CORPORATE GOVERNANCE AND BANK RISK MANAGEMENT IN GHANA

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ABSTRACT

The impact of stakeholders of Ghanaian banks on the management of bank capital risk, credit risk and liquidity risk is investigated. Bank stakeholders include the board of directors, shareholders, depositors and regulators. We emphasize the impact of the strength the board of directors and constructed an indicator of board strength in a manner similar to Greuning and Bratanovic (2004). Other explanatory variables of bank financial risks include management efficiency, total assets, inflation and central bank lending rate. Three fixed effects (least squares dummy variables) regression coefficients were estimated for each of the three risks, using an unbalanced panel of 23 banks covering 2005-2008. Estimation of the variance-covariance matrix was controlled for heteroscedasticity and autocorrelation of the residuals.

Banks with board strength values higher than the industry median are labelled strong boards, and those below are labelled weak boards. Statistical tests indicate that there is no difference between means and medians of bank capital, credit risk and liquidity risk indicators of banks with strong boards and banks with weak boards.

In respect of capital risk management, the following explanatory variables were significant and positive at the 5% level: management efficiency and the logarithm of total assets and inflation. The central bank lending rate was also significant but negative. For credit risk, only bank-specific dummies and management efficiency variables were significant at the 1% level. Bank reserves and inflation do so at the 10% significance level. For liquidity risk, reserves and loan-to deposit ratio significantly impact liquidity risk (1%). The impact of the board index was moderately significant (10%).

We conclude that there is no statistical difference between the strengths of bank boards in Ghana, and that board strength does not have significant impact on capital risk, credit risk nor liquidity risk. Depositor behavior appears to impact only liquidity management, while, shareholders do not appear to act in a manner that reduces the credit risk taking by banks. We also conclude that, more efficient the management, the less capital the bank is likely to hold, while bank total assets are important only in capital risk management. Bank-specific approaches to credit risk management are significant.
1.0 Introduction
The question of whether corporate governance has an impact on the management of bank risks has received different answers from researchers. For example, Jansen (1993) and Greuning and Bratanovic (2004) posit that stakeholders in the corporate governance of banks impact how banks manage risks, while Simpson and Gleason (1999) and Prowse (1997) argue that stakeholders in the corporate governance do not have significant impact on risk management. In the midst of these contrasting debates, this paper will seek to establish what the case is for Ghana.

By virtue of the relationship that exists between a bank and its stakeholders, the stakeholders have a duty to ensure that the bank is managed well. Stakeholders must exert influence in all areas of the health of a bank. The area that is of interest in this study is the financial health of a bank. Are stakeholders exerting any significant influence on the management of bank risks in Ghana? For example, Macey and O’hara (2001) have suggested that because banks have an atypical contractual relationship, the corporate governance systems of banks should be extended to include depositors and shareholders.

When the governance systems put in place are not functioning properly, problems may result. In a study conducted for the World Bank, Kirkpatrick (2009) concluded that the recent global financial crises can, to an important extent, be attributed to the weaknesses and failures in the corporate governance structures. He added that corporate governance routines that were in place did not serve to safeguard excessive risk taking which resulted in huge sums of bad loans.

To the extent that the financial system is very central to the proper functioning of a market economy and also that the single most important threat to the financial sector is the improper management of risk, it becomes imperative to investigate the risk management activities of banks and the role played by the governance systems and processes put in place in an emerging economy like Ghana. Research that links corporate governance directly to the management of financial risks of banks in Ghana is almost non-existent. This paper therefore seeks to contribute to closing this gap. The paper specifically studies the relationship between the corporate governance and financial risk management of 23 banks in Ghana from 2005 to 2008. In particular, it assesses the impact of the strength of the board (how resolute) of directors on risk management.

The paper is organised as follows: the next section discusses pertinent literature on the subject matter. This is followed by a discussion of the methods which were employed in conducting the study. Results are then presented and discussed. The paper ends by drawing conclusions.

2.0 Literature

OECD (2004) states that “The presence of an effective Corporate Governance System, within an individual company and across an economy as a whole, helps to provide a degree of confidence that is necessary for the proper functioning of a
market economy…” Central to the proper functioning of a market economy is the financial sector which, in most parts of Africa, is predominantly made up of banks. Consequently the need for proper corporate governance of banks becomes extremely paramount.

2.1 Conceptual issues
The governance mechanism of banks establishes a set of relationships between stakeholders and the bank. In fact, Greuning and Bratanovic (2004) define corporate governance as the set of relationships between a bank’s management, its board, its shareholders and other stakeholders. Clearly, the governance mechanisms must have a bearing on bank risk management, for it is often said that banks are in the business of managing risks.

2.1.1 Governance mechanisms
The governance mechanisms can be categorized in two: endogenous systems and exogenous systems.

**Endogenous Corporate Governance Mechanisms**
Internal corporate governance is about mechanisms for the accountability, monitoring, and control of a firm’s management with respect to the use of resources and risk taking (Llewellyn and Sinha, 2000). Internal corporate governance starts with the board of directors.

**The board of directors**
The board of directors is the supreme governing body of bank. The board is responsible for setting the strategic direction of the bank and overseeing the risk management policies of the bank. The board of directors is appointed by the shareholders of the company. The board has the ultimate responsibility for the manner in which the operations/business of a bank is conducted. Among its responsibilities are: appointing senior management, establishing operational policies and, above all, taking responsibility for ensuring the soundness of a bank.

A board must be strong, independent and actively involved in the activities of a bank. Although a bank’s directors may not be experts in banking, it is important that they have the skills, knowledge, and experience to enable them to perform their duties effectively. The board oversees and supports management efforts, tests and probes recommendations before approving them. It should make sure that adequate controls and systems are in place to identify and address concerns before they become major problems. During bad times, a board that is active and involved can help a bank survive if it is able to evaluate problems, take corrective actions, and when necessary, keep the institution on track (Greuning and Bratanovic, 2003).

**Exogenous Corporate Governance Mechanism**
Ciancanelli and Gonzales (2000) state that in the banking sector, the regulation and regulator represent external corporate governance mechanisms. In the conventional literature on corporate governance, the market is the only external governance force with the power to discipline the agent. The existence of regulation means
there is an additional external force with the power to discipline the agent. This force is quite different than the market. This implies that the power of regulation has different effects to those produced by markets.

Bank regulation represents the existence of interests different from the private interests of the firm. As a governance force, regulation aims to serve the public interests, particularly the interests of the customers of the banking services. The regulator does not have a contractual relationship either with the firm’s principal or with the banking organisations because of differing interests from those of the principals (Ciancanelli and Gonzales, 2000).

The role of bank regulators and supervisors in the corporate governance process is mainly seen through the laws and legislations that are promulgated. Such laws pertain to capital adequacy requirements, reserve requirements and others.

2.1.2 Banks and financial risk
Banks have been described as being in the business of managing risks. Bank risks may be categorised in a number of ways. One view is that bank risks fall into four main categories: operational risks, business risks, event risks and financial risks (Greuning and Bratanovic, 2003).

Operational risks are related to a bank’s overall organization and functioning of internal systems, including computer-related and other technologies, compliance with bank policies and procedures, and measures against mismanagement and fraud. Business risks are associated with a bank’s business environment, including macroeconomic and policy concerns, legal and regulatory factors, and the overall financial sector infrastructure and payment systems. Event risks include all types of exogenous risks which, if they were to materialize, could jeopardize a bank’s operations or undermine its financial condition and capital adequacy.

Financial risks can be further divided into two types of risks – pure risks and speculative risks. Pure risks can only result in a loss for the bank. Pure risks include liquidity, credit, and solvency risks. Speculative risks may result in a gain or loss. The main categories of speculative risks are interest rate, currency, and market price (or position) risks such as financial derivatives. Because of time and resource constraints, this study focuses on bank management of pure financial risks. The following dimensions are investigated.

Capital Risk
Capital refers to the amount of equity owners have put up. Almost every aspect of banking is either directly or indirectly influenced by the availability of capital. The role of capital in banking business is so important that in many jurisdictions, rules and regulations are set for maintaining a minimum capital adequacy ratio. In 2003, the central bank of Ghana issued a directive to all banks to increase their minimum paid-up capital to the equivalent of US$ 8 million by the end of 2006. All the banks did. Then in 2007, another directive was issued, this time requiring an increase in
bank equity to US$ 60 million by 2012. By the end of 2009, most banks had attained the new capital level.

Capital is one of the key factors to be considered when the safety and soundness of a bank is assessed. An adequate capital base serves as a safety net for a variety of risks. Capital absorbs possible unexpected losses, and thus provides a basis for maintaining depositor confidence in a bank. Capital also is the ultimate determinant of a bank's lending capability. A bank's balance sheet cannot be expanded beyond the level determined by its capital adequacy ratio, which is 10% in Ghana. The availability of capital consequently determines the maximum level of assets (equity multiplier).

The failure of a bank may leave its shareholders with none of the capital they committed to the institution. In addition, depositors who are uninsured also risk losing a substantial portion (possibly all) of their funds. When investors believe that a bank has an increased chance of failing, the market value of its capital stock begins to fall. Also, depositors and creditors begin to rush for their money. For this reason, the prices of traded equity and high yields on uninsured deposits/debt, can serve as early warning signs of solvency problems.

**Credit Risk**

Credit risk is defined as the probability that some of a bank's assets, especially its loans, will decline in value and possibly become worthless. Because banks hold little owners' capital relative to the aggregate value of their assets, only a small percentage of total loans need to go bad to push a bank to the brink of failure. Thus, management of credit risk is very important and central to the health of a bank and indeed the entire financial system.

As banks make loans, they need to make provisions for loan losses in their books. The higher this provision becomes, relative to the size of total loans, the riskier a bank becomes. An increase in the value of the provision for loan losses relative to total loans is an indication that the bank's assets are becoming more difficult to collect.

**Liquidity Risk**

Liquidity is necessary for banks to compensate for expected and unexpected balance sheet fluctuations and to provide funds for growth. Liquidity represents a bank's ability to efficiently accommodate the redemption of deposits and other liabilities and to fund increases in loan and investment portfolios.

Liquidity risk management lies at the heart of confidence in the banking system, as banks are highly leveraged institutions. The importance of liquidity transcends the individual institution, because a liquidity short-fall at a single institution can have system wide repercussions. It is in the nature of a bank to transform the term of its liabilities to different maturities on the asset side of the balance sheet. Since the yield curve is typically upward sloping the maturity of assets generally tends to be longer than that of liabilities. A bank may therefore experience liquidity...
mismatches, making its liquidity policies and liquidity risk management key to survival.

### 2.1.3 Stakeholders and bank risk management

Economic theory suggests that both shareholders and depositors can influence bank risk management. See for example, Levine (2004).

**Shareholders**

Shareholders are a class of stakeholders. Shareholding structure may be diffused or concentrated. Shareholding is said to be diffused if each person’s shareholding is so small that it is too costly for such shareholder to monitor the company’s activities closely. However, in principle, diffuse shareholders exert corporate governance by directly voting on crucial issues, such as mergers, liquidation, and fundamental changes in business strategy, and indirectly by electing the boards of directors to represent the interests of the owners and oversee the myriad of managerial decisions. A variety of factors, however, keep diffuse shareholders from effectively exerting corporate control. There are large informational asymmetries between managers and small shareholders, as managers have enormous discretion over the flow of information. Small shareholders frequently lack the expertise to monitor managers. Furthermore, the relatively large costs associated with monitoring managers by each small investor may induce a “free-rider” problem - each investor relies on others to undertake the costly process of monitoring managers, and in the end there is too little monitoring.

One corporate governance mechanism for preventing managers from deviating too far from the interests of owners is concentrated ownership. Large investors have the incentives to acquire information and monitor managers. Furthermore, large shareholders can elect their representatives to the board of directors to avoid managerial control of the board of directors. Large shareholders will also be more effective at exercising their voting rights than an ownership structure dominated by small, comparatively uninformed investors. Finally, well-informed, large shareholders can more effectively negotiate managerial incentive contracts that align owner and manager interests than poorly-informed small shareholders whose representatives – the board of directors – can be manipulated by management.

However, concentrated ownership raises new corporate governance problems. Large investors may pay themselves special dividends and exploit business relationships with other firms they own that profit themselves at the expense of the corporation or bank. Thus, while concentrated ownership is a common mechanism for confronting the corporate governance issue, it has its drawbacks.

**Debt holders**

Debt purchasers and depositors provide finance in return for a promised stream of payments and a variety of other covenants pertaining to corporate behavior, such as the value and risk of corporate assets. If the corporation violates these covenants or defaults on payments, then debt holders typically obtain the rights to repossess
collateral, throw the corporation into bankruptcy proceedings, vote in decisions to reorganize, and vote on removing managers.

Clearly, the effective exertion of corporate control with diffuse debt depends on the efficiency of the legal and bankruptcy systems. There are barriers, however to diffuse debt holders effectively exerting corporate governance. Small debt holders maybe unable to monitor complex organizations and will face the same “free-rider” incentives as small equity holders discussed above.

Legal systems in many countries give companies the right of an automatic stay on assets, and managers frequently remain in place pending a decision by the bankruptcy courts. This makes repossision of assets difficult even for secured creditors and reduces the governance power of debt holders. Furthermore, inefficient bankruptcy proceedings frequently take years to complete, which further erode the corporate governance role of diffuse debt.

As with large equity holders, concentrated debt can ameliorate some of the information and contract enforcement problems with diffuse debt. Because of their large investment, large debt holders are more likely to have the ability and the incentives to exert control over the firm by monitoring managers and influencing the composition of the board of directors.

In terms of cash flow, concentrated debt holders can also renegotiate the terms of loans, which may avoid inefficient bankruptcies procedures. If the legal system does not efficiently identify the violation of contracts and provide the means to bankrupt and reorganize firms, then creditors lose a crucial mechanism for exerting corporate governance. Large creditors – like large shareholders – may attempt to shift the activities of the corporation or bank to reflect their own preferences.

**Market Discipline**

Market discipline refers to actions taken by depositors and shareholders to penalize banks for undertaking unacceptable risks. Specifically, depositors may either withdraw funds or require a higher interest rate in response to an increase in risk. Shareholders, on the other hand, may in effect sell off their shares and push down the stock price.

Among various disciplining devices, the ability of private agents to control bank risk-taking, i.e., market discipline, is attracting more and more attention by both policy-makers and economists. Depositors (and creditors) may withdraw deposits from, or require high deposit interests from risky banks. If banks recognize that deposit withdrawal or high funding costs endanger their survival, they will avoid excessive risk-taking and engage in prudential management (Hosono, 2007). Flannery (1998) has suggested that bank supervisors can make use of security prices to identify problem institutions and shorten the time lag to take corrective actions.

Market discipline is expected to complement the government regulation and supervision. Basel Committee on International Settlements (2004) designates
market discipline as one of the three pillars on which future financial regulation should be based.

2.2 Empirical evidence
Empirical findings with respect to board influence are many and conflicting. Sumner and Webb (2005) argued that the board of directors has the responsibility of formulating bank loan policy and to monitor compliance. Therefore, the structure of the board (proportion of insiders and outsiders) must influence the portfolio of loans that the bank has outstanding. We note however that because financial institutions are monitored by external regulatory agencies, bank boards may not influence loan policy. Their empirical tests using a sample of over 300 US bank holding companies yielded evidence consistent with both positions. For example, they found that both proportion of outsiders and a board strength index are directly related to growth in consumer loans as a percent of total assets, whereas farm and real estate loan holdings are not related to bank board structure.

Pi and Timme (1993) examined the role of the chairman of a bank’s board and found that cost efficiency and return on assets are lower for banks that have the same person serving as chairman of the board and chief executive officer (CEO) than for banks without such duality. They also found out that the proportion of insiders/outsiders on the board of directors is unrelated to bank performance.

Prowse (1997), among others, examined the power of boards of banks vis-à-vis boards of non-financial firms. He found that much of the monitoring responsibility of banks falls on the regulators, not boards. Simpson and Gleason (1999) also find little evidence of corporate governance characteristics influencing bank activity.

Kyereboah-Coleman and Biekpe (2006) examined how corporate governance indicators such as board size, board composition and CEO duality impact financing decisions of 47 firms listed on the Nairobi Stock Exchange. They found that firms with larger board sizes employ more debt and the independence of a board correlates negatively and significantly with short-term debts. When a CEO doubles as board chairperson, less debt is employed.

Aboagye and Otieku (2010) studied 30 rural and community banks in Ghana using data over the period 2000 – 2005 and concluded that an index that captures the state of corporate governance, outreach to clients, dependence on subsidies and use of technology is not statistically associated with their financial performance.

2.3 This study
We investigate whether the state of corporate governance in the Ghanaian banking industry impacts three measures of bank risks – capital risk, credit risk and liquidity risk. Our indicator of the state of corporate governance is the score of the board on an index that tracks the strength of boards.

Sumner and Webb (2005) use the concept of board strength in their study of corporate governance and bank portfolio choice. Their premise was that bank board characteristics do have an impact on bank activities. Our construction of the board
index is a modified version of Sumner and Webb. For example, Sumner and Webb do not include the audit committee as an element in the index, but this study considers not only the existence of the audit committee, but its composition as well. The board index was constructed as the sum of its components as follows.\footnote{The higher the score, the stronger and more independent the board.}

**Board Independence**
Studies by Beasley (1996) and Rosenstein and Wyatt (1997) show that outside directors are directly related to the strength and independence of the board. Core et al. (1999) show in their study that the proportion of inside directors on the board is inversely related to board strength. Our measure of board independence is the percentage of outside directors on the board.

**Board Size**
Yermack (1996) showed that board size had an inverse relationship with board effectiveness. In fact, the 2008 Spencer Stuart Board Index reports that worldwide, board size has been shrinking over the years and that there is a continued trend towards smaller boards. Informed by this, this study used the reciprocal of the board size in constructing the board index.

**The Audit Committee**
The audit committee is an extension of the board’s risk management function. The audit committee is a valuable tool to help management with the identification and handling of risk areas in complex organizations. The audit committee must be allowed to work independently without the intervention of the board or senior management. It is recommended that this committee be composed of, and chaired by an outside board member. We awarded points for the existence of audit committees.

**Internal Auditors**
The most important duties of internal auditors are to provide assurance regarding corporate governance, control systems and risk management processes. Internal auditors must also review annual financial statements to ensure that appropriate accounting policies and procedures are used in their preparation. The board has the responsibility to appoint internal auditors. We awarded points for the existence of internal auditors.

**Chairman/Chief Executive Officer (CEO) Duality**
The literature now recommends that the ideal corporate governance system should not have the same person as CEO and Chairman of the Board. When this happens, it not only leads to the concentration of power in one hand, but may also result in an obstruction of the operation of checks and balances.

**Other factors**
Whatever evidence that is provided by studying the existence or otherwise of an association between board strength and bank risk measures will not be conclusive if the potential influence of other factors are not controlled for. To this end, this investigation further controls for other factors. For example, the discussion on the
influence of boards and the evidence available suggests that bank regulators do have influence. Second, the earlier discussion about bank stakeholders and financial risk suggests that depositors, creditors and shareholders may exert a significant influence on risk management through market discipline.

3.0 METHODOLOGY

The board index was used to proxy the impact of the board of directors as stakeholders in the corporate governance process. The board indices were constructed as outlined above. It captured matters relating to monitoring effectiveness.

Next, following Greuning and Bratanovic (2003), Tandelilin et al. (2007), and Sumner and Webb (2005) this study models the relationship between three indicators of the financial risks that a bank faces and a vector of explanatory variables which include corporate governance indicators. The relationship is hypothesized as:

\[ Y_{jit} = A_{jit} X_{kit} + \epsilon_{jit} \]  

where, \( Y_{jit} \) is a financial risk measure \( j \), where \( j \) runs through capital risk, credit risk and liquidity risk for bank \( i \) at time \( t \). \( X_{kit} \) is a matrix of explanatory variables (transposed) arranged as a panel of \( k \) variables, and \( A_{jit} \) is a vector of coefficients to be estimated. Each residual \( \epsilon_{jit} \) is posited to have bank-specific and time-specific components and an error term that is independently and identically distributed. The bank-specific and time-specific components may be fixed or random.

Thus, three equations are implied in equation (1), one each for capital, credit and liquidity risk. The explanatory variables are repeated for each risk. Thus, three sets of coefficients will be estimated corresponding to each dependent variable. The variables are:

\( Y_{1it} \), capital risk, is defined as the ratio of equity capital to total assets. This ratio is a good measure of capital risk because a decline in equity funding relative to assets suggests increased exposure of shareholders (and debt holders). A higher ratio represents higher bank sensitivity to public interest, hence less risk. Konishi and Yasuda (2004) found that implementation of capital adequacy provision reduced risk taking by commercial banks.

\( Y_{2it} \), credit risk, defined as the ratio of loan loss provision to total loans. This ratio is commonly used in the literature. A high ratio is considered an indicator of poor credit risk management.

\( Y_{3it} \), liquidity risk, defined as the ratio of liquid funds (cash and near cash securities) to total deposits. A higher ratio shows better liquidity risk management.

The explanatory variables are:
X_{1..}, board strength, the value of the board index. A stronger board should ensure better all round risk management, hence appositive coefficients are expected in all cases for Y_{1..} and Y_{3..}, but negative for Y_{2..}.

X_{2..}, central bank regulation, proxied by the logarithm of the Reserve Fund. In addition to the primary required reserves ratio of 9% of all deposits mobilized, banks are also required to maintain a Reserve Fund as follows:

- where the amount of the bank’s Reserve Fund is less than fifty per cent of its paid-up capital, an amount which is not less than fifty per cent of the bank’s net profit for the year shall be transferred into the Reserve Fund;

- where the amount of the bank’s Reserve Fund is fifty per cent or more but less than hundred percent of its paid-up capital, an amount which is not less than twenty five percent of the bank’s net profit for the year shall be transferred into the Reserve Fund; or

- where the amount of the bank’s Reserve Fund is equal to one hundred percent or more of its paid-up capital, an amount equal to twelve and half percent of the bank’s net profit for the year shall be transferred into the reserve fund.

Tandelilin et al (2007) have suggested that the enforcement of regulations such as the Reserve Fund, limits the ability of bank managers to over-issue liabilities or divert assets into high-risk ventures. Thus, government intervention through regulation and supervision restrains expropriating management behavior in banking sector which should lead to reduced risk taking.

X_{3..}, depositors’ influence. As in Tandelilin et al. (2007), the loans to deposit ratio, is used. A higher value of this ratio indicates reduced depositor support for loans probably because of perceived higher risk.

X_{4..}, shareholders’ influence, Total Equity/Total loans of bank. A higher value suggests increased shareholder confidence, which also offers better protection for deposits (and debts) that support loans. This variable is excluded in the regression for capital risk.

X_{5..}, management efficiency. Management efficiency will be measured by the ratio of operating expenses to total income. Thus, smaller is better. A more efficient management will ensure that the bank meets its capital adequacy requirement but puts all other capital to work. On the credit front, it is expected that a more efficient management team will assess credit worthiness better and so will be expected to make fewer loss provisions. With respect to liquidity risk management, a more efficient management will strive to strike a balance between investing liquid funds to earn a higher return and staying liquid to meet deposit withdrawal requests.

X_{6..}, total assets of a bank. It is argued that bank size must be controlled for as size
has implication for the risks that a bank takes and how these risks are managed. If equity capital investment in bigger banks is exposed to less risk, the coefficient should be positive. The same holds for liquidity risk. On the other hand, if the loan portfolios of bigger banks are less risky, the coefficient of this variable should be negative.

$X_{t-1}$, Inflation, and $X_{t}$, central bank lending rate. In addition to bank and industry specific factors, banks also keep an eye on the economic environment when analysing and managing the risks they face. Clearly, an unstable macroeconomic and policy environment is perceived as more risky. Changes in inflation are good proxy for macroeconomic instability, while central banks use their lending (policy) rates to influence banks behaviour.

The number of banks in Ghana increased from 19 in 2005 to 26 in 2008. Our sample included the population of banks in Ghana in 2005 and increased to 23 as more banks were licensed. We did not use the three most recently licensed banks (which had too few observations).

4.0 EMPIRICAL RESULTS

4.1 The Board Index

Data collected indicates that in Ghana, all banks have audit committees and internal auditors. Also, no sampled bank suffered from one person occupying the positions of chairman of the board and the chief executive officer. Thus, these three variables were dropped from consideration in calculating the board index. The board index was therefore constructed with the following variables: board size, composition of the audit committee and board independence.

Table 1 shows the values of the board index for each of the 23 banks. The median value is 1.45. We labelled the banks with scores above the median as banks with strong boards and those with scores below the median as banks with weak boards. We note however that board index scores do not vary much across the industry. This suggests that in so far as board size, board independence and the composition of the audit committee of banks are concerned, the practice in the industry is similar. Based on our knowledge of the individual banks, we note that banks that have a high government holding had weak boards. This seems to lend credence to the assertion among some researchers that banks (firms in general) with large government holding tend to have weak governance systems.

To gain further insight, we provide in Table 2a and Table 2b basic statistics on the three measures of risk for the strong and weak sub-groups respectively. The capital ratio of the strong banks is 22%, whereas that of banks with weak boards is 12%. Banks with strong boards have a liquidity ratio of 18%, while banks with weak boards have a liquidity ratio of 15%. With a loan loss ratio of 3% against 4% for banks with weak boards, the credit risk management of banks with stronger boards appears to be better.
The figures suggest that banks with strong boards are less exposed to financial risks. In other words, risk management in banks who have strong boards seems to be superior. However, statistical tests indicate that there is no difference between means or medians of the two sub-groups (strong boards and weak boards) at any reasonable significance level.

Table 1: Bank board index scores and classification.

<table>
<thead>
<tr>
<th>Bank</th>
<th>Index score</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.89</td>
<td>Strong</td>
</tr>
<tr>
<td>2</td>
<td>1.82</td>
<td>Strong</td>
</tr>
<tr>
<td>3</td>
<td>1.73</td>
<td>Strong</td>
</tr>
<tr>
<td>4</td>
<td>1.67</td>
<td>Strong</td>
</tr>
<tr>
<td>5</td>
<td>1.66</td>
<td>Strong</td>
</tr>
<tr>
<td>6</td>
<td>1.65</td>
<td>Strong</td>
</tr>
<tr>
<td>7</td>
<td>1.58</td>
<td>Strong</td>
</tr>
<tr>
<td>8</td>
<td>1.57</td>
<td>Strong</td>
</tr>
<tr>
<td>9</td>
<td>1.57</td>
<td>Strong</td>
</tr>
<tr>
<td>10</td>
<td>1.51</td>
<td>Strong</td>
</tr>
<tr>
<td>11</td>
<td>1.45</td>
<td>Strong</td>
</tr>
<tr>
<td>12</td>
<td>1.45</td>
<td>Strong</td>
</tr>
<tr>
<td>13</td>
<td>1.32</td>
<td>Weak</td>
</tr>
<tr>
<td>14</td>
<td>1.30</td>
<td>Weak</td>
</tr>
<tr>
<td>15</td>
<td>1.30</td>
<td>Weak</td>
</tr>
<tr>
<td>16</td>
<td>1.27</td>
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</tr>
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<td>17</td>
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<td>18</td>
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<tr>
<td>19</td>
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<td>1.12</td>
<td>Weak</td>
</tr>
<tr>
<td>21</td>
<td>1.05</td>
<td>Weak</td>
</tr>
<tr>
<td>22</td>
<td>1.10</td>
<td>Weak</td>
</tr>
<tr>
<td>23</td>
<td>0.90</td>
<td>Weak</td>
</tr>
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</table>
Table 2a: Banks with strong boards

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev*</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Risk</td>
<td>0.218</td>
<td>0.280</td>
<td>0.046</td>
<td>1.135</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.026</td>
<td>0.035</td>
<td>0.002</td>
<td>0.237</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>0.184</td>
<td>0.127</td>
<td>0.048</td>
<td>0.656</td>
</tr>
<tr>
<td>Log of Total assets</td>
<td>11.780</td>
<td>0.987</td>
<td>9.139</td>
<td>13.7318</td>
</tr>
</tbody>
</table>

Source: Authors’ computations

* Std. Dev = standard deviation

Table 2b: Banks with weak boards

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Risk</td>
<td>0.122</td>
<td>0.055</td>
<td>0.027</td>
<td>0.232</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.036</td>
<td>0.039</td>
<td>0.001</td>
<td>0.164</td>
</tr>
<tr>
<td>Liquidity Ratio</td>
<td>0.149</td>
<td>0.058</td>
<td>0.033</td>
<td>0.405</td>
</tr>
<tr>
<td>Total assets</td>
<td>12.241</td>
<td>1.125</td>
<td>9.995</td>
<td>14.316</td>
</tr>
</tbody>
</table>

Source: Authors’ computations

4.2 Regression output and discussion
Given that our sample consist of all licensed banks between 2005 and 2008, leaving out only three banks that were licensed after 2007, we reasoned that a random effect specification would not be appropriate. Thus, a fixed-effects specification that allows for bank dummies for this unbalanced panel was adopted. Individual bank dummies will help account for individual bank effects. To incorporate the view in the literature that diffused shareholding may not effectively exert corporate governance, we reasoned that publicly listed banks are very likely to have diffused shareholding and assigned one dummy variable to them. Non-listed firms retained their individual dummies. Information about deposit concentration is not available, but the central bank, which regulates banks, frowns upon deposit concentration. The time frame being so short, a maximum of four annual observations, we did not allow for time-specific effects.

Inclusion of the logarithm of the Reserves Fund and total assets as explanatory variables immediately raises the question heteroskedasticity, since the banks are of varying sizes. Also, autocorrelation test of residuals of the least squares dummy variable specification indicated that the residuals were autocorrelated in the first order. However, we do not transform the model to remove serial correlation, since such transformation may introduce bias in coefficient estimates in the presence of possible measurement errors. We controlled for heteroscedasticity and autocorrelation by specifying the option for heteroscedasticity and autocorrelation consistent estimates of standard errors in Winrats 7.1. Estimates of coefficients are reported in Table 3.

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2 Seven out of the 23 banks are publicly listed.
**Capital risk**

No individual bank-effect was significant at any decent significance level, but tests for their exclusion or equality were rejected. The dummy for the listed banks was also not significant. Based on these finding, one may conclude that bank-specific approaches to capital risk management are not significant and suggests the influence of the regulator.

The coefficient of board index is not significant (p-value 0.18). However, the coefficient is positive. Thus, it would appear that board strength does not significantly impact capital risk management. This should be expected in the face of stringent minimum capital adequacy requirement by the central bank. There however is indication that stronger bonds are more likely to ensure compliance with this requirement than weaker bonds.

### Table 3: Bank board strength and other factors that explain bank capital risk management.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equity Capital to Total Assets (0.180)</td>
</tr>
<tr>
<td>Board index</td>
<td>0.084</td>
</tr>
<tr>
<td>Reserve Fund</td>
<td>-0.036 (0.107)</td>
</tr>
<tr>
<td>Loans to Deposit ratio</td>
<td>0.007 (0.650)</td>
</tr>
<tr>
<td>Equity to Loans ratio</td>
<td>0.089 (0.070)</td>
</tr>
<tr>
<td>Operating Expenses to Total Income</td>
<td>0.110 (0.000)</td>
</tr>
<tr>
<td>Total assets</td>
<td>0.064 (0.022)</td>
</tr>
<tr>
<td>Inflation</td>
<td>3.218 (0.024)</td>
</tr>
<tr>
<td>Central Bank lending rate</td>
<td>-1.861 (0.024)</td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>55</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.880</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>122.22</td>
</tr>
<tr>
<td>Standard error of estimate</td>
<td>0.068</td>
</tr>
</tbody>
</table>

The coefficient of the Reserve Fund is negative. Its p-value is 0.11. Thus, this variable appears to have relatively strong but non-significant impact on the capital risk of
banks - the more the reserves, the lower the capital that banks keep on hand. Again, this is subject to minimum legal capital requirements. That this variable is not significant is consistent with Greuning and Bratanovic (2003) who concluded that regulatory and supervisory institutions only provide the framework for risk management. And that the provision of this framework does not by itself influence the way risk is managed so as to prevent bank failure.

The coefficient of the loan-to-deposits ratio is not at all significant (p-value 0.65). Thus, changes in this variable do not impact how banks manage their capital. To gain further insight, we took a closer look at this variable. The average for all banks is 0.76. The median was 0.69. Thus, on average, loans are less than deposits and virtually all loans appear to be made out of deposits. Support for this contention is provided by the fact that Ghanaian banks do not borrow much. Indeed, the average deposit-to-total-assets ratio was 0.70 and the average ratio of equity-to-total-assets was 0.16 over the period, meaning only 14% of assets were financed by loans.

The loans-to-deposit ratio is supposed to track depositor reaction to bank risks, but it may be the case that in Ghana depositors look up to regulators to keep banks in check. Thus, as long as regulators do not raise any issue with bank risk management (which the regulators have not done publicly in a long time) depositor reaction to bank capital risk will be muted.

The coefficient of the management efficiency variable, is positive and significant (p-value 0). A higher value of this variable says management is less efficient. Thus, the finding suggests that banks with less efficient management keep higher equity relative to total assets. This finding is consistent with a management team that is not putting excess equity (beyond the legal minimum) to optimal use.

Bank size, represented by logarithm of total assets, has significant positive impact on bank capital management (p-value 0.02). This is consistent with the general feeling that bigger banks are safer.

Inflation impacts bank capital positively and significantly (p-value 0.02). That is, bank capital increases with inflation. This must be because banks charge higher lending rates relative to deposit rates during inflationary times resulting in higher earnings hence total shareholder funds (providing more cushion). Indeed, Aboagye et al. (2008) found that net interest margin of banks increase with inflation.

The coefficient of the central bank lending rate is negative and significant. That is, in responding to rising central bank lending rate (during inflationary times), may result in banks shifting the marginal revenue versus marginal cost analysis in favour of use of equity. That is, instead of borrowing to lend, banks may use bank equity in excess of minimum requirement for business, reducing equity to total assets ratio.

Credit risk
For this specification, the dummy for listed banks was significant (p-value 0.02) and positive. In addition, all individual bank dummies, except one, are also significant and
positive. The p-values suggest significant bank-specific approaches to credit risk management among non-listed firms, and a significant difference between listed and non-listed firms.

Board strength does not significantly (p-value 0.26) impact credit risk. There is however, the tendency for the credit risk of the bank to decrease as board strength increases (negative coefficient). This negative relationship was expected. Given that the board has ultimately responsibility for loan policies, a reasonable assumption can be made that as the board gets stronger the banks loan policy will get tighter and result in reduced credit risk.

Regulation of the industry, proxied by the Reserve Fund, impacts credit risk negatively with a p-value of 0.09. Theory does not suggest a direction of impact since bank regulation is not directed at credit risk management. However, the evidence is that as the Reserve Fund increases, credit risk decreases.

The loans-to-deposit ratio does not have significant impact on credit risk. The coefficient of the ratio of equity-to-loans is positive with a p-value of 0.07. The conventional literature posits that investors express their disapproval to increasing risk taking behavior by desiring less of the shares of the bank, hence triggering a fall in share prices. Thus, the equity ratio should be negatively related to credit risk. On the contrary, our finding is that increases in equity increase loan loss provision. This may be explained by the fact that, with more equity, bank management may be more comfortable (realistic) in writing off more loans, given that the higher equity provides more cushion. Our interpretation of this variable notes that 16 out of the 23 banks are not publicly traded (share prices not available), and also that our proxy for this variable is the ratio of book value of equity to total assets.

The impact of the management efficiency variable is significant and negative. Thus, the higher the variable (lower efficiency) the lower the credit risk. This is unexpected. Could it be that less efficient management is not aware of the full extent of their credit risk and do not make enough provisions, or could they be deliberately understating their loan loss provisions?

Bank size does not at all impact credit risk management significantly. On the other hand, inflation impacts credit risk positively with a p-value of 0.08. That is, credit risk increases during inflationary times. Indeed, during inflationary times, more loans are likely to go bad (increasing the credit risk variable). Central bank lending rate does not impact credit risk significantly, but is negative.

**Liquidity risk**
For this estimation, neither the dummy for listed companies, nor any of the individual non-listed bank dummies were significant. Test for equality of the dummies was rejected. This suggest the central banks liquidity guidelines impact all banks in the same manner.
The board index coefficient is positive with a p-value of 0.10. The suggestion is that stronger boards are more likely to have higher liquidity relative to deposits. This may be interpreted as better liquidity risk management. However, care should be taken that this is not done at the expense of earnings.

The variable that proxies the impact of bank regulation has negative and significant impact on liquidity risk (p-value 0.01). Konishi and Yasuda (2004) have suggested that regulatory and supervisory institutions had an influence on risk management. However, the finding here is that as the Reserve Fund increases, liquidity decreases, which may be unexpected. It may be that as the Reserve Fund increases, bank management feels more confident and is inclined to take more risks. Their attention must however be drawn to the fact that liquidity is critical to the survival of banks.

The coefficient of the loans-to-deposit ratio is positive and significant (p-value 0). Thus an increase in this variable (relative increase in loans vis-à-vis deposits) increases liquidity. This is unexpected. One would have expected liquidity to decrease, for loans are normally created as alternative use of deposits (which could have been used to acquire liquid assets). The coefficient of equity-to-loans ratio is positive but not significant, suggesting that a relative increase in equity vis-à-vis loans may improve liquidity, but not significantly.

The management efficiency coefficient is positive but not significant. The suggestion here is that a less efficient management may hold relatively more liquid assets.

The estimation results also say that bank size does not at all impact liquidity. Neither does changes in inflation and central bank lending rates. Indeed, liquidity ratio guidelines are the same for all banks, irrespective of size, or the rate of inflation.

5.0 CONCLUSION

The following conclusions may be drawn from this study.

There is no statistical difference between the means and medians of strong boards vis-à-vis weak boards. Board strength does not have significant impact on capital risk, credit risk nor liquidity risk. Though, the tendency is for stronger boards to impact these risks positively. This is broadly consistent with Aboagye and Otieku (2010) who found that an index that captures the state of corporate governance, outreach to clients, dependence on subsidies and use of technology is not statistically associated with their financial performance.

Regulation, proxied by the amount of Reserve Fund appears to have negative impact on all three measures of risk, significantly so for liquidity risk. Depositor behavior appears to significantly impact only liquidity management, but not capital.
nor credit risk management. We do not find evidence that shareholders act in a manner that reduces the credit risk of banks.

The more efficient the management, the less capital the bank is likely to hold, subject to minimum capital requirement. That is, the equity multipliers of banks with more efficient management are likely to be higher. The other evidence is that credit risk increases as management efficiency variable decreases (more efficient). This was not expected.

Total assets are important only in capital risk management, where bigger banks are likely to have relatively more capital. One may thus conclude that bigger banks are less efficient in deploying shareholder funds.

During inflationary times, both bank equity relative to assets and loan loss provisions relative to loans increase. It would also appear that in inflationary times, when the central bank lending rate increases, banks use relatively more equity for business, rather than borrow (deposits).

Bank-specific dummy variables suggest that bank-specific approaches to capital risk and liquidity risk management are not significant. However, bank-specific approaches to credit risk management are significant.

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