Role of Bank Specific, Macroeconomic and Risk Determinants of Banks Profitability: Empirical Evidence from Ghana's Rural Banking Industry

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ABSTRACT

This paper analyzes bank specific, macroeconomic and some risk determinants of bank profitability of rural and community banks (RCBs) in Ghana. Fixed effect panel regression analysis is applied on 114 RCBs annual financial reports during the period 2005-2013. The results generally suggests that capital adequacy, asset quality, liquidity management, investment, gross domestic product growth rate, inflation, funding risk and bank resilience risk are significant determinants of RCBs profitability though with varying degrees. Whereas management efficiency, and bank size cannot be considered as positive contributors to RCBs profitability. The study also indicates that continuous profitability performance of RCBs can curtail shortfall in funding risk and enhance RCBs stability.

Keywords: Bank Performance, Bank Specific Determinants, Macroeconomic Factors, Risk Factors
JEL Classifications: C5, E4, G2, G21

1. INTRODUCTION

The aim of the paper is to determine the bank specific and macroeconomic determinants of Ghana's rural banking industry (also referred to as rural and community banks [RCBs] or small banks or community banks). In this contemporary world, the existence of well performing banking institutions ginger economic growth (Pradhan et al., 2014), though some scholars have argued that when it is supported by the capital markets, economic growth is usually accelerated in a rapid manner. A country financial system consist of banks, insurance firms, savings and loans, mutual funds and others. In most developing countries like Kenya the financial sector is dominated by the commercial banks (Ongore and Kusa, 2013) and the same can be said of Ghana which the banking sector accounts for 70% of the financial sector (Bawumia et al., 2008).

Ghana operate a universal banking system, and all banks do banking business irrespective of their size. This is enshrined in the following enactments: The 1992 Constitution of Ghana, the Bank of Ghana Act, 2002 (Act 612), the banking (Amendment) Act 2007 (Act 738) and the companies Act, 1963 (Act 179). The banking industry has experience growth especially in the expanding of branches across regions, metropolitans, municipals and districts. What is disturbing is the re-injection of capital which could not curtail the high interest rate on loans. It appears it only reassures depositors of some sort of protection. Although the central bank reduced the policy rate to which interest rate determination is pegged, its effort has not really achieved any incentive to reduce interest rate. This makes the commercial banks unattractive to specific localities of the economic particularly the rural localities. Their non interest in patronizing the big commercial banks makes the RCBs the most attractive, judging from the nature of the rural dwellers work. They are predominantly into agricultural skilled works like fishing, crop productions, fish mockers and others are into petty trading business which required some sought of credit to expand their operations. But the question is how profitable are

these RCBs to provide this financial credit to the rural dwellers? This is the primary question this study sought to answer, and to determine what major factors can account to the determination of RCBs profitability. Hypothetically we seek to test whether internal determinants or macroeconomic determinants or risk factors statistically affects RCBs profitability.

Our study will focus on the determinants of RCBs profitability in Ghana. To enhance the relevance of RCBs profitability determinants, a brief overview of RCBs background is provided.

In Ghana, in a bid to bring financial services to the rural communities in Ghana, in the late 1970's the Bank of Ghana (BoG) in its wisdom introduced the RCBs for several reasons; (i) to bring formal financial banking services to the rural dwellers, (ii) to promote the savings habits of the rural folks, (iii) to encourage them to invest their savings for their best future and (iv) to aid in the payment of farmers particularly cocoa farmers by the government for their produce. BoG has contributed in several ways in strengthening and enhancing the RCBs through technological training, human training and development through ARP banks established by the BoG. The BoG play a supervising role and empowers ARP bank to monitor RCBs performance on their behalf whiles also serving as the clearing agent between the BoG and the RCBs.

In sphere of business, it appears growth is seen as essential to the strengths and progress of firms. In 2008 the total assets (TA) of RCBs grew by 20.6% to GHS 463.7 million (Bank of Ghana, 2013). This made the BoG to increase the number of satisfactory category of RCBs by 17 banks. In 2008, 104 RCBs banks from 87 banks in 2007. The same year the number of mediocre banks went up from 19 to 25 (Bank of Ghana, 2013). This was quite encouraging as most RCBs primary minimum reserved capital was above the required 8% of the BoG. Subsequently it was increase to 10% as at 2010 and most RCBs were still performing better. In general in 2011 RCBs TA increased by 30.4% (GHS 266.8 million to GHS 1,142.6 million). This was made up of Shareholders' funds, deposits and borrowings which went up by 28.3%, 32.0% and 13.9% respectively. This upward achievement in TA was mainly in loans and advances, Investments and liquid assets (cash and bank balance) of GHS 130.6 million, GHS 57.9 million and GHS 32.7 million respectively. Despite all this, in 2011 some RCBs were insolvent and had comparatively high nonperforming loans which did affected their financial health. There are several challenges that RCBs being part of the financial sector faces in Ghana. These are peculiarly in relation to their low capitalization, liquidity and profitability (Asiedu-Mante, 2011). For instance 15 RCBs were marked for liquidation in 2010. This was revealed by the Director Banking Supervision Department of the BoG during seminar for RCBs managers as reported on 2nd September, 2010 by the Ghana News Agency. According to the director, liquidation in banking primarily aims to weed out and reduce risk in the financial sector. Again during the same period five RCBs were categorized as distress banks and 6% declared as insolvent by the BoG and several others give warnings (Nair and Fissha, 2010). In addition to the above RCBs performance has been in question due to the level of management expertise, poor

client's service and poor corporate government practices. This is a reflection of what happened in 1983 as captured by (Nair and Fissha, 2010) as the decline in RCBs financial performance which lead to high default rates in loans and board of director's conflicts.

A number of studies have emphasis on mechanisms to help RCBs improve on their low performance. According to Steel and Andah (2003) it demands stringent measures from the BoG in areas such as modifying their credit quotas up limits, a decline in agriculture loans, an upward review of their reserves (primary and secondary) and others. To us these are all regulatory measures and the regulator is responsible to ensure safety in that sector of the industry. However, the bank managers and stakeholders must be informed of what factors specifically influence their performance. According to the Ghana Statistical Service Report on the 2010 census, in Ghana apart from two most populous regions namely Ashanti and Greater Accra, the number of rural communities' population in the remaining eight regions outweigh the urban localities. This is due to the concentration of industries and commercialization activities focus in Greater Accra and Ashanti region respectively. Figure 1 epitomizes the rural nature of all the regions in Ghana and emphases the need to enhance the rural sector of the economy.

From the Figure 1 eight of the regions were predominantly rural, judging from Ghana's urban averages as defined by the Ghana statistical service. This rural-urban gab has and still continues to receive increasing concerns in contemporary emerging economic countries. For instance in the case of China, the Chinese government confronted the problems and challenges from migration and development. China particularly concentrated on how to: (i) Reduce regional disparities between the urban and the rural communities, (ii) decentralized urbanization to relieve the burden and difficulties currently confronting the urban centers, (iii) restore rural areas in less developed regions and (iv) strengthening economic linkages between the urban and rural areas (Zhao and Guo, 2007). This dynamic strategies was used by China which may be seen now as one of the world economic power though is a developing country. With regards to Ghana, one immediate and ready resource that can help reduce rural urban migration is the empowering of RCBs to offer credit and managerial advice to inspire the rural communities' dwellers to stay and expand their agriculture products. There appears to be loss of interest by the youth population in agriculture and this is

Figure 1: Regional distribution of urban and rural population in Ghana
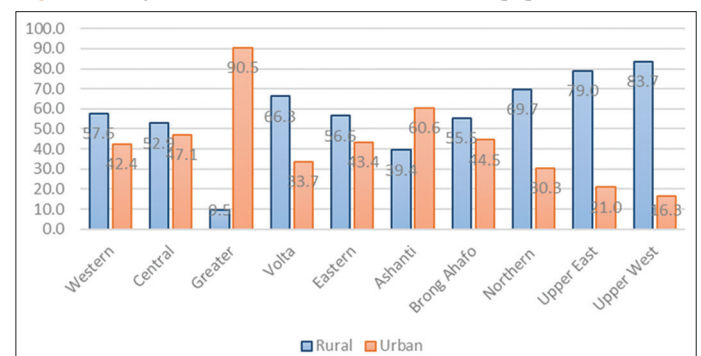
Source: Census (2010)

great worry to any developing country like Ghana. To determine whether RCBs are better placed to offer credit, the first call is to determine how profitable RCBs are:

This makes these research work more essential as RCBs are well placed to provide sources of fund (credit) to the rural/community folks who are mostly fish mockers, petty traders, farmers etc. This research work believe the enhancement of the rural sector would greatly reduce and to some extent prevent drastic migration to the already most populated Greater Accra and Ashanti region.

This study is one of other studies on RCBs by us. The focus of this is to determine the main determinants of RCBs profitability with the use of CAMEL framework which the Basel Accord on Banking Supervision has endorsed through its international measures and used in numerous studies (Baral, 2005). In Ghana no study to the best of our knowledge has used this measure. Again this study uses a larger sample of license RCBs and longer period (114 RCBs and 2005-2013) compared to other similar studies (Adusei, 2015; Owusu-Antwi et al., 2014). It the first study to have incorporated macroeconomic variables in RCBs profitability determinants in Ghana.

The remainder of the study is organized as follows: Section 2 present a review of previous studies on bank profitability. Section 3 presents the conceptual framework and the empirical model used in the estimation, Section 4 present the results and the empirical discussions of the results and Section 5 briefly concludes and provides some policy implications of the study.

2. EMPIRICS CONSIDERATION

Empirically, numerous studies has been carried out in respect to "big to fail commercial banks" performance (Altunbas et al., 2004; Demerguç-Kunt and Huizinga, 2001; Flamini et al., 2009; Godlewski, 2006; Ongore and Kusa, 2013).

In Ghana too, a number of studies on banking has focused on listed banks (Barnor and Odonkor, 2013; Lartey et al., 2013). This could be due to severally factors but to the best of our knowledge, research on RCBs using financial ratios has be limited primarily due to data availability in the past. With the restructuring of the RCBs though it is still bedeviled with numerous challenges, the ARP Apex bank spearheaded by the BoG has made it possible to revamp the RCBs data. This has assisted in easing access to their annual financial reports by request. This is evidenced by the use of technology, enhance client services, gradual improvement in management quality and current research works on RCBs performance (Adusei, 2015; Afriyie and Akotey, 2013; Antwi et al., 2012; Owusu-Antwi et al., 2014).

2.1. Determinants of Banks Profitability
The very early contributors to banks profitability studies on literature include but not limited to (Berger et al., 1987; Bourke, 1989; Molyneux and Thornton, 1992; Short, 1979).

On small banks performance like community banks, Kahn et al. (2003) found that community banks in U.S. economy complement larger banks in relationship banking and in servicing customers in areas where larger banks do not operate. In respect to the best of our knowledge no panel country study has been carry out on community banks. This as researchers raise a number of concerns which in the near future we shall seek to address. However, we discovered the issue more is due to data across countries and within countries. With such a discovery, we believe an increase in small banks studies in various countries will eventual aid collaborative studies in panel country studies, hence our study importance can't be ignored.

The various literature has focused on diverse areas. However the literature on banks profitability determinants can be segregated into management control determinants and non-management controls. These are usually referred to as bank-specific determinants, industry and macroeconomics determinants (Athanasoglou et al., 2008). This can broadly be classified also into financial performance indicators and non-financial performance indicators. Our focus on the literature is more on the financial performance derived from the bank's balance sheet and income statements. Due to increasing usage of macroeconomic variables to measure bank performance GDP and inflation has recently received attention (Flamini et al., 2009; Sufian and Habibullah, 2009). We equally include such measures as we seek to measure economic growth of RCBs.

2.1.1. Bank specific performance determinants
The main focus of this literature is the use of CAMEL as the bank specific performance indicators. This is a regulatory measure that has received comprehensive interest by scholars and practitioners as a means evaluating the financial soundness and health of banks (Atikoğullari, 2009; Baral, 2005; Olweny, 2011; Ongore and Kusa, 2013; Rime, 2001; Roman and Şargu, 2013; Tiberiu and Ioana, 2006). It stands for capital adequacy (CA), asset quality (AQ), management efficiency (ME), earnings ability and liquidity.

2.1.1.1. Return on assets (ROA)
ROA is considered as a key profitability measure as it takes into account the risk derived from financial leverage which return on equity (ROE) does not (Athanasoglou et al., 2005). Recent work on bank performance recommended the use of ROA as superior than ROE (Flamini et al., 2009) and financial performance of RCBs (Owusu-Antwi et al., 2014) in Ghana also employed such a measure. This has been widely employed as a financial ratio that determines the earning ability of managers of companies' TA. As a profitability measure, is expressed as the total income of a firm to its TA (Boadi et al., 2013; Khrawish, 2011; Ongore and Kusa, 2013). Others also used the ratio of net income that is pre-tax profit to TA (Van Horne and Wachowicz, 2008). It has been established that, the higher the ROA of a company the more efficient it utilizes its assets (Khrawish, 2011; Wen, 2010). This measure has been used as a key variable in determining how efficient RCBs make judicious use of its assets. ROA is the dependent variable and as showed under the conceptual framework we seek to: (i) Identify the bank specific variables that affects profitability of RCBs, (ii) determine and stain out the key fundamental influencer variables of RCBs profitability that contribute to optimal determinants of RCB profitability variability.

2.1.1.2. Capital adequacy

Capital is an essential element of banks profitability determinants. This has received varying outcomes in literature depending on its measure. Using it as a capital requirement measure, it may be a substitute to risk and regulatory cost. The theoretical consideration is evidenced by Modigliani-Miller theorem. This states that in a perfect market there exist no bankruptcy cost and that capital structure is not an issue and that firm value are generated by the firm's asset. However, in an imperfect capital markets, which is the modern case, a well-structured bank borrow less in other to enhance a given level of assets and hence due to lower potential bankruptcy cost, it tends to face lower cost of funding. According to Athanasoglou et al. (2005) and Berger (1995) empirically where there exist information asymmetric, a well-structured bank stands to predict future signal that suggested above average market performance.

Positive correlation between returns (profitability) and capital has been demonstrated empirically (Demirgüç-Kunt and Huizinga, 1999; Kwan and Eisenbeis, 1997; Naceur, 2003). Bourke (1989), Abreu and Mendes (2002) and Naceur (2003) agree that well-capitalized banks face lower need to external funding and lower bankruptcy and funding costs; and this advantage translates into better profitability.

2.1.1.3. Asset quality

Bank loans are paramount assets base of banks. For us the performance of loans granted by the RCBs determines how quality their assets are. This is measure in diverse forms. Some researchers measures it as loan loss reserves to TA, loan loss provisions to total loans and the ratio (Atikoğullari, 2009). The ratio of non-performing loans to TA was also used by .proxy is much identify to Roman and Şargu (2013) measure of total loans to TA as measure of AQ. This measure purely measure the banking risk of the RCBs.

2.1.1.4. Management efficiency

To determine how efficient management of firms are has been a challenging issue in most literature. The measure of such a factor poses a lot of questions unless many other factors are held constant. From the non-financial measure point, management control systems, staff quality employed by management, organizational discipline and others are all measures that could be used though they are very judgmental. From the financial performance view, operating profit to income, operating expenses to TA have be used to proxy ME (Sangmi and Nazir, 2010). According to Avkiran and Cai (2012) and Gunsel (2007) operating expense as a percentage to TA, non-interest expense to the sum of net interest income and non-interest income, cost to income ratio, deposit interest expense as a percentage of total deposits and personnel expenses to average assets are all useful measurement of ME. We adopted operating expense to TA to measure the total direct expense of the RCBs associated to their TA. If this ratio is high, management would be seen as inefficient and *viz*.

2.1.1.5. Liquidity management (LM)

Apart from the above, the liquidity parameter to a larger extent has a contribution to the bank's profitability performance. This measure reveals the strength of RCBs to pay deposits that they hold in trust for their client. In our research the loan and advances to customer deposits ratio is used as a proxy for liquidity. This is not different from the proxy measurement adopted by Dang, (2011), though Dang also suggested customer deposits to TA in addition to total loans to total customer deposits (Ilhomovich, 2009). Used cash to deposit ratio as liquidity indicator. We believe a bank with good level of liquidity has a greater likelihood to settle its obligations as they fall due especially during the bank's difficult moments. From the perceptive of Dang (2011), adequate level of liquidity indicates banks profitability. Similar views have been expressed that a comfortable liquidity ratio indicates a decline in risk failure which and hence reduces financial cost to the advantage of higher profitability (Alexiou and Voyazas, 2009). This is in sharp variance with a study by Said and Tumin (2011) which found no association between liquidity and profitability. To us, what should not be neglected is that, the keeping of high liquid assets without investing has the possibility of reducing the returns of RCBs. Hence it is expected that, high liquidity would result to negative association with profitability as empirically also established (Owusu-Antwi et al., 2014).

2.1.1.6. Investments

This study defines investment of banks in terms of short term investment in treasury bills and other liquid investments that falls due before 1 year. Banks collect customers' deposits and customers' demands for deposits are not expected to be delayed. A delay in payment raises concerns of the financial health of the banks. Banks are not expected to lock up customers deposits in long term investments. However, banks can strategically diversify their returns into viable investment portfolios. In this respect investment embark on are expected to have a positive effect on banks profitability. According to Adusei (2015) banks diversification have positive impact on their profitability but must be done with cushion. On this basis we expect investment to have significant effect on RCBs profitability.

2.1.1.7. Bank size

It has been argued that the effect of a growing size on bank profitability is significantly positive to a large extent (Smirlock, 1985). (Kwan and Eisenbeis, 1997) Suggest that the difference in profitability among large and small banks is due to production technologies and outputs, which vary across them due to size. The relative efficiency hypothesis (Clarke et al., 1984) suggests that larger banks which assets are determined by their assets are performs better than smaller banks, and are more profitable due to their size superior efficiency. Also, the effect of size on bank profitability overlap with the idea that large banks can benefit from economies of scale (Baumol, 1959). However, some studies equally opines that not enough cost saving can be gained by increasing the size of a banking firm (Berger et al., 1987). It is also suggested that overtime very large banks could face scale inefficiencies, perhaps due to bureaucratic reasons (Athanasoglou et al., 2005).

2.1.1.8. Bank resilience risk

In the context of risk in the banking industry, solvency risk usually refers to bank capital capacity to absorb shocks related to its equity capital (EC). According to Ćurak et al. (2012) suggests that

adequate equity to TA enables a bank to absorb any form of shocks. By preposition if a bank holds enough capital it is believed to have a lower insolvency risk from the risk return perspective. This study considers solvency risk as a bank resilience defined with its Z-score using accounting measurements of profitability, leverage and volatility. This equally was used previous studies (Demirgüç-Kunt and Huizinga, 2010; Stiroh, 2004a; Stiroh, 2004b).

$$\text{Z-score (BRS)}_{i,t} = (\text{ROA}_{i,t} + \text{EC}_{i,t}/\text{TA}_{i,t})/\sigma(\text{ROA}_{ip})$$

Where $\text{BRS}_{i,t}$ is the resilience Z-score of bank i in year t, ROA_{it} is the ROA ratio, EC/TA is the EC to TA ratio of bank i in year t and $\sigma(\text{ROA}_{ip})$ is the standard deviation of the ROA of bank i over the entire sample period p (Köhler, 2015). Z-score measures the number of standard deviations by which a bank's ROA has decline for it's to become illiquid.

2.1.1.9. Funding risk
Another risk that has not be given much attention in banking profitability studies is the funding risk. As noted by Adusei (2015) is the likelihood risk that may arise due to banks inability to mobilize more deposit. We examine the potential effect of funding risk on banks profitability employing Z-score of the funding risk (Z-score funding risk) defined by deposits-to-asset ratio ($\text{DEP}_{i,t}/\text{TA}_{i,t}$) plus the EC to TA ($\text{EC}_{i,t}/\text{TA}_{i,t}$) ratio in respect to a given bank and time representing i and t respectively and all being divided by the standard deviation of the deposit to TA ratio $\sigma(\text{DEP}_{i,t}/\text{TA}_{i,t})$ of a particular bank and period representing also i and p respectively. i.e. Z-score of funding risk = $[(\text{DEP}_{i,t}/\text{TA}_{i,t}) + (\text{EC}_{i,t}/\text{TA}_{i,t})]/\sigma(\text{DEP}_{i,t}/\text{TA}_{i,t})$. The higher the value of the Z-score of funding risk the more stable the banks deposit mobilization is. We therefore expect a positive effect of this risk on RCBs profitability as indicated in its measurements.

2.1.1.10. Macroeconomic indicators
Following from the research (Flamini et al., 2009; Ongore and Kusa, 2013) as part of banks profitability determinants a measure of economic growth variable (macroeconomic variables) has been seen as relevant. Our work follow such a trend, however since the RCBs represent less than 5% of the TA base of the banking sector (Bank of Ghana Annual Report, 2013) we do not expect much extreme contribution of RCB Ghana economic growth. However they stand to represent larger number of the rural population who continues need for financial services for their economic activities cannot be undermined as depicted in Figure 2. We used GDP and inflation as a measure of the macroeconomic performance as also employed in other bank performance studies as cited above.

2.2. Conceptual Framework
Following the review of the relevant literature we present conceptual framework is given Figure 2.

3. DATA AND METHODOLOGY

The study is based on secondary financial data collected from the audited financial accounts of RCBs from the bank scope database consolidated by the ARP Apex BoG and BoG. These data is from

Figure 2: Diagrammatic relationship between variables
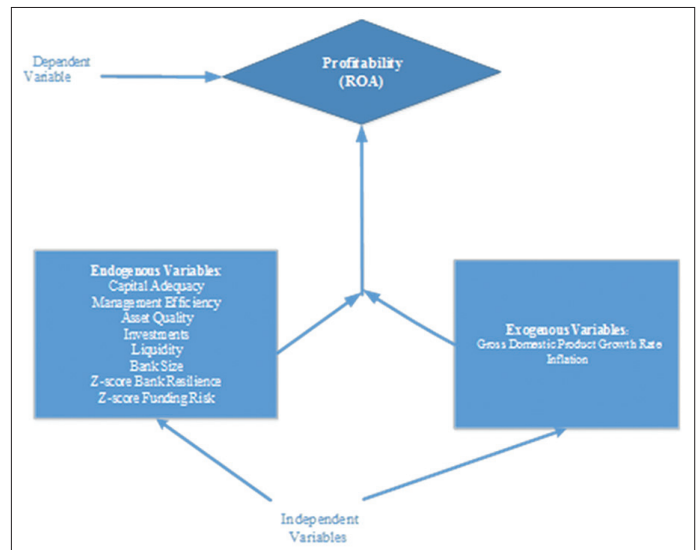
Source: Authors Construction (2016)

the audited annual financial statement of the RCBs of Ghana covered the period 2005-2013.

The sample size of the data consisted of 114 RCBs operating from 2005 to 2013 out of 135 RCBs due to data issues. It also adopted the panel data methodology which assisted in studying a group of RCBs and this is supported by Neuman (2007) as the advantage that panel data offers. The data was entered into a spreadsheet, sorted and edited before importing to Stata 13.1 software for the computation of the descriptive statistics, correlation matrix and regression results. A linear multiple regression model was developed based on the CAMEL model as a regulatory measure and other relevant variables to determine the profitability determinants of RCBs in Ghana.

3.1. Model Specification
To identify the profitability determinants of the RCBs the CAMEL model used by regulators and which is in line with the recommendations of Basel Committee on Bank Supervision of the Bank of International Settlement (Baral, 2005) was used. The baseline model was developed based on the empirical works on financial soundness, and health of Banks (Atikoğullari, 2009; Dardac and Moinescu, 2009; Mishra et al., 2012; Olweny, 2011; Ongore and Kusa, 2013; Tiberiu and Ioana, 2006). The baseline model is indicated below:

$$\text{Pro}_{it} = \alpha_o + \alpha_1\text{CA}_{it} + \alpha_2\text{AQ}_{it} + \alpha_3\text{ME}_{it} + \alpha_4\text{LM}_{it} + \alpha_5\text{INV}_{it} + \alpha_6\text{BS} + \alpha_7\text{GDP}_{it} + \alpha_8\text{INF}_{it} + \varepsilon_{it} \qquad \text{Equation (1)}$$

Where:

Pro_{it} = Performance of Bank i at time t as expressed by:
ROA = Returns on assets and ROE = Return on equity.
α_o = Constant or intercept
α_1-α_7 = Coefficients parameters
CA_{it} = Capital adequacy of bank i at time t
LM_{it} = Liquidity management
AQ_{it} = Asset quality of bank i at time t

ME_{it} = Management efficiency of bank i at time t
INV_{it} = Investment size of bank i at time t
$Bsize_{it}$ = Size of assets of banks i at time t
GDP_t = Gross domestic product at time t
INF_t = Average annual inflation rate at time t
ε_{it} = Error term.

Where i is cross sectional and t time identifier.

When the risk of banks as defined in the literature are considered Equation 2 is derived as:

$$Pro_{it} = \alpha_o + \alpha_1 CA_{it} + \alpha_2 AQ_{it} + \alpha_3 ME_{it} + \alpha_4 LM_{it} + \alpha_5 INV_{it}$$
$$+ \alpha_6 BS + \alpha_7 GDP_{it} + \alpha_8 INF_{it} + \alpha_9 Z\text{-score(BRS)}$$
$$+ \alpha_{10} Z\text{-score(FR)} + \varepsilon_{it}. \qquad \text{Equation (2)}$$

Where: Z-score (BRS) is the Z-score Bank resilience risk and Z-score (FR) is the Z-score funding risk whiles α_7 and α_8 are their co-efficient respectively.

3.2. Further Operationalization of the Study Variables Used in the Empirical Estimation

This section presents the measurements used to define the variables of the study and their expected outcomes (Table 1).

ROA as profitability performance indicator was the dependent variable whiles the remaining variables were all independent variables.

3.3. Estimations Issues

To ensure right estimations were carried out for a better empirical analysis, some robustness routes were undertaken. We check for all outliers and we identified that the results were not affected by outliers. We also carried out a robust regression which came with some regression iterations before we analyzed the results. For instance, bank age was drop from the estimation due to its multicollinearity as identified by the regression results. This was done by including the variables one after the other and where potential biases of the variable is established it was omitted from the regression estimations. Additionally for the purpose of non-stationarity we deflated the macroeconomic variable GDPGR with inflation determined by the consumer price index. Again the natural logarithm of the bank TA was used for the bank size which has been the convention in determining banks size (Berger and Bouwman, 2013). The rest of the variables, we performed panel unit root test to check the remaining variables non-stationarity which Swamy (2013) equally used. Again, the model fitness between random effect and fixed effect was performed and the hausman test rejected the random effect.

4. EMPIRICAL RESULTS AND DISCUSSIONS OF RESULTS

4.1. Descriptive Statistics

We present below the descriptive statistics of the variables under consideration (Table 2).

As can be observed from the Table 2, the means of the variables were satisfactory. For instance as revealed by Flamini et al. (2009) in Sub Sahara Africa (SSA) that the ROA was about 2.35% using 389 banks in 41 Sub-Sahara Africa countries, that of RCBs in Ghana is about 2.85% which is a little higher than the SSA. It was also above the outcome observed in Kenya's commercial banks study by Ongore and Kusa (2013) of 1.96% over 10-year period. Again in an emerging economies study conducted by Mirzaei et al. (2013), ROA recorded an average of 1.43% as compared to 13.38% of ROE for commercial banks. For non- commercial banks it recovered 1.52% and 12.78% respectively for ROA and ROE. This shows that RCBs profitability returns is higher and could have accounted for the increase in their CA average ratio especially considering BoG's warning to RCBs not to pay dividend if they have not meet the new minimum capital requirement of GHC 3000,000.00 by 31st December 2015. Hence it could implied most RCBs are retaining their profit to beef up their capital if not

Table 1: Variables measurement and its operationalization

Variables	Measurement	Notations	Expected outcome	Data source
Profitability	Net profit before tax and interest to its total assets	ROA		ARB Apex Bank
Capital adequacy	Total capital to total assets	CA	+	ARB Apex Bank
Investment management	Real total investments in securities (after due consideration to inflation using the consumer price index	INV	+	ARB Apex Bank
Liquidity management	Total loans to total customer deposits	LM	−	ARB Apex Bank
Assets management/quality	Total loans and advances to total assets	AQ	+	ARB Apex Bank
Management efficiency	Operating expense/total deposits	ME	+	ARB Apex Bank
Bank size (Bsize)	Natural logarithm of total assets	Bsize	+	ARB Apex Bank
Z-score of funding risk	Total deposits to total assets ratio-equity capital to asset ratio all divided by the standard deviation of total deposits to total assets	Z-score (FR)	+	ARB Apex Bank
Z-score of bank resilience risk	Net profit before interest and tax to assets ratio plus equity to assets ratio divided by the standard deviation of profit before interest and tax assets ratio	Z-score (BRS)	+	ARB Apex Bank
Inflation	Annual inflation based on consumer price index	InFCPI	−	Ghana statistical service
Gross domestic product	Annual gross domestic product of ghana	GDPGR	+	Bank of Ghana

Source: Authors Construction (2016), where (+): Indicate positive outcome, (–): Indicates negative expected outcome. ROA: Return of assets, CA: Capital adequacy, AQ: Asset quality, ME: Management efficiency, LM: Liquidity management, INV: Real investment of the bank, InFCPI: Inflation defined by the consumer price index, Bsize: Bank total asset, GDPGR: Gross domestic product growth rate deflated by consumer price index, Z-score (FR): Funding risk, Z-score (BRS): Bank resilience

the worst case of charging high interest rate on loans and advances. Evidence is observed with RCBs CA of 14.5% which was above the current 10% set by the BoG the regulator.

In respect to RCB resilience, the results shows a 3.8% stability rate per the Zscore, a much relatively higher financial resilience than that revealed by:

As can be observed from Table 3, the relationship between ROA and CA, ME, LM, investments, bank size and GDPGR were weak. However, it had a moderate relationship with AQ and a weak negative relationship with Ghana's inflation per consumer price index. One indication is that RCBs do not face variability in their earnings as a result of leverage which is in conformity with Kenya's commercial banks financial performance study (Ongore and Kusa, 2013). The associations derived above did not show strong correlation among the independent variables and this is an indication that multicollinearity is not an issue.

4.2. Regression Results and Discussion
We equally present below the results of the panel least square fixed effect model of bank profitability determinants in Table 4.

5. DISCUSSION OF REGRESSION RESULTS

The parameters of bank specific variables signs as expected were the same apart from bank size. Also, their statistical significance varies. As revealed by the output at an alpha value of 5% CA had a significant statistical influence on profitability. By implication as RCBs profitability increases its CA increases. In Ghana's banking industry there is regular review of the minimum capital requirement, hence the BoG especially from the perspective of RCBs due to their low mobilization of deposit are admonished to retained their profit to increase their capital base. Again, RCBs in 2010, after their CA requirement were instructed not to pay dividend to increase their CA. After series of warnings and liquidation of some RCBs that signal has uplifted the performance of RCBs in raising their capital. This support empirical evidences established that capital has a positive impact on banks profitability. For instance Sufian and Habibullah (2009) using a multivariate regression analysis method to study the Chinese banking industry from 2000 to 2005 find a statistically significant positive impact of capital on profitability. Similar outcomes has been observed in a study on 15 European Union banks from the period 1995-2001 (Pasiouras and Kosmidou, 2007) that banks that keeps high capital relative to assets performs better because they are less geared to risk compare to those with lower capital to risk. The same was observed by Dietrich and Wanzenried (2011) in the determinants of bank profitability of before and during the financial crises in Switzerland banks.

The effect of AQ on RCBs profitability was statistically significant and has a positive impact on banks performance. This implies that as RCBs loans and advances increases, their profitability equally increases due to an increase in interest income and that

Table 2: Descriptive statistics of dependent variable and independent variables

Variable	Observations	Mean	Stdandard deviation	Minimum	Maximum
ROA	1010	0.0285	0.05515	−0.270	1.193
CA	1010	0.1453	0.53458	−0.568	16.433
AQ	1010	0.4621	0.68410	0.003	14.575
ME	1010	0.1483	0.08731	0.001	1.526
LM	1010	0.5491	0.46751	0.005	7.918
INV	1010	0.0008	0.00088	0.000	0.008
InFCPI	1010	12.2554	3.56376	8.727	19.251
Bsize	1010	1.09E+07	1.24E+07	325078	1.31E+08
GDPGR	1010	7.63028	3.11084	3.961497	12.9311
Z-score (FR)	1010	3.82190	2.777066	−9.605	13.387
Z-score (BRS)	1010	3.796852	3.866974	−22.286	39.763

Source: Authors construction (2016). ROA: Return of assets, CA: Capital adequacy, AQ: Asset quality, ME: Management efficiency, LM: Liquidity management, INV: Real investment of the bank, InFCPI: Inflation defined by the consumer price index, Bsize: Bank total asset, GDPGR: Gross domestic product growth rate deflated by consumer price index, Z-score (FR): Funding risk, Z-score (BRS): Bank resilience

Table 3: Correlation matrix of variables

Variables	ROA	CA	AQ	ME	LQMGT	INV	InFcpi	Bsize	GDPGR	Zscore (FR)	Zscore (BRS)
ROA	1.00										
CA	0.23	1									
AQ	0.56	0.145	1.00								
ME	0.07	0.022	0.50	1							
LM	0.06	0.011	0.59	0.56	1						
INV	0.27	0.056	0.03	0.03	−0.103	1					
InFCPI	−0.10	0.03	−0.03	0.05	0.062	−0.21	1				
Bsize	0.20	0.033	0.07	0.01	−0.047	0.583	−0.144	1			
GDPGR	0.12	0.061	0.07	0.06	0.14	0.045	−0.216	−0.0031	1		
Z-score (FR)	−0.06	0.004	−0.08	−0	−0.225	0.047	−0.002	0.1790	−0.18	1	
Z-score (BRS)	0.16	0.114	−0.02	0.08	−0.024	0.035	0.2743	0.1306	−0.06	0.437	1

Source: Authors construction (2016). ROA: Return of assets, CA: Capital adequacy, AQ: Asset quality, ME: Management efficiency, LM: Liquidity management, INV: Real investment of the bank, InFCPI: Inflation defined by the consumer price index, Bsize: Bank total asset, GDPGR: Gross domestic product growth rate deflated by consumer price index, Z-score (FR): Funding risk, Z-score (BRS): Bank resilience

Table 4: Regression results of bank specific factors with ROA as dependent variable

Variable	Coefficients	t-statistis
CA	0.005	2.05*
ASSQUA	0.066	29.45**
ME	0.049	1.54[NS]
LM	−0.064	9.56**
INV	8.406	3.28**
InfCPI	−0.001	2.56*
Bsize	0.000	0.79[NS]
GDPGR	0.001	3.86**
Zscore (FR)	−0.004	7.69**
Zscore (BRS)	0.003	7.77**
Constant	0.022	3.09**

Source: Authors construction (2016). *P<0.05 and **P<0.01 R^2=0.54, ROA: Return of assets, CA: Capital adequacy, AQ: Asset quality, ME: Management efficiency, LM: Liquidity management, INV: Real investment of the bank, InFCPI: Inflation defined by the consumer price index, Bsize: Bank total asset, GDPGR: Gross domestic product growth rate deflated by consumer price index, Z-score (FR): Funding risk, Z-score (BRS): Bank resilience, [NS]not significant

non-performing loans decreases. This could be accounted by an efficient debt management style of collecting loans through their agents on regularly basis (normally daily) irrespective of the amounts the customer pays. Again it may be as a results of rigorous monitoring system instituted by RCBs to conduct background checks of their customers who are mostly small and medium scale enterprises before granting those loans. It could also holds that their interest expenses decreases or remain constant as a result of decrease on interest on deposits without a corresponding decline on interest on loans and advances. In any case, the quality of RCBs loans portfolio is good and it has a significant impact on their profitability performance.

ME was defined as the ratio of operating expense to total deposits and we expected a positive impact. However it had no significant statistically influence on RCBs performance, though it could impact positively or negatively on banks performance. We did not have any evidence to establish that.

LM as expected had a negative impact on banks performance as established in in some literature (Owusu-Antwi et al., 2014). The impact was significant too which contradict research on commercial banks performance by Ongore and Kusa (2013) which find no effect. In the case of Ghana it contradict Adusei (2015) who failed to include macroeconomic variables in his determinants that, liquidity has a positive and significant impact on RCBs profitability. Our findings suggest that if RCBs increases it profitability there is a decline in its liquidity as a result of investing their liquid resources. This means they do not keep excessive liquidity but offers it as loans and advances to their small and medium scale business customers which they equally recoup through proper debt management monitoring systems as revealed by their AQ.

Investment as measure by the real investment of RCBs in terms of short term and long term securities was find to have significant positive effect on RCBs profitability. By this, an increase in diversification by way of investment in securities equally increases their profitability. However it must be exercise with due restrictions so depositors' funds are not lock up upon its demand.

This implies other things remaining constant, shareholders wealth maximizes as investment increases resulting to the banks' earnings appreciation. However, from the socioeconomic spirit, investments is a secondary choice after wholeheartedly satisfying their rural financial intermediation role. In the contest of the reported results it confirms Stiroh (2004a) studied a sample of US community banks and observed diversification benefits within broader activity classes but not between them. Though an empirical work by Acharya et al. (2006) observed when analyzing Italian banks that, diversification/investment of banks assets do not guarantee banks superior performance and/or risk reduction.

The concept of bank size effect on banks profitability is contentious as revealed in our literature review. However, as other works (Berger and Bouwman, 2013; Zopounidis and Kosmidou, 2008) find evidence that size has a significant impact on banks performance, our study failed to established that evidence as it had no significant influence on RCBs performance in Ghana under the period of study from 2005 to 2013 considering the variables used.

In respect to macroeconomic determinants both inflation and real GDPGR were used. We find a statistically significant effect of GDPGR those it was very minimal. This was not surprising considering the minuet nature of RCBs in the banking industry of Ghana. However, it proves their relevance in contributing to economic growth in their small catchment areas through the providing of financial intermediation role. This is provide support for the evidences established by the positive impact association of banks performance on economic growth (Flamini et al., 2009; Zopounidis and Kosmidou, 2008), though study by Ongore and Kusa (2013) in Kenya was inconclusive of banks performance on economic growth. In our study, we find evidence to support RCBs impact on Ghana's economic growth as was expected though little. It however means favorable economic conditions have the propensity to increase household savings at the bank.

Another macroeconomic determinants adopted was inflation. We realized that it has a negative impact on RCBs performance and was significant. This may implied that RCBs do not much adjust their interest on loans in anticipation based on foresee inflation in the future and this has a negative effect on their profitability which was also observed in other studies (Flamini et al., 2009; Pasiouras and Kosmidou, 2007).

The concept of risk in banking are assess in diverse forms. Using Z-score in determining both funding risk and Bank resilience risk we find the following:

Funding risk indicated a negative significant statistical impact on RCBs profitability. This epitomizes that RCBs which enhances its funding risks in a year has a tendency to experience a decline in profitability in the following year. A number of factors could account for such a decrease. The predominant factor could be the shortfalls of RCBs in converting deposits to loans. As noted by Adusei (2015), it is logical to argue that a RCB that enhances its lending standards despite growing deposit has the probability of benefiting significantly from its deposits.

As revealed by Munteanu (2012), the most relevant measure of banks performance should be their resilience in terms of crisis in the economic. During the above named study of Romania banks, it was established that, the Z-score of Romania banking industry stability was the most significant measure that instils confidence in the banking sector and proofs banks regulators scrutiny to protect depositor's funds. This backs the theoretical well know and much emphasized view that, stability in the banking sector promotes banks profitability using the hackneyed determinants of bank resilience of Z-score as an indicator. Per the evidence obtained from the RCBs profitability determinants we established that, the bank stability Z-score which measures the number of standard deviations by which a bank's ROA has to decline for regulators to declare the said bank as bankrupt declare RCBs at the moment stable. We also found evident that RCBs resilience is an extreme significant factor that impact positively on their profitability as showed in Table 4.

6. CONCLUSIONS AND POLICY IMPLICATIONS

Over some decades, a number of important measures have been instituted by the BoG in ensuring RCBs performance improves. It comes as no surprise that they seem to be an improvement. However per the outcome of our studies there still remains a lot more improvement.

The paper analyzed the determinants of RCBs profitability using about 114 RCBs annual financial reports across Ghana over the period 2005-2013. This banks were chosen based on data availability. It specifically considered both the bank specific factors, macroeconomic factors and did risk assessment of RCBs performance in the areas of their resilience to economic shocks and funding risk using an econometric analysis. Panel Least Square Regression with Fixed effect estimation was used based on the Hausman test performed during the study. The results provided evidence that CA, AQ, investment, GDPGR, bank and Bank resilience has significant positive predictive impact on RCBs profitability in the Ghana Rural banking industry confirming the extant of literature. However, we established that though Inflation defined by Consumer price index has a statistical significant effect on RCBs performance its impact was negative, meaning it's not being anticipated by RCBs will lead to a decline in RCBs profitability. In respect to GDPGR RCBs proved they contribute to economic growth with a positive coefficient. Furthermore, there was no evidence that ME and bank size impact on RCBs profitability. More so, there were signs that RCBs funding risk has a negative impact on RCBs profitability. This implies RCBs deposit mobilization increase in a given year does not provide a guarantee in the preceding year but can drop in the subsequent year. On a whole the finding extant the literature works on RCBs performance in terms of its macroeconomic variables which to our knowledge previous works failed to capture.

For policy implication purposes, we suggest three recommendations:
i.   We add to the call that RCBs managers should pay relevant attention to their funding and stability risks in the daily management activities of RCBs as their ME fails to account for a significant effect on RCBs profitability.
ii. We equally encourages BoG to continue its fundamental changes in the areas of new minimum CA requirement and RCBs boards with specialist in risk assessment and management to reduce risk potential effects of liquidations which happened in the past.
iii. RCB manager's whiles enhancing their profitability should be extremely mindful not to direct all their liquid funds into investment to the detriment of not satisfying their customers quick demand withdrawals.

This study included macroeconomic variables and we recommend subsequent research should consider financial structure variables in its determinants of profitability of RCBs in Ghana.

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