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## Financial Performance of Rural and Community Banks (RCBs) in Ghana

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### **Abstract:**

*Purpose: This paper examines the determinants of financial performance of Rural and Community banks in Ghana.*

*Design/methodology/approach- The study considers Rural and Community banks (RCBs) in Ghana as they are the major microfinance service providers. Thirty (30) rural and community banks across the country were purposefully selected for the period 2006-2010 and panel data was used in regression analysis model to examine the variables that could affect the performance of RCBs. The variables of the regression include credit risk, capital adequacy, portfolio composition, bank size, operational efficiency, gross domestic product as well as inflation (consumer price index).*

*Findings- Results from the paper reveals that credit risk, non-interest expense, bank's capital strength, gross domestic product, and annual rate of inflation are significant drivers of RCBs' profitability in Ghana. However, bank size and portfolio composition did not have any significant impact on their profitability.*

*Practical implications- The results suggest that like the traditional (commercial) banks in Ghana, credit risk can affect Rural and Community banks and hence managers are expected to do more as they try to give more loans as a means of attracting or retaining customers. Also, as RCBs become large, measures should be put in place to check inefficiency and ensure economies of scale through proper supervision.*

*Originality- As most of the earlier studies on financial performance focused on the commercial banks, this study conversely focused on Rural and Community Banks (RCBs) and from Ghanaian perspective.*

**Keywords:** Financial Performance, Rural and Community Banks (RCBs), Credit risk, Banks, Ghana

### **1. Introduction**

The financial sector plays an important economic role in providing financial intermediation and economic acceleration by converting deposits into productive investments. Hence, having a sound and profitable banking sector cannot be overemphasized because it is better able to withstand negative shocks and contribute to the stability of the financial system. The issue of corporate financial performance has been associated with the potential growth of an economy. The banking industry is one of the industries that have received much attention especially in the area of performance. Researchers have tried to ascertain the statistical determinants of financial performance of banks both from single-country or cross-country perspectives.

In Ghana, the banking sector remains one of the most lucrative industries despite increasing competition and in the attempt to remain competitive; banks are exposed to a number of factors which can affect their profitability. One of the key players in the Ghanaian banking industry is the rural and community banks (RCBs). The steady expansion and the extent of outreach of RCBs especially in the rural economy are well acknowledged. The rural banking sector has most of its clients being in the informal sector of the economy. Besides, most of the areas of operations of these RCBs have the populace being much into agriculture, and the financial needs of these people are intend to be met by the RCBs. Available literature indicates that indeed, RCBs have significantly contributed to the socio-economic welfare of the rural populace in Ghana.

Considering the significance of the banking industry in general and the rural banking sector in particular, this study looks at the determinants of the financial performance of RCBs in Ghana. Determinants of banks' profitability have been looked at both in developed and developing economies. Researchers either studying banks in one economy or across countries have focused on the main stream banking firms. This study is therefore carried out to look into the variables that affect RCBs' performance (profitability) in the Ghanaian rural banking context.

The paper considered Rural and community banks (RCBs), because according to Basu, Blavy, and Yulek (2004), RCBs account for the largest share of microfinance services in Ghana. This is corroborated by Nair and Fissaha(2010), who indicate that RCB network reaches about 2.8 million depositors and 680,000borrowers, making RCBs the largest group of licensed financial service providers in rural areas. The lack of literature on financial performance in the area of rural banking is the motivation for this paper. This paper

therefore contributes to the existing literature by providing empirical evidence regarding financial performance of rural and community banks (RCBs) in Ghana using 30 sampled RCBs for the period 2006-2010. Thus, the objective of this study is to ascertain the factors that affect the performance (profitability) of Rural and Community Banks (RCBs) in Ghana.

The paper is organized as follows: the next section deals with previous studies in the subject area followed by research methodology. In the empirical results section, the relationship between profitability and the other statistical variables is analysed, after which comes a summary of the study and conclusion and its policy implications.

## 2. Literature Review

In pursuit to identify the factors that affect bank performance, numerous empirical studies have been held. In recent literature, the determinant of bank profitability typically measured by the Return on Assets (ROA) and/or the return on equity (ROE) reported by a bank is expressed as a function of internal and external determinants. The internal determinants originate from bank accounts and are factors that are mainly influenced by a bank's management decisions and policy objectives and therefore could be termed micro or bank-specific determinants of profitability.

On the other hand, the external determinants are variables reflecting economic and legal environment that affects the operation and performance of banks. A number of explanatory variables have been proposed for both categories, per the nature and purpose of each study. Among the internal determinants include size, capital adequacy, provisioning policy, expenses management, deposits and liquidity etc. Economic growth, inflation, and market interest rates are some external determinants that affect bank profitability. Some empirical studies on the bank profitability according to literature have focused on a specific country, while others have concentrated on a panel of countries.

All the studies examining internal and external determinants of bank profitability present varying results in a way or two in that both datasets and environments differ. However, there are some common elements and this study intends to replicate this in the Ghanaian rural banking context. Credit risk, bank size, capital adequacy, portfolio composition, expenses management, GDP and inflation (CPI) among others are some of the variables that have been used in most studies in an attempt to ascertain drivers of banks performance.

Mamatzakis and Remoundos (2003), for example, show that the variables that are directly related to the strategic planning of the banks include personnel expenses, equity to assets ratio and these mainly explain profitability. The following paragraphs detail the results of selected empirical studies carried out to determine factors affecting bank performance (profitability) including credit risk. Athanoglou, Brissimis, & Delis (2008) examined the effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability. The empirical results indicate a negative and significant relationship between credit risk and bank profitability. Miller and Noulas, (1997) indicate that credit risk on profitability appears clearly negative. According to a study by Kaya (2002), netnon-performing loans ostensibly representing credit risk affect ROA negatively. Ali, Akhtar and Ahmed (2011) study on Islamic banks profitability in Pakistan indicate that profitability is negatively and significantly related to credit risk when profitability is measured by return on assets (ROA) but insignificant and negatively affect profitability when measured by return on equity (ROE).

Ramlall (2009) studying determinants of profitability of banks in Taiwan also stated a negative but insignificant relationship between credit risk and profitability (ROE). Alper and Anbar,(2011) studying the determinants of commercial bank profitability posit that greater provisions for loan losses is a lower indicative of lower bank profits which seemingly corroborate the position of Ramlall (2009). They however indicate that the ratios of loans/assets and loans under follow-up/loans are significantly and negatively impact ROA.

In a sharp contrast to the above results is that of Naceur and Omran (2008) cited in Sufian et al(2009) who indicate a positive relationship between credit risk and profitability. They examined the influence of bank regulations, concentration, financial and institutional development on Middle East and North Africa (MENA) countries commercial banks margin and profitability during the period 1989–2005. Their results show that bank specific characteristics such as credit risk have positive and significant impact on banks' profitability.

Size has been in the books of authors basically to account for existing economies or diseconomies of scale in the market. A study by Ahmed and Khababa (2010) assessed the financial performance (profitability) of commercial banks in Saudi Arabia. The authors test the effect of business risk, concentration and market size on the profitability of the bank measured in terms of return on assets (ROA) and return on equity (ROE). The empirical results as generated from the models showed that bank size are one of the main variables which determine banks' profitability. Alper and Anbar(2011) find that asset size has a positive and significant effect on profitability. It suggests that larger banks achieve a higher ROA and ROE. Also, the positive and significant coefficients of asset size variable provide evidence for the economies of scale theory. Smirlock (1985) also find a positive and significant relationship between size and bank profitability.

Demirguc-Kunt and Maksimovic (1998) suggest that the extent to which various financial, legal and other factors (e.g. corruption) affect bank profitability is closely linked to firm size. In addition, Short (1979) argues that size is closely related to the capital adequacy of a bank and a relatively large banks tend to raise less expensive capital and, hence, appear more profitable. Molyneux and Seth (1998) found a positive and significant relationship between banks size and profitability and they relate this to economies of scale asserting that larger banks were more profitable than smaller banks. However, many other researchers suggest that little cost saving can be achieved by increasing the size of a banking firm (Berger et al., 1987), which suggests that eventually very large banks could face scale inefficiencies. The indication here is that, there is empirical evidence also suggesting a negative relationship of bank size and profitability.

Deposit taking is a core business of banking institutions and out of these deposits; funds are made available for lending. According to Kaya (2002), deposits to total assets (portfolio composition) affect both ROA negatively. However, Ali, Akhtar and Ahmed (2011) indicate that profitability is positively related by portfolio composition profitability (as measured by return on assets ROA and/or return on equity, ROE) but the relationship is insignificant. The insignificant relation of portfolio composition (proxy by the ratio of total deposits/total assets) with profitability is in accordance with that of (Naceur & Goaied, 2001; Al-Tamimi, 2006).

Bank expenses per literature are also very important determinant of profitability, closely related to the notion of efficient management. There has been an extensive literature based on the idea that an expenses-related variable should be included in the cost part of a standard microeconomic profit function. Bourke (1989) and Molyneux and Thornton (1992), for example, find a positive relationship between better-quality management and profitability. Guru et al. (2002) studies on a sample of seventeen commercial banks in Malaysia from 1986-1995 time periods. In this study, it is found that efficient expenses management is one of the most significant in explaining high bank profitability.

According to Ali, Akhtar and Ahmed (2011), operating efficiency is found to be positively related to profitability (ROA) but the relation is insignificant but when profitability is measured by return on equity (ROE); operating efficiency is established to have significant effect on profitability. The significant relation of operating efficiency with profitability is in accordance with the findings of previous studies (Alexiou & Sofoklis, 2009; Sufian & Habibullah, 2009). Other studies have found a negative relationship between profitability and expense management.

According to a study by Kaya (2002) ratios of staff expenditures affect both ROA and ROE negatively. Ali, Akhtar and Ahmed (2011) in their study also indicate that in case profitability is measured by return on equity (ROE), profitability is significant and negatively affected by operating efficiency.

Sayilgan and Yildirim (2009) investigated the relationship between the return on assets and the return on equity ratio for a sample of Turkish banks for the 2002-2007 time periods using monthly data. It was found that profitability positively affected by capital adequacy. Naceur (2003) investigates the impact of banks characteristics, final structure and macroeconomic indicators on banks net interest margin and profitability in Tunisian Banking Industry for the period 1983-2000. According to this study, higher profitability is found to be associated with banks that hold a relatively high amount of capital. Dietrich and Wanzenried (2009) also find significant differences in profitability between commercial banks and they indicate these differences can to a large extent be explained by factors such as capitalization. It is found that, better capitalized bank seem to be more profitable. Again, Javaid et al. (2011) find that equity-to-asset ratio has significant impact on profitability. In the same country, Atasoy (2007) examined profitability determinants and expenditure-income structure between 1990 and 2005 and report that ROA is affected positively by the ratio of equity and total assets. Unlike the above-mentioned studies, others have found an inverse relationship between profitability and capital adequacy. Ali, Akhtar and Ahmed (2011), for example, indicate that profitability is negative and significantly affected by capital when profitability is measured by return on assets (ROA) but positive and insignificant with ROE as suggested by (Ramlall, 2009). Hassan and Bashir (2003) found a statistically significant inverse relationship between the equity variable and ROE, indicating that high capital ratio reduces the returns on equity of Islamic Banks. Further, their results show an almost lack of correspondence between the capital ratio variable and the return on assets (ROA). The negative association of capital as shown in these studies is in agreement with (Al-Tamimi, 2005; Naceur & Goaied, 2002) as their study stated that the problem of maintaining capital reveals the negative relation with profitability. According to a study by Kaya (2002), equity to assets affects ROA ratio positively while affecting ROE negatively.

Dietrich and Wanzenried (2009), find that GDP growth variable is one of the most important factors which affect the bank profitability positively. Per a study by Alexiou & Sofoklis, (2009) economic growth is significant and positively related to profitability. Ali, Akhtar and Ahmed (2011), find a positive and significant relation of GDP with profitability (as measured by ROA and ROE) which is in accordance with the results of (Alexiou & Sofoklis, 2009). This is in sharp contrast with the findings of Hassan & Bashir (2003) who suggested that per capita GDP does not have significant coefficient in profitability, either measured by ROE or ROA. Athanasoglou, Delis and Stakouras (2006) have analyzed the effect of selected set of determinants on banks profitability in the South Eastern European region over 1998-2002. It is found that banks' profits is not significantly affected by real GDP per capita fluctuations.

Revell (1979) introduced the issue of the relationship between bank profitability and inflation. He noted that the effect of inflation on bank profitability depends on whether bank wages and other operating expenses increase at a faster rate than inflation. The question is how mature an economy is so that future inflation is accurately forecasted to enable banks manage their operating costs. Bourke (1989) and Molyneux and Thornton (1992) found a positive relationship between inflation and bank profitability. A study by Athanasoglou, Delis and Stakouras (2006) found that inflation has a strong effect on profitability. The consumer price inflation positively related to profitability falls in line with the empirical evidence provided by Alexiou & Sofoklis, (2009). Contrary to the results of the aforementioned studies is that of Naceur (2003) who investigates the impact of banks characteristics, final structure and macroeconomic indicators on bank's net interest margin and profitability in Tunisian Banking Industry for the 1983 – 2000 period. Naceur (2003) also finds that inflation has negative impact on profitability.

Sayilgan and Yildirim (2009) investigates the relationship between the return on assets and the return on equity ratio for a sample of Turkish banks for the 2002-2007 time period using monthly data. The study suggested that profitability of the banking sector increases along with declining inflation rate. Ali, Akhtar and Ahmed (2011) also indicate that the consumer price index (CPI) is statistically significant and negatively associated with profitability (as measured by ROA) and this is in agreement with the findings of (Sayilgan & Yildirim, 2009) as indicated above. They however, find a positive but insignificant relationship between consumer price index and profitability (as measured by ROE).

### 3. Data and Methodology

In all, 30 Rural and Community Banks in Ghana were selected and analyzed, covering a period of 2006-2010. It must be indicated that all RCBs that have been part of the Ghana Club 100 within the period under consideration were purposely selected. Besides, for the selection of the RCBs, data availability through record keeping played a major role. It is on the premise above that the population specification and sampling was done. The data set takes the form of a 'panel', since it combines time series with cross section observations. The main data source for the study is financial reports of the rural banks covering the period, 2006-2010. The variables under consideration necessitate looking into financial statements, reports and notes and other performance indicators per the regulators' definition.

#### 3.1. Research Model

The dependent variable of this study is performance (as measured by ROA). Description of both dependent and independent variables and their proxies are depicted in the Table 1 below. It must be indicated that the model and the variables are adopted from previous literature which includes that of (Ali et al, 2011; Athanasoglou et al, 2008).

Symbols	Variables	Proxies	Expected sign +/-
ROA	ROA (Return on asset)	Net Profit/Total Assets	NA
CR	Credit Risk	Loan Loss Provision/Total Loans(CR)	-
LNTA	Size	Logarithm of Total Assets (LNTA)	+/-
LNTA <sup>2</sup>	Size Square	Logarithm of Total Assets (LNTA) <sup>2</sup>	-
CAP	Capital Adequacy	Equity/Total Assets	+/-
PC	Portfolio Composition	Total Deposits/Total Assets (PC)	+
OE	Operating Efficiency	Total Operating Expenses/Total Assets (OE)	-
GDP	Economic growth	Natural log of GDP (LNGDP)	+
CPI	Consumer Price Index	Consumer Price Inflation rate (CPI)	+/-

Table 1: Variable, Corresponding Proxies and Symbols

Regression Model: Performance (ROA):

$$ROA_{i,t} = \alpha_i + \beta_1 CR_{i,t} + \beta_2 LNTA_{i,t} + \beta_3 (LNTA)_{i,t}^2 + \beta_4 OE_{i,t} + \beta_5 CAP_{i,t} + \beta_6 PC_{i,t} + \beta_7 LNGDP_t + \beta_8 CPI_t + \mu_t + \varepsilon_{i,t}$$

Where:  $ROA_{i,t}$ : is return on assets for firm i at time t

$CR_{i,t}$ : is ratio of loan loss provision to total loans for firm i at time t

$LNTA_{i,t}$ : is natural log of total assets for firm i at time t

$(LNTA)_{i,t}^2$ : is the square of LNTA for firm i at time t

$OE_{i,t}$ : is operating efficiency for firm t at time t

$CAP_{i,t}$ : is the ratio of equity to total assets for firm i at time t

$PC_{i,t}$ : is ratio of total deposits to total assets for firm i at time t

$LNGDP_t$  is the natural logarithm of GDP for year t and

$CPI_t$  is Consumer Price Index for year t

$\alpha_i$  is the intercept,

$\beta$  is the coefficient,

$\mu_t$  is the control variables and

$\varepsilon_{i,t}$  error term.

#### 3.2. Variable Description

##### 3.2.1. Dependent Variable

The profitability variable is represented by Return on Asset (ROA). It is used as indicator of profitability in the regression analysis in this study because ROA along with ROE has been widely used in earlier research. Also, Gilbert (1984) and Molyneux (1993), after reviewing related literature, suggest that the only bank performance ratios that do not present measurement problems include ROA. Again, ROA emerges as the key ratio for the evaluation of bank profitability (IMF, 2002).

##### 3.2.2. Independent Variables

###### 3.2.2.1. Credit Risk (CR)

The ratio of loan loss provisions to total loans (LLP/TL) is incorporated as an independent variable in the regression analysis as a proxy of credit risk as conferred by Athanasoglou et al (2006) and Ali et al (2011). Changes in credit risk may reflect changes in the health of a bank's loan portfolio which may affect the performance of the institution. Theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, a negative relationship is expected between credit risk management and ROA.

### 3.2.2.2. Bank Size (NLTA)

In most finance literature, total assets of the banks are used as a proxy for bank size. Size of the bank can be a determinant of bank's position for the fact that it affects both the ease of access to liquidity and costs as well as ability of banks to diversify. This study therefore used bank size as explanatory variable and used natural logarithm of total assets as proxy for measuring bank size as used by (Athanasoglou et al, 2008; Hassan and Bashir, 2003).

### 3.2.2.3. Capital Adequacy (CAP)

The ratio of equity to total assets (CA) is considered one of the basic ratios for capital strength. It is expected that the higher this ratio, the lower the need for external funding and the higher the profitability of the bank. It shows the ability of bank to absorb losses and handle risk exposure with shareholder. Equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks (Berger, 1995; Bourke, 1989; Hassan and Bashir, 2003) cited in Alper et al (2011).

### 3.2.2.4. Portfolio Composition (PC)

Deposit to total assets is used to proxy portfolio composition. Deposits are the main source of banks funding and are the lowest cost of funds. The more deposits are transformed into loans, the higher the interest margin and profit. Deposits therefore have positive impact on profitability of banks and base on that this study expects positive relationship between profitability and portfolio composition.

### 3.2.2.5. Operating Efficiency (OE)

This study measures operating efficiency of banks as independent variable. Total operating expenses divided by total assets is used as proxy for measuring operating efficiency and this is in line with that of Ramlall (2009), Alexiou & Sofoklis (2009), Sufian & Habiullah (2009). This variable explains how well a bank workout its assets and liabilities internally in order to successfully improve their profitability. This study expects a negative relationship between profitability of rural and community banks.

### 3.2.2.6. Natural Logarithm of Gross Domestic Product (LNGDP)

It is a measure of the total economic activity and it is expected to have an impact on numerous factors related to the demand and supply for banks deposits and loans. Here the natural logarithm of GDP is used as the independent variable. According to the literature on the association between economic growth and financial sector profitability, GDP is expected to have a positive relation on bank profitability (Demirguc-Kunt and Huizinga, 1999). In this context, a positive relationship is expected between bank profitability and GDP development as the demand for lending is increasing (decreasing).

### 3.2.2.7. Consumer Price Index (CPI)

This measures the overall percentage increase in Consumer Price Index (CPI) for all goods and services. Inflation affects the real value of costs and revenues. The relationship between the inflation and profitability may have a positive or negative effect on profitability depending on whether it is anticipated or unanticipated (Perry, 1992). If an inflation rate is anticipated, banks can adjust interest rate in order to increase revenues than costs. On the contrary, if inflation rate is not anticipated, banks cannot make proper adjustments of interest rate that costs may increase faster than revenues. But most studies observe a positive impact between inflation and profitability (Bourke, 1989; Molyneux and Thornton 1992; Hassan and Bashir 2003, Alexiou & Sofoklis, 2009) and that positive relationship is expected in this study.

## 3.3 Model Diagnosis

Diagnosing the model is needed to establish whether the estimates of the coefficients are tenable and the extent to which the regression coefficients fitted in the model makes the model the best linear unbiased estimator of return to assets (profitability) of the RCBs in Ghana. For the purpose of this study, the model was tested to verify the existence or otherwise of Multicollinearity, Heteroskedasticity and Autocolleration. The significant presence of any of this would imply a violation of three key assumptions of Ordinary Least Square.

### 3.3.1. Multicollinearity Diagnosis

To test the independence of the explanatory variables the study used Pearson Correlation to test for correlation between the dependent variable as well the as the independent variables. More significantly, the test is run to check to what extent does the independent variables relate to each other. The Pearson correlation matrix posits that a correlation coefficient of 0.5 or less is more appropriate hence no presence of multicollinearity.

### 3.3.2. Heteroskedasticity Diagnosis

To test for the presence of heteroskedasticity, the Breusch-Pagan / Cook-Weisberg tests was employed. This test involves testing the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. In other words the alternative hypothesis states that, the error variances increase (or decrease) as the predicted values of Y increase. A large chi-square would indicate that heteroskedasticity was present, thus it indicates that the error term is a multiplicative function of the predicted values.

### 3.3.3. Autocorrelation Diagnosis

To test for the existence of autocorrelation or not, the Wooldridge test was employed. This module tested for correlations between errors. Specifically, it tests whether adjacent residuals are correlated, which is a violation of a regression assumption that the residuals are independent. In short, this module is important for testing whether the assumption of independent errors is tenable.

## 4. Empirical Results

### 4.1. Descriptive Statistics

The basic descriptive statistics of the variables are presented in Table 2. For each variable, the table shows mean, standard deviation, minimum and maximum values. In all, a total of 150 observations were presented for 30 rural and community banks covering a period of 2006-2010. On average, banks sampled have a return on assets (ROA) of 4.4% over the entire time period from 2006 to 2010. This means that the rural and community banks overall made return on assets a little below 5% individually. The standard deviation for ROA is 2.86% with minimum and maximum values of 0.15% and 19.5% respectively. When the mean of credit risk (CR) is 2.58%, minimum value is 0.10% with a maximum value of 9.62% and a standard deviation of 3.02%. Operating efficiency which is measured by the non-interest expenses/total assets has mean value of 13.4% and a standard deviation of 23%. The minimum and maximum values for this variable are 0.12% and 99% respectively.

The mean values for equity/total assets (CAP) and deposits/assets (PC) are approximately 15.37% and 73.10%, as against a standard deviation of 7% and 7.3% respectively. The minimum and maximum values for CAP are 4.2% and 75.4% and that of PC are 36.8% and 93% respectively. The indication here is that all rural and community banks are above the capital adequacy requirement of 10% by 5.37% while they are lending to the rate of 73.10%.

Natural log of total assets measuring bank's size amounts to 15.74% on average, while it varies between 12.74% and 17.35% with a standard deviation of 31.20%. The mean for the natural logarithm of GDP is approximately 10% with minimum and maximum values of 6.6% and 11.65% respectively while the standard deviation is 2.2%. In terms of inflation, when the mean is 13.3% minimum and maximum values amount to 8.6% and 18.1% with a standard deviation of 3.4%.

	ROA	CR	OE	CAP	PC	GDP	CPI	LNTA
Mean	0.044308	0.025772	0.133929	0.153659	0.735491	9.73094	0.132761	15.73849
Std. Deb.	0.028641	0.030205	0.230081	0.068873	0.073002	2.169738	0.034341	0.649021
Minimum	0.0015	0.001018	0.0012	0.0415	0.3676	6.6147	0.085864	12.7849
Maximum	0.195	0.096166	0.9895	0.7543	0.9292	11.6518	0.181462	17.3507
Obs.	150	150	150	150	150	150	150	150

Table 2: Summary Statistics. Source: authors' compilation from the banks financial statements

### 4.2. Tests for Multicollinearity

Correlation matrix between independent variables is presented in Table 3. As seen in the table, there are fairly low data correlations among most of the independent variables, except GDP and CPI, CPI and LNTA and LNTA and LNTA1. The high correlation between LNTA and LNTA1 is because of the fact that the latter is embedded in the former and they are the same. These fairly low correlation coefficients among most of the variables show that multicollinearity was not an issue in these estimations, as no two variables were highly correlated.

As shown in the table below, credit risk management (CR), operating efficiency (OE), portfolio composition (PC) and bank size (LNTA and LNTA2) has negative correlation with return on assets (ROA) whiles GDP and CPI which are macroeconomic variables have positive correlations with ROA.

	ROA	CR	OE	CAP	PC	GDP	CPI	LNTA	LNTA1
ROA	1.00								
CR	-0.332	1.000							
OE	-0.191	0.235	1.000						
CAP	0.416	-0.092	0.029	1.000					
PC	-0.233	0.117	-0.019	-0.282	1.000				
GDP	0.134	0.087	0.116	-0.015	-0.001	1.000			
CPI	0.261	0.011	0.085	0.026	0.024	0.470	1.000		
LNTA	-0.342	0.107	0.202	-0.199	0.239	-0.428	-0.535	1.000	
LNTA1	-0.339	0.102	0.205	-0.182	0.244	-0.437	-0.545	0.999	1

Table 3: Correlation Coefficients between variables  
Source: authors' compilation from the banks' financial statements

#### 4.3. Regression Results defy

It must be indicated that panel corrected standard errors estimation was used to run the regression in that, the diagnosis tests run indicated the presence of both Heteroskedasticity and autocorrelation which defiesthe assumptions of Ordinary Least Square (OLS). Panel standard corrected error estimation, therefore, better explains the regression model in this case since it corrects for the presence of these two anomalies.

##### 4.3.1. Credit Risk and Performance

As expected, the coefficient of the ratio of Provision for loan loss to total loans (CR), a variable in the regression model which is an indicator of credit risk, has a negative impact on profitability which falls in line with theory and literature as well. In addition, the variable is significant in explaining the variability in the return on assets of rural and community banks in Ghana, a result which is in agreement with that of Athanasoglou et al (2008), Miller and Noulas, (1997), Kaya (2002), Ali et al, (2011) even though contrary to the results of Naceur and Omran (2008) who found a significantly positive relationship between credit risk and profitability as cited in Sufian et al (2009).

The significantly negative impact that credit risk has had on the banks' performance is an indication that, RCBs have not been managing their credit risks very well leading to high rates of defaults on the part of borrowers. High rate of default coupled with high amounts of provisions for loan loss has directly reduced the profitability levels of the banks in the sector.

##### 4.3.2. Operating Expenses and Performance

The ratio of operating expense to total assets (OE), which provides information on the efficiency of the management regarding expenses relative to the asset, has a negative impact on profitability and it is a significant driver of rural and community banks' performance (profitability). The negative relationship is in agreement with the findings of Bourke (1989) cited by Sufien et al. (2008), and Krakah et al. (2011) who assert a significant and a negative relationship between the operating expenses ratio and profitability. The impact being negative and significant could be related to poor management of operational expenses leading to high amounts of expenditure which will directly reduce the net profit of the sample banks.

##### 4.3.3. Capital Adequacy and Performance

The coefficient of bank's capital adequacy level in year  $t$ , measured by the ratio of equity to total assets (CAP) in the same year has positive relationship with profitability (ROA). The positive relationship wholly corroborates the findings of earlier researchers (such as, Sayilgan and Yildirim, 2009; Goddard, Molyeux and Wilson, 2004; Kaya, 2002; Dietrich and Wanzenried, 2009; Naceur and Omran, 2008). Again, the variable is statistically significant in explaining the variation in the performance (ROA) of rural and community banks in the country. The significant impact that the variable has had on return on assets (ROA) of rural and community banks supports the argument that profitable banks remain well capitalized; or the view that well capitalized banks enjoy access to cheaper and less risky sources of funds which subsequently improve their profit margins. Thus, this finding reaffirms the assertion that well-capitalised banks face lower risks of going bankrupt, thereby reducing their cost of funding. The indication here is that, rural and community banks seems to have had improved capital positions and have taking advantage of such development to impact their performance positively.

##### 4.3.4. Portfolio Composition and Performance

The ratio of total deposits to total assets which represents portfolio composition (PC) of the banks is found to be negatively related to profitability but not statistically significant in explaining RCBs' profitability and this conforms to that of Kaya (2002), who indicates that deposits to total assets (portfolio composition) affect ROA negatively. The insignificant relation of portfolio composition (proxy by the ratio of total deposits/total assets) with profitability is also in accordance with that of (Naceur & Goaid, 2001; Al-Tamimi, 2005; Ali et al, 2011; Alper et al, 2011). Portfolio composition having insignificant relationship with performance shows that banks in the rural banking setting may have more deposits but not making the most out of these deposits.

##### 4.3.5. Firm Size and Performance

The natural log of total assets (LNTA) which is a proxy for banks size has a positive relationship but insignificant impact on the banks performance and this seems to support that of Athanasoglou et al (2008) who posit that the effect of bank size on profitability is not important. In effect, what they want to put across is that the estimated effect of bank size does not provide evidence of economies of scale in banking. The insignificant relationship could be that the rural and community banks havenot utilised their size to the level that can help them enjoy economies of scale. When the product of LNTA was squared, the relationship between size and performance became negative which is in linewith a priori restrictions however insignificant. Javid et al. (2011), in Pakistan, also posit that highertotal assets may not necessarily lead to higher profits due to the diseconomies of scale.

Unexpectedly, the impact of natural logarithm of grosses domestic products (LNGDP) on profitabilitywas negative and does not conform to the a priori restrictions. The negative relationship between the variable and profitability goes contrary to that of earlier findings by Sufien et al. (2008) and Alexiou & Sofoklis (2009), but it is in total agreement with that of Alper et al. (2011). Again, likethat of Alper et al. (2011), the variable is not highly significant value driver in the performance ofrural banks in Ghana.

During economic boom, one would expect people to access more funds for business expansionamong others and therefore banks are expected to make more profit as they lend more at a certainmargin. However, the situation per this study has been different in the case

of rural and community banks as the variable measuring gross domestic products shows a negative impact even though low. It is possible that, in times of economic boom, most people access funds more from the commercial banks which have a relatively low rate of interest as compared to the RCBs.

#### 4.3.6. Inflation and Performance

The results from this paper reveals that annual rate of inflation has a positive impact on profitability, and also a significant driver in the performance of rural and community banks in Ghana a result which is in agreement with that of Krakah et al, (2010). At soy (2007) also determines that ROA is affected by inflation rate positively. Here, the effect of inflation on bank profitability according to literature depends on the ability of bank managers to forecast inflation more accurately. The conclusion here therefore, is that RCBs have been factoring the element of inflation in their interest build-ups and that has helped them make more profits even as inflation goes up. This could be a justification for their relatively high rate of interest on loans.

The overall statistical significant value was found to be 0.0000, as shown by the probability of chi-square in Table 4, indicating that the model used is satisfactory and that all the coefficients in the model are different from zero. The coefficient of determination, R<sup>2</sup> which indicates the percentage of variation in the dependent variable that are explained by all the predictors in the model was 62.6%. This shows that about 37.4% of the variation in the performance of rural and community banks is due to all other key value drivers other than the independent variables that were considered in the model. In effect, about 37.4% variation in the performance of RCBs remains unexplained.

DEPENDENT VARIABLE: ROA				
	Coefficients	Std. Err.	z	p > z
CONSTANT	-0.5974	0.7287	-0.82	0.412
CR	-0.2310	0.0467	-4.95	0.000***
OE	-0.0248	0.0061	-4.04	0.000***
CAP	0.1360	0.0362	3.76	0.000***
PC	-0.0104	0.0332	-0.31	0.754
GDP	-0.0014	0.0008	-1.73	0.084*
CPI	0.1949	0.0777	2.51	0.012**
LNTA	0.0901	0.0941	0.96	0.338
LNTA1	-0.0032	0.0031	-1.04	0.297
R-SQUARED	0.6256			
WALD $\chi^2$ (8)	114.2			
PROB > $\chi^2$	0.0000			
NUMBER OF OBSERVATIONS	150			
NUMBER OF PANELS	30			

Table 4: Regression Results

\*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% respectively

## 5. Conclusion and Recommendations

The lack of empirical studies on the impact of credit risk management as well as other bank-specific and macroeconomic variables on performance (profitability) of rural and community banks in Ghana motivated this study. Thirty (30) RCBs across the country were selected for the period 2006-2010. Regression model having ROA as the dependent variable measuring performance was run to ascertain the determinants the banks' profitability in the country. That is, examining the effect of credit risk, capital adequacy, portfolio composition, bank size, operating efficiency, gross domestic product and inflation on the performance of RCBs.

The results obtained from the regression model show that RCBs are statistically affected by credit risk management when their performance is measured by Return on assets (ROA). Again, the operational efficiency among the rural banks is very poor and that has had a negative impact on their performance as they incur more non-interest expenses. The higher these expenses, the lower the profit becomes. From the statistical results, it has also been proved that capital adequacy which is proxied by equity/total assets is a significant key driver in explaining the performance of rural and community banks in the Ghana.

However, portfolio composition and firm size had no impact on the banks' performance (profitability) and therefore they are not key value drivers in explaining the variations in the performance of RCBs. Similarly, GDP is less significant factor in explaining the variation in the profitability of the banks. It must be noted however that the variable is inversely related to profitability per this study. Unlike GDP, another economic factor, inflation rate, in the economy over the period seems to have impacted profitability in a positive way showing how well managers in the sector are incorporating inflation in their price build-ups.

It must be noted that in both developed and developing economies, researchers have come out with different findings as they try to study factors (bank-specific and macroeconomic factors) that determine banks' performance (profitability) depending on the variables, period, and institutions considered. It would be more imperative therefore to carry out further studies within the rural banking sector to unearth and confirm the factors that really impact the sector's financial performance. Also, a qualitative aspect of how variables like credit risk is managed by the sampled banks can be carried out to report wholly on credit risk management practices in the sector.



Beyond the RCBs, other microfinance institutions such as the Savings and Loans companies (SLCs) could be used in examining the performance of microfinance institutions in the country.

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