

RISK MANAGEMENT AND PERFORMANCE OF LISTED BANKS IN GHANA

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ABSTRACT

The objective of the study was in two parts; first, to construct an overall risk index to ascertain risk level of banks listed on Ghana Stock Exchange (GSE), second, to ascertain whether there is a significant relationship between risk management and bank performance. Secondary data of all listed banks on GSE over the period 2007–2014 was used and a panel regression data approach and a risk index were constructed for all listed banks. Findings show that, banks listed on Ghana Stock Exchange have declining risk indexes on average over the latter part of the study period indicating that the Ghanaian Banking Regulator may have to impose additional prudential and regulatory requirements to ensure banks remain solvent. We also find evidence that risk management is positively related to performance of GSE listed banks when the latter is measured from ROE perspective.

KEY WORDS

capital adequacy, risk management, Ghana stock exchange, bank performance, risk index

JEL CODES

G21, G28, G32, G38, L25

1 INTRODUCTION

In recent world economy, risk management has become a very important tool for financial institutions. Banks form large proportion of the world's leading companies and have critical role to play in the economy of every country and the world economy at large. Essentially, financial institutions' core business involves

risks taking in conditions of uncertainty. The global financial sector is expanding with additional banks springing up every day, this coupled with world financial crises makes it imperative to determine the risk levels of banks and in addition examines the effects it has on their performance. Banking business involves

taking risk and ensures that the consequences arising from deposits, granting of loans and trading portfolios are mitigated (Jaiye, 2009). In Ghana, the enactment of the new Banking Act of 2004, Act 673, introduce universal banking license, which enable banks to provide various banking services. Currently, there are 32 registered banks (Bank of Ghana, 2016) with seven listed on Ghana Stock Exchange (GSE).

Bloom and Milkovich (1998) therefore defines as the possibility of an adverse event happening and its negative effect affects firms. It is the uncertainty that may lead to adverse variations of profitability or losses (Bessis, 2002). The fundamental issue presented in both definitions suggests that, risk present two different outcomes, however, managers are mostly concerned with the adverse outcome. The effort to manage risk (the adverse outcome) is to ensure that risks are taken with full awareness and knowledge, defined purpose with understanding to enhance measurement and mitigation. However, it does not involve prohibition or prevention of risk taking activity. Most of the global financial crises would not have occurred with proper risk management; hence, risk must optimally be managed by banks'.

There exist at least three reasons why managers engage in risk management activities. First among them is the manager's self-interest of protecting their position and wealth in the firm. Secondly, the cost of possible financial distress, thus; significant losses of earnings which can result in stakeholders losing confidence in the operations of the firm, loss of competitive strategic position in the industry, withdrawal of license and even bankruptcy. Finally, the imperfection nature of the capital market is one of the reasons for risk management (Oldfield

and Santomero, 1995). One of the approaches to deal with this is to build confidence in stakeholders by listing on the stock market. This establishes a lasting connection with foreign banks, which offer medium to long-term benefits in terms of financial intermediation in the economy. In order to achieve this, there is the need for a proper risk management in order to optimally manage risk. Vast number of literature suggests an enormous effect of risk management on performance of bank and other financial institutions. However, evidence to show the position of listed banks is still limited. Studies of Odonkor et al. (2011), Naimy (2005), Uwuigbe et al. (2015) and Boahene et al. (2012) have all examined risk and performance of bank, however, in most cases, they focus on the entire banking industry. Our objective is to fill this gap by ascertaining the risk levels of banks listed on the GSE and assess how it impact on their performance in Ghana. The study is therefore organized as follows. Section 2 provide a review of literature on the subject while Section 3 explains the methodology used. Section 4 and Section 5 present a discussion of the results; and conclusion respectively. With our approach, firstly, we determine the overall risk levels of listed banks on Ghana Stock Exchange; we adopt an index proposed by Hannan and Hanweck (1988) and construct a risk index following Altman z-score approach. Using risk index we are able to determine both risky and safer listed banks for the period 2007–2014. Secondly, we focus on GSE listed banks, which is the first study to determine the overall risk levels of banks listed on GSE. Since the last decade, the stock market of Ghana has been an emerging market of promise above established average performance.

2 LITERATURE REVIEW

In this section we present literature on major risks influencing banks in Section 2.1, in Section 2.2 we provide literature on the management of these risks and finally provide an empirical literature in Section 2.3.

2.1 Bank Risks

Koch and MacDonald (2000) describe credit risk as the uncertainty that counterparties to a loan and derivatives transactions might default, this implies that a party to a transaction

fails to honour his part of the obligation by settling the interest and principal at agreed time. This is consistent with opinion of Fabozzi et al. (2010) which states that credit risk is a type of risk involving the likelihood that an obligator of a financial instrument will not be able to fulfill the associated obligation on timely basis. Credit risk is the common and greatest risk affecting bank performance in the financial industry. Credit risk may be firm specific or systematic. Firm specific credit risk is the risk of default of a firm whose borrowing is linked to a particular project, which the bank has entered into. However, systematic credit risk relates to default that is linked to macroeconomic indicators, which affects all borrowers (Saunders and Cornett, 2006).

Market risk is the uncertainty relating to financial institutions' earnings on their business portfolio (Saunders and Cornett, 2006). Certainly, market risk could be caused by fluctuations in market conditions such as market volatility, interest rates, and market liquidity as well as asset prices. Pyle (1997) posits that market risk is the variations in the asset value due to changes in contributory economic factors such as equity and commodity prices, exchange rates, interest rate. It has to do with losses of on and off balance sheet positions of banks arising from unfavourable changes in market prices. In the banking sector, financial institutions battle with three key market risk factors: foreign exchange rates, liquidity and interest rates (Bank of Tanzania, 2010).

This is the risk that, unfavourable exchange rate fluctuations leads to loss during a period in which banks have open position on forward, spot or both in the same foreign currency (Raghavan, 2003). Generally, foreign exchange market dominates all the financial markets. According Bessis (2010), it is the risk of incurring losses because of changes in exchange rates. These losses arise due to the mismatch existing between the value of assets, capital and liabilities that are denominated in foreign currencies or foreign receivables and foreign payables mismatch expressed in a local currency. Wood and Kellman (2013) states four major activities that takes place in foreign

exchange markets: buying and selling of foreign currency to enable customers execute commercial trade transactions; buying and selling of foreign currencies for customers to be able to have better standing in investment; buying and selling of foreign currencies for hedging purposes and buying and selling of foreign currencies for speculative purposes.

Gup and Kolari (2005) have described liquidity risk as the probability that a bank may not be able to perform its obligations to its depositors and provide the needs of borrowers by turning assets to liquid assets immediately with minimum loss with the ability to borrow funds when required and at the same time have enough funds available to undertake profitable securities trading transactions. Liquidity is a necessity for financial institutions in order to compensate for expected and unexpected fluctuations on the balance sheet to enhance growth (van Greuning and Brajovic Bratanovic, 2009). However, some banks integrate the need to plan to cater for growth and unexpected credit expansion, the risk here should be regarded more correctly as the potential for funding crisis (Santomero, 1997). According to Basel committee on Bank supervision (2008), the basic role of banks during maturity transformation of short-term deposits into long-term loans makes them essentially vulnerable to liquidity risk of the bank as an institution and the market as a whole (systemic). There are two fundamental circumstances from which liquidity risk may arise. Firstly, depositors of banks' might pursue to withdraw their financial claims instantly. In this regard, the bank may need to meet this sudden demand by resorting to borrowing or selling of assets. Secondly, liquidity risk may also occur banks are suppliers of off balance sheet loan obligations. If borrowers decide to draw on their loan obligations, it must have immediate resources to fund it quickly, hence the demand for liquidity.

The main circumstance under which interest rate risk arises is the mis-match between assets and liabilities of bank's portfolio. This usually occurs since banks' assets and liabilities are highly dependent on interest rates. Interest rate risk can be classified into reinvestment and

refinancing risk. The latter is the risk that the cost of borrowing funds will be higher than the current returns earned on invested assets. However, the former, the risk that returns on funds will not exceed the cost of funds (Saunders and Cornett, 2006). Kanchu and Kumar (2013) posit that, interest rate risk is the vulnerability of financial institutions to the fluctuations of interest rate; hence interest rate risk has potential negative impacts on the net interest income. Such fluctuations affect, earnings, assets value, off balance sheet liability items as well as cash flow. From earnings perspective, it focuses on the analysis of the impact of variations in interest rates on accrual or reported earnings in the near term. This could be computed as net interest income equivalent to the difference between total interest income and total interest expenses (Kanchu and Kumar, 2013). Four main sources of interest rate risk that financial institutions encounter are: yield curve risk, basis risk, repricing risk and optionality. Most often, discussions on interest rate risk stems from timing disparities in the maturity of fixed rates and repricing of floating rates of bank liabilities, assets and off balance sheet positions (van Greuning and Brajovic Bratanovic, 2009).

2.2 Managing Risk

The major task of risk management is to enhance shareholders' return incorporating bank performance. The motivation of banks' risk management comes as a result of under-performance. Highlighting more on the essence of implementing a risk management program, Cebenoyan and Strahan (2004) states that, risk management increases banks' reputation and opportunity to be attractive to customers in building their portfolio of fund resources; it also improves bank's efficiency as well as profitability. According to Moreno (2006), banks' capacity to manage it risk partially depends on how well interbank market is organized and operated. A specific fear is the vulnerabilities existing in the banking system in the form of shocks that might reduce liquidity in the interbank market. This could

be a significant source of spreading financial crisis.

In an attempt to mitigate shocks, some banks might choose to withdraw liquidity from interbank market. Turner (2006) states that, there are two general inferences that arose in debate regarding the management of recent risk that banks face. Firstly, there has been a radical change in the nature of macroeconomic risk. External vulnerabilities which usually lead to imprudent macroeconomic policies and intensified earlier banking crisis have significantly disappeared. However, other views suggest that some domestic macroeconomic risks were severe recently than a decade ago. Secondly, lending activities of banks were informed by a better risk assessment management approach. At the same time, modern techniques have given rise to new risks, which were difficult to quantify (Moreno, 2006). The application of quantitative risk management techniques by banks in developing markets has expanded significantly. There is a growing trend in the market indicating that valuations are based on market prices; quantification of risks are done mainly using VaR models; risk scoring models are used in the assessment of credit risk to household and small business borrowers. Bank portfolios are stress-tested for various adverse scenarios; moreover, pricing and provision for credit facilities are increasingly grounded on quantitative assessments.

2.3 Empirical Literature

Risk of a firm as illustrated by portfolio theory of Donaldson (2000) was a new model for performance-driven organisation change where risk plays a pivotal role. Whether a firm is probable to effect adaptive changes or not; and whether there is the likelihood of growing or not, there is the need to have an understanding of the level of its risk. The awareness created by stock market downturns in 2000 and 2001 shows that, the underlying risk of financial institutions and the industry is equally important just like the financial performance of firms (Orlitzky and Benjamin, 2001). For practical and managerial significance, managers are not only concerned

with possible factors and consequences of financial performance levels but also their risk. The difference between future bankruptcy and organizational health of firms are determined by management's ability to manage risk.

Studies on risk management and financial performance have been essentially conceptual focusing on theoretical frameworks provided by regulators (Soyemi et al., 2014). The major objective of bank management is to maximize shareholders' return showing bank performance. However, this comes at a cost of increasing risk levels (Tandelilin et al., 2007). In the long-run, the market as well as events in the environment penalize the attitude of increasing bank risks. As a result, principals and agents are more concerned about the level of risk incurred by the banks (Bloom and Milkovich, 1998). Hence, managements' motivation for managing risk stems from risks that can result in underperformance. In this sense, Schroeck (2002) and Nocco and Stulz (2006) present two contrasting views. Thus, the latter stress that the implementation of effective enterprise risk management (ERM) by firms (banks) results in competitive advantage in the long-run relative to firms who manage and monitor risks separately. However, the former propose that ensuring best practices through the establishment of effective and prudent risk management practices increases earnings. In this regard, we suggest a holistic approach of managing risk.

Bettis and Thomas (1990) found that, low risk level allows for proper planning since low risk firms are able to project their future cash flows with greater level of certainty. As a result, Odonkor et al. (2011) suggest that firms with low risk face minimum uncertainty in relation to future business opportunities as well as opportunity cost regarding performance. Moreover, Smithson and Simkins (2005) conclude that firm value is increased when firms risk levels are lower, hence, it could be inferred that, financial institutions need to put in significant measures to mitigate their risk exposure. Carey and Stulz (2005) stress that financial institutions that are too risky could lose substantial proportion of their franchise. Merton and Perold

(1993) in earlier studies underscored that risk management is exclusively vital for financial institutions since their liabilities serve as the main source of shareholders wealth. In addition, Merton and Perold (1993) give an instance where long dated derivatives written by financial institutions would ordinarily be shut out of market provided credit rating of vehicles used to write such derivatives fell below an A rating. Since the value of franchise depends on risk, a bank or financial institution has an optimal risk level at which shareholders' value is maximized. However, risk maximization is certainly not optimal since franchise value cannot be ascertained without bearing risks, hence; firms always bear costs and enjoy benefits when there is an increase in risk level (Carey and Stulz, 2005).

Bruner (2011) offers another dimension that, taking excessive risk enhances performance. Thus, a reduction in the risk-free rate of interest to minimum levels led to credit expansion, which was an aggressive quest for yield among investors. Therefore, key global financial crisis were attributed to excessive ambition of management and board, in so doing, they take excess risk to boost prices of stock.

Zhang et al. (2013) studied the relationship between market concentration, risk-taking and bank performance and conclude that banks taking a lower level of risks perform better with prudent risk management practice. Moreover, this study served as a foundation to suggest that BRICs' banking sectors were severely affected negatively during the 2007–2008 global economic meltdowns. Moreover, findings by Jafari et al. (2011) show that total risk management and performance have a significant positive association especially with firms found in investing in modernizations research capacities research and development as well as intellectual property.

Digging into specific risks that banks face, Ogilo (2012) analyzed how credit risk affects commercial bank in Kenya using CAMEL indicators and found that financial performance of banks are strongly affected by these indicators. Similarly, Nawaz et al. (2012) found that credit risk management significantly impact

on profitability of Nigerian banks and posit that management need to be cautious when establishing credit policy which may inversely affect profitability and operation of banks to ensure judicious utilization of deposits.

In the Ghanaian context, Odonkor et al. (2011) investigated the effect of bank performance with a panel data of 18 banks for the period 1997–2008. Evidence shows that lower risk levels increases bank performance; furthermore, it was established that bigger banks are able to accommodate more risk leading to higher performance when there is an interaction between size and risk. Boahene et al. (2012) suggest that there is a positive and significant relationship between credit risk and bank profitability. This is enough evidence to

conclude that despite high level of credit risk in the Ghanaian banking industry, some banks continue to earn high profit. In a related study, Ariffin (2012) however, show that liquidity risk and performance of banks in Malaysian banking industry cannot always be predicted using the traditional finance theory of high risk and high return approach. This implies that performance (measured by ROA and ROE) may decline because of liquidity risk. The trend in liquidity of Islamic banks was inconsistent during the period of financial crises. Moreover, Arif and Nauman Anees (2012), show bank profitability is negatively affected by liquidity risk with non-performing loans and liquidity gap as the major contributing factors.

3 METHODOLOGY

3.1 Data

The banking industry in Ghana was considered as the population and this is made up of 32 registered banks (Bank of Ghana, 2016). Seven out of these, which were listed on the Ghana Stock Exchange (GSE), were selected. These were banks that have been on the stock market for the last 10 years with 4 of them been indigenous Ghanaian banks. Data covering the period 2007–2014 was used for the analysis and we relied on secondary data based on audited annual accounts of these banks as well as the statutory returns submitted to Bank of Ghana. Other data used such as inflation and exchange rate. Data on inflation and exchange rate were sought from databases of Ghana Statistical service and Bank of Ghana respectively.

3.2 Performance Indicators

We follow the approach of Naïmy (2005) in determining our performance indicators; hence, we adopt return on assets (ROA) and return on equity (ROE) as the performance measures. The former is regarded as the having prominence as the accounting measure of performance and is a critical element of loan quality in terms

of determining bank performance (Naïmy, 2011). ROE however, measures performance from shareholders perspective, hence, measure accounting profit per dollar of book value of equity capital, which can be computed by dividing net income by total equity. However, this can be decomposed into equity multiplier or leverage factor and return on capital (Naïmy, 2011).

Therefore:

$$ROE = ROA \times EM,$$

where ROA is defined as net income divided by total assets and EM is total assets divided by total equity. By this, we provide a gauge of an institution's leverage base equity multiplier.

3.3 Risk Index

In this study, we construct a Risk Index as proposed by Hannan and Hanweck (1988) which measure perceived insolvency of banks. Various studies that have investigated risk management issues have adopted the risk index and these include: Nash and Sinkey (1997); Blaško and Sinkey (2006); Eisenbeis and Kwast (1991); Sinkey and Nash (1993); Liang and Savage (1990); Naïmy (2005), Odonkor et al. (2011) and Ofoeda et al. (2012). Risk index captures

the overall risk of banks' and indicating the risk taking behaviour of banks and since it is constructed based on financial ratios, it is appropriate for investigating risk management and bank performance. The variability of ROA offers a comprehensive measure that indicates credit risk, operational risk, interest rate risk, liquidity risk and other risk that hinder the realization of banks' earnings (Naïmy, 2011). The standard deviation of ROA is regarded as a good measure of variability of ROA while CAP (inverse of equity multiplier or equity capital to assets ratio) of banks, is often used as a proxy for risk for financial institutions since high level of capital provide protection for banks. Therefore, *ceteris paribus*, we can conclude that, highly capitalized banks bear less insolvency risk. We provide the Risk index through a combination of CAP, ROA and standard deviation of ROA. The empirical form of this index is

$$RI = \frac{ROA + CAP}{\sigma ROA},$$

where RI = risk index for the various banks under study; ROA = return on assets for each institution for each year; CAP = inverse of equity multiplier of equity capital to assets ratio.

Risk index (RI) measures measure the extent to which a bank's accounting earnings can fall until it reaches negative; it is expressed in units of standard deviation of ROA. According to Naïmy (2005), risk index is an appealing risk measure since it includes ROA, which is a widely accepted accounting indicator of overall bank performance. An industry standard to measure bank safety and soundness is book capital adequacy while variability of ROA serves as the standard measure of risk in financial economics (Sakyi et al., 2014). Although, there is no defined level for risk index, it is expected that, risky firms would have a lower risk index and vice versa.

3.4 Econometric Model

Bank performance literature underscore a number of factors that affect performance of financial institutions, these include risk, other firm

level factors such as size, leverage; market factors such as market share and macroeconomic factors including inflation and exchange rate. On this basis, we use a modified panel regression model of Dietrich and Wanzenried (2011) which is also in line with that used by Odonkor et al. (2011) and Sakyi et al. (2014).

$$\begin{aligned} BKPER_{it} = & \alpha_i + \alpha_1 RI_{it} + \alpha_2 SIZE_{it} + \\ & + \alpha_3 CAP_{it} + \alpha_4 LQT_{it} + \\ & + \alpha_5 NPL_{it} + \alpha_6 INF_t + \\ & + \alpha_8 EX_t + \epsilon_{it}, \end{aligned}$$

where BKPER = performance of banks ROA and ROE (ROA is defined as bank net income divided by total equity while ROE is bank net income divided by total equity); α_0 = constant term; RI = risk index, a measure of risk management; SIZE = size of bank calculated as the natural log of total assets; CAP = a measure of bank solvency measured as the ratio of book value of equity capital to total assets; LQT = a measure of bank liquidity and it is measures as total advances divided by total deposits; NPL = non-performing loans is an indicator of a bank's credit risk, therefore reflects a bank's credit quality and it is measured as the proportion of net nonperforming loans in net bank loans measures it; INF = inflation is measured by using the annual inflation rate of Ghana statistical service; EX = exchange rate measured as the average annual exchange rate Bank of Ghana; i = represent each of the individual banks for the study; t = represent the time specific effect; ϵ = residual term.

3.5 Explanation of Variables

In this study, a positive relationship is expected between risk index and performance (ROA and ROE) of listed banks. That is to suggest that, a bank with lower level of risk is probable to have more credit available, which offers banks the opportunity to increase productive assets and profitability (Cebenoyan and Strahan, 2004)

Size of a bank is usually measured by the natural log of total assets, hence the higher the size of a bank, the higher its ability to take risk (Saunders et al., 1990). Large firms

are more diversified; therefore, hold more assets than smaller ones. The former are able to better manage and have in place better financial and organizational structure (Psillaki et al., 2010). In the financial sector, potential economies and diseconomies of scale are generally captured using firm size. It therefore controls for the variations of in cost and product and risk diversification depending on the size of the bank. Empirical evidence on size provides mixed results. Thus, Short, (1979), Bikker and Hu (2002), Ben Naceur and Goaid (2008) all establish a positive relationship between size and performance. However, Kasman et al. (2010) find a negative and statistically significant relationship with net interest margin (performance). Moreover, Kosmidou et al. (2005) establish that small firms display higher profitability relative to larger firms. On this basis, we expect size to be positively or negatively related to performance of banks.

Solvency measure (CAP) implies that financial institutions are expected to maintain adequate capital for the purpose of long-term stability. High level of equity capital of a bank eventually lowers its risk of insolvency and vice versa (Maji et al., 2011). As a high RI indicates lower insolvency risk, a positive association between RI and our solvency measure (CAP) is expected to be positive.

Liquidity of a bank is generally measured as the ratio of liquid cash liquid cash assets to total assets. Following the classical concept of liquid assets in bank management literature, the definition of bank liquid assets include cash and bank balance, money at call and short notice and short-term investment (Alger and Alger, 1999). Usually, higher liquidity ratio is understood as having a positive effect on the stability of a bank. However, excessive investment in liquid assets is likely to affect the profitability of the bank; therefore, a trade-off between liquidity and profitability is necessary.

Non-performing loans (NPL): non-performing loans arises from a banks inability to recover loans and advances from clients. Therefore, the ratio of net non-performing loans to net loans and advances has been widely

accepted and used as a measure of credit risk by researchers (Maji et al., 2011). Banks total loans divided by total assets and ratio of loans provision to total assets have also been widely used as a measure of credit risk; however, in this study the ratio of net non-performing loans to net loans and advances is used as an indicator of credit risk. Credit risk increases when the ratio of net non-performing loans to net loans and advances increases, hence, theoretically, a negative relationship is expected between non-performing loans (credit risk) and risk index.

Inflation and its relationship with bank performance (profitability) is labeled ambiguous. The effect of inflation on bank performance largely depends on whether there is a similar rate of change in wages as well as other operating expenses. Evidence to support the impact of inflation on bank performance (profitability) are mixed. Studies have shown that higher inflation rate results in higher bank performance (profitability) (Guru et al., 2002 and Jiang et al., 2003). However, others found a negative relationship (Abreu and Mendes, 2002 and Ayadi and Boujelbène, 2012). Mostly in developing countries, Demirgüç-Kunt and Huizinga (1999) observe that banks are less profitable in inflationary environment especially those with high capital ratio. When income of banks rises rapidly compared to its cost, it extends a positive effect on profitability, hence increase bank performance and vice versa. In this study, we expect inflation and bank performance to have an inverse relationship.

Exchange rate measures the impact of environmental conditions on the banking industry. However, the resultant impact largely depends on whether the adopted exchange rate regime is fixed or flexible. In case of the former, Domaç and Martinez Peria (2003) show that exchange rate diminish the probability of crisis in the banking industry in developing countries, hence, profit is increased. However, in previous findings Eichengreen and Arteta (2002) detected that both fixed and flexible regimes are vulnerable to banking crisis, which implies low levels of profitability. Therefore, exchange rate is expected to have a negative effect on profit levels of banks.

4 RESULTS AND DISCUSSION

4.1 Discussion of the Risk Level of Banks Listed on Ghana Stock Exchange

The risk levels of Ghanaian listed banks are computed for the period of study and presented in the Tab. 1. The overall risk index for individual banks listed on Ghana Stock Exchange (GSE) improved from an average of 25.93 in 2007 to a peak of about 33.3 in 2010 and steadily fell to about 26.54 in 2013 but with a sharp fall in 2014 hitting 8.58. This could be attributable to the harsh economic conditions in 2014 resulting from the major power outages facing many industries in the country and hence increasing banks risks exposures.

Tab. 1 also indicates that UT Bank was the most risky bank over the period scoring the lowest risk index and averaging around 2.28 whilst the average risk index over the entire period was about 25.93. This could therefore be attributed to tough competition that it has faced since it converted from financial Service to bank in 2007. Our findings further suggest that, SSG Bank was the safest among all the banks constantly out performing all the other banks over the entire period except in 2014 and recorded the highest average risk index of 54.28 for the period under review. This may be attributed to its conservative banking philosophy. All indigenous Ghanaian banks; GCB, CAL and UT had average risk index of about 13, 22.58 and 2.28 far below the overall average of 25.93 except HFC which scored a risk index of about 6.5 above the overall average. In contrast non-indigenous Ghanaian banks except SCB which recorded a risk index slightly lower the overall average all other non-indigenous Ghanaian banks; ECB and SGG had risk index of about 39.61 and 54.28 respectively which were far above the overall average. It therefore be inferred that the Non-indigenous Ghanaian banks were a lot safer than the indigenous Ghanaian banks. This could be as a result of the more strenuous prudential regulatory risk management frameworks which overseas banks are subjected to.

4.2 Regression Results

The purpose of the study was to determine the relationship between risk management and performance of listed banks. In achieving this objective, a panel linear multiple regressions was adopted using the Least Square Estimator for simplicity of exposition, further research can examine the robustness of the regression results using a more robust estimators such as the GMM. Return on Assets (ROA) and Return on Equity (ROE) were used as the main performance indicators while Risk Index (RI) was used as a proxy for risk management. The results presented in Tab. 2 indicate that 77.97% of the disparity in the return on asset is explained by the independent variables. The p -value of 0.000 explains that the explanatory variables are significant because it is below the significance level of 0.05.

Tab. 3 shows that R^2 (coefficient of determinations) value of 0.6011 indicates that 60.11% of the variation in the return on equity is attributed to the independent variables. The p -value of 0.00 explains that the explanatory variables are significant because it is below the significance level of 0.05.

4.2.1 Regression Analysis for ROA

This section presents analysis of regression results using ROA as the dependent variable (Tab. 4).

In our first regression analysis, we use ROA as the dependent variable to investigate the relationship between bank performance and determinants of bank performance. Our results suggest that, risk management (RI) had no significant relationship with bank performance. This was inconsistent with evidence of Jafari et al (2011) which suggest that companies improve their performance by managing their risk exposure; hence there is a significant positive relationship between performance and risk management. Bank size and capital adequacy had no significant with bank performance (ROA) was inconsistent with earlier findings of: Stiroh and Rumble (2006), Pasiouras and Kosmidou (2007), Ben Naceur and Goaid (2001),

Tab. 1: Risk Level of Banks Listed on Ghana Stock Exchange (GSE)

Bank	2007	2008	2009	2010	2011	2012	2013	2014	Average
HFC (Bank 1)	14.83	15.99	31.02	50.88	47.09	61.33	29.11	10.08	32.54
GCB (Bank 2)	21.89	18.78	12.68	14.13	6.69	9.97	13.30	6.60	13.00
CAL (Bank 3)	43.89	21.48	20.54	22.62	20.58	23.92	17.27	10.36	22.58
ECB (Bank 4)	22.10	36.37	51.86	52.32	43.82	50.43	49.07	10.92	39.61
SGG (Bank 5)	48.03	61.07	79.71	62.45	59.75	54.12	59.23	9.91	54.28
SCB (Bank 6)	30.77	15.56	23.49	28.07	29.74	24.84	14.36	8.74	21.95
UT (Bank 7)	0.00	0.78	2.07	2.75	2.54	3.84	2.81	3.45	2.28
Average	25.93	24.29	31.62	33.32	30.03	32.63	26.45	8.58	25.93

Tab. 2: Summary of regression results for ROA

Source	SS	dF	MS	Number of obs. = 56
Model	0.0511	8	0.0064	$F(8, 47) = 20.79$
Residual	0.0144	47	0.0003	Prob > $F = 0.0000$
Total	0.0655	55	0.0012	$R^2 = 0.7797$ Adj $R^2 = 0.7422$ Root MSE = 0.0175

Tab. 3: Summary of regression results for ROE

Source	SS	dF	MS	Number of obs. = 56
Model	1.5613	8	0.1952	$F(8, 47) = 8.85$
Residual	1.0360	47	0.0220	Prob > $F = 0.0000$
Total	2.5973	55	0.0472	$R^2 = 0.6011$ Adj $R^2 = 0.5332$ Root MSE = 0.1485

Tab. 4: Regression results of coefficients of the predictor variables for ROA

ROA	Coef	Std. Err.	t	$P > t $	95% Conf. Interval	
RI	0.0000	0.0000	1.47	0.149	-0.0000	0.0000
SIZE	-0.0002	0.0003	-0.54	0.591	-0.0009	0.0005
CAP	-0.0135	0.0275	-0.49	0.625	-0.0689	0.0419
NPL	-0.1213	0.0165	-7.35	0.000	-0.1545	-0.0881
CIR	-0.0862	0.0067	-13.00	0.000	-0.0995	-0.0729
CON	0.0747	0.0205	3.64	0.001	0.0335	0.1160
INF	0.0562	0.0239	2.35	0.023	0.0081	0.1043
EX	0.0131	0.0033	3.97	0.000	0.0064	0.0197
_CONS	0.0588	0.0083	7.11	0.000	0.0421	0.0754

Note: Dependent variable: ROA 5% significance level

Bourke (1989), Kosmidou et al. (2005) and Dietrich and Wanzenried (2011), respectively. There is a significant relationship between non-performing loans and performance of listed with a coefficient of -0.12130 (approx. -0.12) indicating the degree of effect of return on assets. It could therefore be inferred that an increase in non-performing loans leads to a decline in profit since banks mostly service non-performing loans with their profit. Relative to earlier studies, our findings is consistent with by Miller and Noulas (1997).

Moreover, Cost to income ratio also exhibited similar feature as it also had significant negative relationship with ROA with a coefficient of -0.0861995 (approx. -0.09). Implication is that bank expansion cost as well as administrative cost decrease performance. This substantiates evidence by Athanasoglou et al. (2008) but contradicts evidence by Molyneux and Thornton (1992). In addition concentration (CON) measured by market share of listed banks had significant positive relationship with performance (ROA) with coefficient of 0.074 . Thus, as banks expand their market share; it has positive effects on their profitability. By these results, our study shows consistency with findings of Bourke (1989), Molyneux and Thornton (1992) and Bawumia et al. (2005). Macroeconomic variables such as inflation and exchange rate had significant positive relationship with ROA with coefficient of 0.056 and 0.013 respectively suggesting little impact on ROA.

4.2.2 Regression Analysis for ROE

In this section, we test the relationship between ROE and the explanatory variables of the study. This section presents analysis of regression results using ROE as the dependent variable.

In the second aspect of our regression analysis, we measure bank performance by return on equity (ROE). We found a significant positive relationship between ROE and risk management (RI) with a coefficient of 0.00023 suggesting that there is little impact on performance. Our results were consistent with evidence of Jafari et al. (2011) which suggest a significant positive relationship between performance and risk management. However this contradicts our

earlier results which measured performance by ROA.

Moreover, findings show that, bank size has no significant impact on ROE which is consistent with earlier findings when ROA was used. This implies that whether shareholders increase their equity or not, it does not impact on either ROA or ROE. Macroeconomic variables such as inflation and exchange rate also had no significant impact on ROE. Capital adequacy of listed banks was found to have a significant negative effect on ROE with a coefficient of -0.8913554 (approx. -0.89); this defeats earlier results which showed that capital adequacy and ROA had no significant. It may therefore be deduced that, as banks maintain high capital ratios in order to mitigate unexpected shocks of the market, ROE may also decline and vice versa.

Non-performing loans of listed banks had a significant negative relationship with ROE with a coefficient of -0.3180098 (approx. -0.31). It implies that ROE is adversely affected by non-performing loans indicating the extent of impact is high. The implication is that, as banks non-performing loans increases, it decreases their profit since it is their main source of servicing non-performing loans. Relative to earlier studies, our findings is consistent with by Miller and Noulas (1997). Furthermore, cost to income ratio is negatively related to ROE with ROE with a coefficient of -0.64505026 (approx. -0.64). This implies that banks incur a lot of administrative and operational cost in their operation and this has negative impact on their performance (ROE) although they pass it onto customers. Undoubtedly, the results suggest that cost to income is a major determinant of ROE. This evidence supports earlier findings using ROA and further confirms evidence by Athanasoglou et al. (2008), however, it contradicts evidence by Molyneux and Thornton (1992). Similar to finding on ROA and evidence of Bourke (1989), Molyneux and Thornton (1992) and Bawumia et al. (2005), concentration (CON) had a significant positive relationship with performance (ROE) with coefficient of 0.9288215 (approx. 0.92). Our evidence confirms that, the major determinant that has negative impact on ROE (bank performance) is market share.

5 CONCLUSION

Based on the summary of risk level of GSE listed banks computed using the risk index suggested by Hannan and Hanweck (1988), it was found that, the safest GSE listed bank for period under study was SGG Société Generale Bank. General impression is that, indigenous Ghanaian listed banks has lower risk index relative to foreign listed banks. However, the most risky GSE listed bank was UT bank. From the panel data regression analysis, it was found that there is a positive relationship between risk management and performance when the letter is measured by ROE and not ROA. However, risk management does not have a stronger impact on bank performance (ROE) which implies that, as

banks increase their risk management practices it results in a marginal increase in banks' ROE.

Overall listed banks in Ghana have weakened risk management index over the entire study period suggesting that banks may be exposed to undue economic uncertainty and this may call for additional capital to cushion bank against insolvency. We, recommend that the Ghanaian banking regulator and bank management may need a rethink of the approaches in the management of their risks and need to be cautious when establishing risk management frameworks and policies to ensure judicious use of deposits to enhance bank performance.

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