more transparency and enhance the level of disclosed information. The evidenced positive relationship is in line with the results of Chen and Jaggi (2000) and Cheng and Courtenary (2006). Quality RMD assist in reducing uncertainty gap and consequently maintain low asymmetry levels.

The results also suggest that CEO with a dual role is more likely to disclose wider content of RMD. Disclosing information related to risk management beyond what is required assists in the management of agency conflict (Hubbard, 2002; Meek et al., 1995; Linsley et al., 2006). Indeed, the content of communicated information shares in reducing uncertainty levels (Patelli and Prencipe, 2007; Li et al., 2008) and provides reasonable signals toward CEO objectivity and judgment in running business operations aligned with shareholders' interest.

While the results of the study provide no evidence to support the relationship between the size of the audit committee, the number of financial experts and the content of RMD, the results evidence a positive correlation between the content of RMD and the frequency of the audit committee meetings. The frequency of meetings is likely to provide additional time to discuss issues over and above complying with the minimum disclosure requirement. This enables the committee to move from discussing and ensuring the disclosure of what should be disclosed to what is better and more informative to be disclosed.

As the present study focused on examining the interrelationships between the content of RMD and the governance structure of a sample of US banks in years 2009 and 2010 using annual reports, further research might be conducted to consider other reporting channels, such as press releases. Moreover, expanding

the sample to cover other types of financial institutions and longer time horizon might help in monitoring the trend in the disclosure practice and governance attitude toward the content of disclosed information.

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## Appendix A

	<b>Risk type</b>	<b>Risk management indicators</b>
1	Credit risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Policies developed to ensure loans are extended within tolerable risk measures</li> <li>• Mechanisms used to measure various credit risks (credit rating and related discussions and how they are impacting cost of funds and the ability to raise funds)</li> <li>• Monitoring tools to assess the portfolio performance (presentation to credit portfolio classified by industry, credit type, geographical concentration, etc.)</li> <li>• Loan restructuring (non-performing loans and borrowers experiencing financial difficulties)</li> <li>• Provisions for credit losses</li> </ul>
2	Liquidity risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• The framework implemented to ensure cash availability to lenders and depositors (discussion on employed liquidity testing and stress testing and the underlined assumptions)</li> <li>• The role of the ALCO committee</li> <li>• Cash and liquidity sources such as “available for sale securities”</li> <li>• Contingency funding plans, how the bank can response to liquidity stress events at various levels of severity</li> </ul>
3	Interest rate risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Describing the techniques used to measure and monitor changes in interest rate <ul style="list-style-type: none"> <li>▪ re-pricing assets</li> <li>▪ liabilities and derivatives</li> <li>▪ earning simulation modelling and related assumption</li> <li>▪ net portfolio value estimation and discussion on assumptions used in the estimation</li> </ul> </li> <li>• Tools adopted to manage the interest rate risk</li> </ul>
4	Market risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Trading and non-trading portfolios market risk exposures</li> <li>• Describing the tools used to monitor and manage risk exposures</li> <li>• Discussions on foreign exchange risk</li> <li>• Discussion on trading risk management (value at risk disclosure if available)</li> <li>• Discussion on commodity risk</li> <li>• Discussion on equity risk</li> <li>• Discussion on issuer credit risk (if available)</li> </ul>
5	Operational risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Policies and procedures followed to manage operational risk</li> <li>• Trainings provided to minimise the occurrence of operational risk</li> <li>• The assessment and reporting of operational risk</li> <li>• Identifying and managing key human capital risks</li> <li>• Presenting information about employees turnover rates and performance</li> <li>• Policies and procedures adopted to mitigate IT risks</li> <li>• Tests and procedures employed to ensure the adequacy of IT controls</li> </ul>
6	Legal and compliance risk	<ul style="list-style-type: none"> <li>• Definition</li> <li>• Policies and procedures followed to manage fiduciary risk</li> <li>• Categories of risks covered under the fiduciary risk policies and procedures</li> <li>• The role of fiduciary risk management function (if any)</li> </ul>

Source: COSO, 2009; Linsley et al., 2006; Baumann and Nier, 2004; Ahmed et al., 2004.