

# The financial performance of rural banks in Ghana

## The generalized method of moments approach

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### Abstract

**Purpose** – Rural and community banks (RCBs) provide financial services to small enterprises in rural and sub-urban areas. The purpose of this paper is to examine their financial performance through a case-specific evaluation of a small bank situated in the northern part of Ghana.

**Design/methodology/approach** – The authors employed a triangulation method comprising relative ratio analysis, bivariate and generalized method of moments (GMM) techniques for the evaluation of the audited annual financial statements of the bank covering a period of 15 years.

**Findings** – The relative ratio analysis show that the bank's financial performance has generally been above the average of the rural banking industry. The bivariate analysis indicates that although the loans portfolio is positive, it is not properly fitted. That is, some of its loan portfolio deviates from the path of expectation. The GMM analysis indicates that its financial performance is significantly influenced by liquidity management, bank capital and size which have enhanced its expansion and intermediation to rural households and microenterprises. However, an increase in the government treasury bill rate has a declining effect on the bank's profitability.

**Practical implications** – The findings have significant policy implications for the management and supervision of RCBs. RCBs should deal with the spillover effects of the banking and MFIs' crisis by educating and re-assuring their customers of their financial integrity. Most importantly, they differentiate their services from the other financial institutions within the space of the rural financial architecture.

**Originality/value** – Majority of research into this area has focused heavily on large commercial banks. This research adds value to the literature by re-focusing the searchlight on the financial performance of small banks.

**Keywords** Ghana, Financial performance, Rural banks, GMM model

**Paper type** Research paper

### 1. Introduction

The recent global financial crisis has increased the intensity of the searchlight on the performance of commercial banks in Ghana. Whereas large commercial banks, either financially distressed or sound, have received significant attention from governments, regulators, academia and civil society into their financial viability, small banks such as rural and community banks (RCBs) have received little research into their financial performance in the face of the global financial meltdown and the banking crisis in Ghana. More importantly, when juxtapose to the fact that 23 RCBs were closed down in 2007, 70 MFIs were closed down in January 2016, and 108 more have been identified by the Bank of Ghana for closure, as well the disruptions of the economic and financial activities of a whole region (Brong Ahafo) by three MFIs[1], it becomes very imperative to delve into the financial health of rural banks and their ability to withstand the microfinance crisis.

Probing into RCBs' financial performance will not only provide answers and insight into the underlying context of some RCBs' financial distress, but most importantly it will provide

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lessons to repair the damage done to the public confidence by failed RCBs, MFIs and even large commercial banks. In order for us to do an in-depth inquiry and get a firm grip on the context-specific issues underlying RCBs performance, this paper has employed a case study approach into the financial operations of Naara Rural Bank (NRB). In particular, the research seeks to determine the soundness of NRB's financial performance in the face of the MFIs' financial crisis.

Our findings indicate that NRB has performed quite creditably above the industry average. Its performance is specifically driven by strong liquidity management, rural expansion and improved intermediation to households and microenterprises. However, a rise in treasury bill (T.bill) rate tends to decrease its profitability possibly due to high cost of deposits arising out of the contagion effects of the MFIs' financial crisis. The spillover of the crisis has certainly reduced MFIs' depositors' confidence and thus most of them prefer to invest their funds in T.bills to safeguard their investment and peace of mind. Thus, financially healthy RCBs and MFIs need to educate and re-assure the public about their financial soundness. It also implies that the spillover of the crisis and the possible preference for T.bills by customers as a means of safeguarding their investments can exacerbate the government clouding out of the private sector from the credit market.

The rest of the paper has a review of the relevant literature in Section 2; an overview of the rural banking industry with special attention on NRB at Section 3; how the research was done is captured in Section 4; and the discussion of the results and policy recommendations have been set out in Sections 5 and 6, respectively.

## 2. Literature review

Harker and Zenios (1998) define the performance of financial institutions as an economic performance which is measured in both short and long term by a number of financial indicators and ratios. The financial indicators and ratios are in turn influenced by internal or bank-specific factors and external factors. In the case of rural banks, the external factors can be re-categorized as macroeconomic and local socio-economic conditions. The findings of Mushonga *et al.* (2018) lend support to this by indicating that the performance of small banks is mostly inhibited by internal more than external factors. They suggest that the future of the industry in South Africa will thrive on technology, culture shift, people and environmental policy.

Yaron *et al.* (1998) delved into three active Asian RCBs which have achieved leadership in the provision of financial services at unprecedented levels to the millions of rural households and microenterprises. Zaman (2004), on the other hand, conducted an in-depth study into how four RCBs in Bangladesh have made great strides in financial intermediation. Both Zaman (2004) and Yaron *et al.* (1998) summarized the factors underpinning effective financial performance in RCBs as visionary leadership, management autonomy in formulating operational policies, efficient staff recruitment and remuneration systems, innovative and technology-driven products, flexible low-cost delivery system and keen supervision of loan portfolio, effective information management system that promotes proper planning and enhances management ability to control operational expenses and ensures adequate internal control systems. The crucial influence of microeconomic stability and a conducive regulatory environment was also alluded to.

Aboagye and Otioku (2010) contended that for RCBs to continue in business, they must make enough money through lending and fiduciary activities or services to cover their operational and financing costs, plough back retained earnings to finance future operations. This will enhance not only the survival of RCBs but their growth and profitability. The position of Aboagye and Otioku (2010) has earlier been alluded to by Naceur (2003) that loans have a significant positive relationship with profitability. That is, bank loans generate interest income and are thus expected to have a positive impact on banks' profitability. With respect to the relationship between liquidity and banks profitability, Buyinza (2010)

posited that, liquidity has a significant relationship with profitability. However, this relationship is a negative one.

Another variable which previous empirical studies have identified as having an impact on banks' profitability is size as represented by total assets. However, the available evidence indicates that, the relationship between total assets (size) and banks' profitability is an inconclusive one. For instance, Berger *et al.* (1987) argued that a bank can achieve cost savings as its size increases. The findings of Berger *et al.* (1987) lend support to that of Shaffer (1985). Specifically, Shaffer showed that as a bank's size increases, significant economies of scales are achieved which enhances financial performance. However, other studies have found a negative relationship between size and bank's financial performance, for example, Naceur (2003) revealed that large banks tend to have lower levels of profit as a result of inefficiencies associated with the diseconomies of scale. Buyinza (2010) has confirmed the findings of Naceur (2003) by indicating that bank size is negative and significantly correlated with profitability.

Similarly, Marwa and Aziakpono (2016) argued that size can be a double-edged sword because a smaller size does not spur the economies of scale nevertheless growth beyond a certain threshold can also be self-destructive. In particular, they posited that whereas small credit unions in Tanzania suffer from lack of economies of scale, the larger ones are inhibited by diseconomies of scale.

Wong *et al.* (2007) outlined bank consolidation, cost efficiency and the ability of a bank to take on more risk as the key determinants of banks' profitability, whereas market structure, as measured by market concentration, and size were found to have a negative association with profitability. On the other hand, Sawada and Okazaki (2006) has a slightly different opinion as his findings showed that policy-oriented consolidation has a positive impact on deposits, though it may have a declining effect on bank's profitability. Clair (2004) established that proper management of lending activities, credit quality and expense control enhance bank's financial performance. The study also found that interest rates may place a significant downward pressure on capital and liquidity, and that non-performing loans (NPL) erode profits. As indicated by Robison and Barry (1977), liquidity challenges of rural banks are mainly due to loan delinquencies and default as well as low levels of deposits. They concluded that the level of asset quality and availability of liquidity may help to reduce the risks of rural banks. Silva *et al.* (2017) also suggest that efficient co-operatives are conservative and thus have less risky activities and lower impairment of assets.

Delis and Papanikolaou (2009) adopted a semi-parametric model to evaluate the impact of bank-specific factors, industry-specific and macroeconomic variables on banks' efficiency and performance. They discovered that bank size is statistically significant and has a direct relationship with banks' efficiency and performance. Similarly, Kosak and Zajc (2006) researched into the cost efficiency of banks as a parameter of growth and improved financial performance in the banking sector. Their findings were consistent with that of Delis and Papanikolaou (2009). In particular, they found a direct association between financial development and banks' cost efficiency. Using efficiency–profitability matrix, Marwa and Aziakpono (2014) also found that only 12 percent of credit unions are best performers.

Hassan and Bashir (2003) showed that given a stable macroeconomic environment and improved financial market system, high capital and improved loan-to-asset ratios have positive effects on banks financial performance. In Asia, Malhotra (2002) delved into the impact of location on the financial performance of regional rural banks in India. He concluded that geographical location of rural banks is not a limiting factor of rural banks' performance.

In another study of the Indian rural banking industry, Ibrahim (2010) evaluated the financial performance of regional rural banks (RRBs) in specific areas such as number of

agencies or branches, district coverage, deposits mobilization, loans portfolio and investments. The study concluded that bank consolidation has enhanced the financial performance of RRBs. This has facilitated growth in branch network, the closure of underperforming RRBs and an increased coverage of the number of districts served by the RRBs. Again, total capital funds have increased tremendously after amalgamation took place in the years 2005–2006. He further discovered that credit–deposit ratio has grown over the years indicating a remarkable deployment of credit facilities by RRBs in rural areas.

### 3. An overview of Naara Rural Bank

The rural and community banking industry has unique characteristics in terms of ownership structure, management structure and operations features. Unlike the large commercial banks, RCBs are community-owned and community-run unit banks. That is, they are licensed to operate in a specific locality or district[2] (Aboagye and Otioku, 2010). This gives them geographical advantages in terms of cultural orientation and access to first-hand information about the economic conditions of households and microenterprises within the locality. This enables RCBs to resolve some of the challenges link to information asymmetry and thus facilitate the proper management of moral hazards and adverse selection. The major adverse effect of this restriction to a locality is lack of portfolio diversification and, therefore, a co-variate risk within a certain district can destabilize the RCBs within that district.

The Association of Rural Banks (ARB), Apex Bank, is the umbrella body of all the RCBs in Ghana. It coordinates the payments and cheques clearing systems among RCBs, and local and international money transfer networks across RCBs. It also organizes capacity-building programs for the various managements of RCBs in Ghana. It liaises with the Bank of Ghana to license, supervise and regulate all RCBs. The main roles of RCBs are (Bank of Ghana, 2006):

- (1) to mobilize savings in the rural communities and channel them into the provision of credit to rural microenterprises, agro-based firms and cottage industries;
- (2) monetize the rural communities by way of inculcating in rural folks the culture of formal banking; and
- (3) serve as tools for the growth and development of microenterprises in the rural communities to facilitate rapid rural industrialization for the overall denhancement of the national economy.

This paper attempts to delve into the financial performance of RCBs against the backdrop of their mandate as stated above through a case study approach.

Since the inception of the rural banking system in 1976, some progress has been attained. Currently, there are 137 rural banks operating in the country. The sector has enhanced rural financial intermediation quite creditably. Rural banks are known to be the principal suppliers of funds in rural communities and their branch network is about 50 percent of the banking outreach in Ghana (IFAD, 2008). The sector has consistently mobilized an average of 5 percent share of the total[3] deposit of the banking industry. Its rural deposit mobilization has grown from 15 percent in 2012 to 24 percent in 2015. The sector's loans and advances as a percentage of the total banking industry's loans portfolio has averaged around 4 percent and its loan portfolio to the rural economy has inched up to 12 percent in 2015. Its asset size also grew from 13 percent in 2014 to 21.5 percent in 2015. This may be an indication that its rural presence is also very significant. Table I presents the key financial intermediation indicators of the banking industry of Ghana. Apart from financial intermediation, RCBs provide other services such as microinsurance distribution (Akotey and Adjasi, 2014) local and international money transfer, mobile banking to rural households.

Despite the general positive outlook of the sector indicated in Table I, a review of their individual financial performance indicates a mixed outcome. As at June 2007, 23 out of the 145 RCBs have been closed down (Aboagye and Otieku, 2010) due to the reasons identified by the Bank of Ghana as management incompetence, embezzlement and fraud, negligence and ineffective board of directors, inefficient accounting procedures, non-compliance with regulations in granting credits, persistent operational losses, poor loan recovery and corruption, low deposits mobilization, use of unqualified staff, non-submission of prudential returns, high unearning assets and high non-performing credit portfolios.

Others have performed creditably and have thus been admitted into the prestigious Ghana Club 100. NRB established in 1981 is one of the few rural banks in the Upper East Region of Ghana which have performed quite remarkably despite the global financial crisis. It has a vision of being the most efficient rural bank and leading poverty reduction agent in Northern Ghana. It aims to accomplish its vision through the provision of innovative products, the usage of modern technology, well-trained and motivated staff who are proactive to customers' needs. It currently operates through four branches/agencies with its headquarters at Paga. The branches/agencies are located at Bukere, Sirigu, Navrongo and Chiana.

A review of its annual reports from 2000 to 2014 indicates that the net profit recorded an average yearly growth of 34 percent. The return on shareholders' investment also showed a steady growth of 29 percent on average. In addition, the bank recorded 81 percent growth in its loans portfolio. Much of its loan portfolio is advanced to microenterprises for rural industrialization – a pre-requisite for the economic growth and development of the rural areas.

In 2010 the Efficiency Monitoring Unit of ARB Apex Bank recognized NRB as the best rural bank in maintaining satisfactory cost–income ratio. In 2013, it was also adjudged the 27th (out of 136) best rural bank in Ghana in terms of amount of deposits mobilized.

Despite the steady growth in its financial performance, it had challenges such as NPL, declining capital adequacy ratio (CAR), competition from large commercial banks, as well as the contagion effects of the MFIs' crisis which have restricted deposits and profits levels. Competition from telcos operating mobile money transfer has also adversely affected the levels of profits that most RCBs generate from local money transfer.

## 4. Methodology

### 4.1 Data sources

The audited financial statements of NRB for a period of 14 years (2000–2014) were used for this study. This period was chosen because of data challenges. Nevertheless the chosen data set covers the time period of the global financial crisis and also the period during which

**Table I.**  
Financial  
intermediation  
indicators of the  
banking sector of  
Ghana (GHS millions)

Financial intermediation indicators	DMBs				RCBs				MFIs <sup>a</sup>		
	2012	2013	2014	2015	2012	2013	2014	2015	2013	2014	2015
Loans and advances	11,686.9	15,442.3	22,212.7	27,094.7	648.5	716.8	777.5	871.6	177.7	481.1	551.7
Deposits	19,581.1	23,331.7	32,413.8	41,258.8	1,185.6	1,372.5	1,604.5	1,993.4	94.3	520.6	719.5
Investments	7,493.5	10,905.3	11,875.3	14,289.7	461.2	537.7	649.7	913.9	n/a	59.2	120.6
Assets	27,237.1	36,169.9	51,445.0	63,303.7	1,524.0	1,852.9	2,099.5	2,551.5	316.2	958.8	1,248.9

**Notes:** <sup>a</sup>The 2012 data for the MFIs are not available. DMBs, deposit money banks represented by the large commercial banks; RCBs, rural and community banks; MFIs, microfinance institutions  
**Source:** Bank of Ghana Annual Reports (2013, 2015a)

many banks including 23 RCBs and some MFIs were closed down due to financial distress. Thus, the analysis covering this period will enable us to ascertain the financial resilience or otherwise of NRB.

#### 4.2 Data analysis

A triangulate analytical procedure comprising ratios, bivariate and generalized method of moments (GMM) regressions were used to delve into NRB's financial health and the drivers of its performance.

*Financial ratios.* Financial ratios enable analysts to deduce meaningful relationships between two financial values (Brigham and Ehrhardt, 2002; Reilly and Brown, 2006) and this provides essential information about a firm's financial strategy and structure (Reilly and Brown, 2006) as well as a sound basis for evaluating its financial performance. It is, however, noteworthy that "an individual ratio has little value except in relation to comparable ratios for other entities. That is, only relative financial ratios are relevant" (Reilly and Brown, 2006). Hence, we have used relative ratio analysis for the financial performance evaluation of NRB. The relative ratio analysis consists of time-series analysis – to estimate the time-varying effects of NRB's performance to determine whether it is progressing or declining; industry comparative analysis comprising comparison with its major competitors within the rural finance industry; and cross-sectional analysis in relation with the nationwide rural banking industry.

Two bivariate analytical techniques – scatter graphs and bivariate regression – were used to estimate the separate effects of each variable on NRB's financial performance. This technique helps us to isolate the effects of each variable on NRB's performance. Thus, we are able to identify the variables which are most important for explaining NRB's financial soundness.

However, the variables do not operate in isolation, but affect the bank's performance concurrently; we thus need a model to account for the combined effects of the variables on NRB's performance. The performance of a company can also be affected by certain unobservable factors generated by the top management, employees or even customers. These unobservable factors create endogeneity problems and restrict the ordinary least squares (OLS) from yielding efficient consistent estimations. Thus, we have adopted Hansen's (1982) GMM model to control for endogeneity bias and measurement error which the OLS cannot resolve efficiently. See Greene (2003) and Wooldridge (2002) for information on GMM. The GMM model is also good for handling the challenges associated with our relatively short period of data set.

The basic model is:

$$y = x'\beta + \mu, \quad (1)$$

where  $y$  is the dependent variable,  $x'$  represents the independent variables,  $\beta$  indicates the co-efficient of the parameters and  $\mu$  is the error term. But  $E(x\mu) \neq 0$ , because the error term,  $\mu$ , correlates with some of the independent variables. Thus, the OLS is not the appropriate estimator. The GMM corrects this problem by using the independent variables as instruments to estimate the model consistently and efficiently. In this case, the instruments,  $z$ , should satisfy three conditions: it should not correlate with the error term; but should correlate with the independent variables sufficiently and finally, there should not be perfect collinearity between the instruments (StataCorp, 2009). The empirical model estimated through the GMM technique for this paper is as follows:

$$y_i = \beta_0 + \sum_{m=1}^m \beta_m int_i + \sum_{n=1}^n \alpha_n ext_i + \mu_i, \quad (2)$$

where  $int_i$  and  $ext_i$  are internal and external factors that affect the financial performance of NRB. They are further decomposed into the following equations:

$$int_i = \beta_0 + \beta_1 liq_i + \beta_2 lon_i + \beta_3 npl_i + \beta_4 siz_i + \beta_5 bcap_i + \beta_6 lev_i + \beta_7 exp_i, \quad (3)$$

$$ext_i = \beta_0 + \beta_1 tbill_i + \beta_2 inf_i, \quad (4)$$

where  $y_i$  denotes financial performance and it measures the return on assets (ROA). That is the net income returned on each cedi of assets. ROA is widely used by many researchers (e.g. Buyinza, 2010; Naceur, 2003; Haron, 2004; Ramlall, 2009; Athanasoglou *et al.*, 2008; Javaid *et al.*, 2011) to measure overall profitability from investment in assets. Higher rates of ROA are desirable.  $liq_i$  denotes the liquidity position of the bank. It is the current assets divided by current liabilities. That is, its ability to meet short term claims as they fall due. In addition, it indicates the capacity of the bank to meet depositors demand for withdrawals. Most importantly, it helps a bank to assess its strength in avoiding “bank-run.”  $lon_i$  denotes the annual loan portfolio of the bank. It is also an indicator of financial intermediation as it measures the total loan advanced to customers annually. It is measured by the natural log of the total loans per annum.  $npl_i$  denotes non-performing loans. NPL is the total loan default by debtors of the bank per year. It is a credit risk management indicator as it measures loan losses such as impaired loans and bad debts of the bank.  $siz_i$  denotes total assets. It is measured as the natural log of the total current and non-current assets of the bank per year. Theoretically, size in the form of earning assets has a positive relationship with profitability, however high levels of unearning assets can have adverse effects on profitability. Hence, the effect of size on profitability is an empirical puzzle.  $bcap_i$  is a measure of the shareholders’ fund. Bank capital is very crucial not only for regulatory purposes but for the avoidance of bank failure during periods of financial crisis. It also affects the shareholders’ return through the equity multiplier. Hence, it is expected to have a positive association with financial performance.  $lev_i$  denotes the effects of leverage in the form of long-term liabilities on the bank’s financial performance.

The external variables are represented by two macroeconomic factors, inflation and the annualized interest rate on the government’s T.bill. The error term is  $e$ .

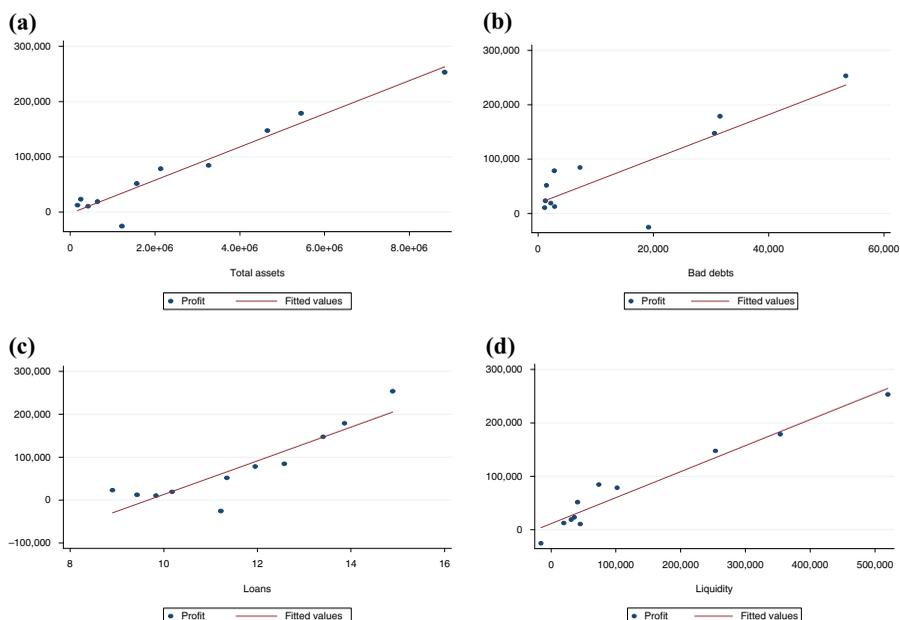
## 5. Results and discussion

### 5.1 Bivariate analysis

In a two-stage approach, this analysis deals with the individual effects of the key variables on NRB’s financial performance. In the first stage, four scatter diagrams were ran (Figures 1(a)–(d)) to provide a pictorial effects of loans, bad debt, liquidity and total assets on its profitability. Whereas total assets and liquidity have a near perfect fitted values and positive associations with NRB’s profitability, the loans portfolio though positive is not properly fitted. That is, some of its loan portfolio deviates from the path of expectation and hence do not add much to profitability. This finding is confirmed by the relatively low adjusted  $R^2$  of 78 percent for loans as against 94 and 92 percent for liquidity and total assets, respectively.

Ranking the results of the bivariate regression by adjusted  $R^2$  indicates that liquidity has the highest influence on NRB’s financial performance. The other relatively important variables are total assets and expenses. The result of the bivariate regression is presented in Table II.

Despite the analytical appeal of the bivariate technique in simplifying the analysis, it does not account for the simultaneous influence of the variables nor the effects of endogeneity bias, therefore we have included a GMM model to deal with these limitations.



**Notes:** (a) Effects of total assets on net profit; (b) effects of bad debts on net profit; (c) effect of loans on net profit; (d) effect of liquidity on net profit

**Source:** Authors' constructions based on Naara Rural Bank's Financial Statements, 2000–2010

**Figure 1.**  
Bivariate diagrams

The results of the GMM estimation and the OLS have been presented in Table III. Even though the co-efficients of each variable under the OLS are the same as that of the GMM, their levels of statistical significance are relatively weaker than those under the GMM model. This is due to the inability of the OLS model to resolve the challenges of unobserved variables, measurement errors and endogeneity bias. Thus, our preferred results are those under the GMM model.

From Table III, liquidity (LIQ) is positive and significant at 1 percent significance level. This confirms the bivariate findings that the bank's liquidity management is robust and thus it derives more benefits from its investment in short-term instruments. This is in support of the theory that banks will usually lend on a short-term basis in order to increase profitability but contradicts Buyinza's (2010) finding that liquidity reduces profitability. However, in order for rural banks to have real positive impacts on the development of their catchment areas it is imperative that they lend on a long-term basis to microenterprises.

Bank capital is also positive and statistically significant. Bank capital enables banks to open new branches/agencies, finance bank's technological operations to spur its customer base and also fund certain long-term loans. These activities, most of which are financed from the bank's capital, add economic value to the bank leading to growth in its profitability. It also implies that well-capitalized banks have the capacity to absorb loan losses and thus face lower risks of experiencing financial distress. This is in line with the theory that bank capital affects returns and prevents bank failure (Mishkin, 2007).

Similarly, rural banking intermediation functions, captured by total loans as well as rural banking expansion, measured by total assets were found to have positive and significant effects. This implies that the continual mobilization of funds within rural communities and the expansion of rural banking to those previously excluded from the formal financial sector

**Table II.**  
The bivariate  
regression results

Variable	Fin_Perform	Fin_Perform	Fin_Perform	Fin_Perform	Fin_Perform	Fin_Perform	Fin_Perform
Liquidity	0.4877 (0.000)***						
Loans		39,280 (0.000)***					
Total assets			0.0301 (0.000)***				
NPL				-606,670 (0.035)**			
Expenses					0.2707 (0.000)***		
Leverage						1.4563 (0.096)*	
Inflation							-413,722.2 (0.278)
Constant	11,115 (0.207)	-379,778 (0.001)***	-2,341 (0.819)	128,367 (0.002)***	-7,427 (0.494)	48,803 (0.107)	14,996.9 (0.055)
R <sup>2</sup>	0.95	0.80	0.93	0.40	0.93	0.27	0.129
Adj. R <sup>2</sup>	0.94	0.78	0.92	0.34	0.92	0.20	0.032
F_Statistic	0.000***	0.002***	0.000***	0.034	0.000***	0.09	0.277

Notes: \*\*\*, \*\* Significant at 10, 5 and 1 percent respectively

Source: Authors' computation based upon Naara Rural Bank Financial Reports

ROA	GMM estimation		OLS estimation	
	Coeff.	p-value	Coeff.	p-value
<i>Internal factors</i>				
Liquidity	0.6387	0.000***	0.6387	0.012**
Loan advances	0.0703	0.000***	0.0703	0.014**
NPL	0.1074	0.000***	0.1074	0.047**
Size	0.0066	0.000***	0.0066	0.186
Expenses	-1.41e-06	0.000***	-1.41e-06	0.025**
Bank capital	1.04e-06	0.000***	1.04e-06	0.029**
Leverage	1.65e-07	0.000***	1.65e-07	0.052*
<i>External factors</i>				
Inflation	0.5287	0.000***	0.5287	0.009**
Treasury bill rate	-0.8780	0.000***	-0.8780	0.020**
Constant	-1.3034	0.000***	-1.3034	0.023**

**Notes:** (For the OLS Estimation:  $R^2 = 0.9999$ ; Prob.  $> F = 0.0034$ ). \*, \*\*, \*\*\*Significant at 10, 5 and 1 percent levels, respectively

**Source:** Authors' analysis based on the financial statements of Naara Rural Bank

**Table III.**  
The result of the  
GMM model

can help stimulate more economic activities within rural communities, and hence lead to the improvement in the standard of living and welfare of rural dwellers. Whereas this finding confirms the positions of Shaffer (1985), Berger *et al.* (1987) and Marwa and Aziakpono (2016), it contradicts the claims of Buyinza (2010) and Naceur (2003).

Even though theoretically, we expect NPL to decrease banks' profitability, the finding here shows otherwise. This may point to two issues: the bank may be passing on the cost of bad debts on previously approved loans as margins on the price of new loans to new customers. This approach is not an efficient credit risk management system and certainly not helpful to genuine borrowers. On the other hand, it may also mean that the bank's credit risk management unit has an effective recovery system for retrieving bad and doubtful debts. It will, however, be helpful to interrogate this issue further through a qualitative research technique. Our finding lends support to the results of Afriyie and Akotey (2013) and Hosna *et al.* (2009), but contradicts that of Clair (2004) and Achou and Tenguh (2008).

The two external factors, inflation and government T.bill rate, have significant association with NRB's financial performance. Whereas the effect of the general price level measured by inflation is positive, that of the T.bill rate is surprisingly negative. During periods of high T.bills rate, the bank is forced to increase the rate it pays on fixed deposits and on its borrowings from other banks. Customers' deposits also decline because the high T.bill rate becomes more favorable to some customers. Another possible reason may be the contagion effects of the MFIs' financial crisis which have reduced the confidence of some depositors in the financial system. Thus some depositors may prefer to invest their funds in T.bills to safeguard their investment and peace of mind. Although the bank also invests in T.bills, the benefit during such periods seems to have been dwarfed by the negative consequences. The possibility of the spillover effects connected to this finding is, however, limited by the study's scope and data challenges.

## 5.2 Ratio analysis

*Profitability ratios.* One of the objectives of the study is to examine the bank's financial performance in terms of its income, expenditure and profitability trends over the period. Primarily, banks are run to make profit in order to keep their going concern alive. Besides this, shareholders expect to be paid dividends when necessary and other investors

(debt holders) expect interest payment to be made on time. Therefore, profitability ratios of the bank were required to inform management, potential investors, shareholders, the general public and other stakeholders about how well the bank is doing. In terms of the bank's ROA, performance was high (6.75 percent) in the year 2000. The subsequent year (2001) had a poor performance of 0.01 percent. From 2002 to 2010, performance ranged from negative 2.07 percent to positive 3 percent.

The bank's ROE, which was 45 percent in 2000, recorded its highest performance of 49 percent in 2001. There was, however, a significant drop in the subsequent years resulting in negative 43 percent in 2004. After the 2004 challenges, its financial performance witness a remarkable improvement as it recorded a 30 percent return on shareholders' investment. Altogether, the trend of both the ROA and ROE indicate a typical U curve or a three-stage movement of high-low-high. Interestingly its ROE from 2012 to 2014 has witnessed a persistent decline since the start of the MFIs' crisis. Although a direct link may not be established between the MFIs' crisis and Naara reduced performance during the crisis period, a possible contagion effect might have influenced the decrease in its ROE.

It is noteworthy that between the periods 2006 and 2010 (see Table V), NRB's ROE was twice more than the average of the RCBs' industry. Its ROA within the same period was also far better than the national average. Whereas it recorded a positive ROA of 0.54 percent, the industry average was an abysmal negative 0.57 percent. The key financial indicators of both NRB and the RCBs' industry have been calculated and presented in Tables IV and V, respectively.

*Liquidity ratios.* Liquidity ratios are used to assess the capacity of an institution to meet its short-term debt obligations. Liquidity challenges can lead to bank run due to multiple or panic withdrawals, bank failure and closure. Our analyses indicate that the bank's average liquidity position over the study period is 1.08. Although this may reflect a sound solvency status, its primary and secondary liquidity position as defined by Bank of Ghana[4] is less than the RCBs' industry average by 10.81 percent (see Table V).

*Capital adequacy ratio.* The management of bank capital is very crucial because it has a direct effect on the minimum regulatory capital, the return to equity holders and the prevention of insolvency (Mishkin, 2007). NRB's CAR is significantly higher than the 10 percent minimum requirement of the Bank of Ghana. Nevertheless, its CAR and the

Year	ROE	ROA	Liquidity
2000	0.45	0.07	1.14
2001	0.49	0.09	1.18
2002	0.18	0.02	1.12
2003	0.26	0.03	1.05
2004	-0.43	-0.02	0.99
2005	0.46	0.03	1.03
2006	0.45	0.04	1.05
2007	0.33	0.03	1.02
2008	0.38	0.03	1.06
2009	0.30	0.03	1.07
2010	0.30	0.03	1.06
2011	0.40	0.04	1.11
2012	0.29	0.03	1.09
2013	0.28	0.03	1.12
2014	0.27	0.04	1.15
Average	0.29	0.04	1.08

**Table IV.**  
Key financial  
indicators of Naara  
Rural Bank

**Source:** Authors' analysis based on the financial statements of Naara Rural Bank

CAR per return are not just below the industry average but the CAR in particular has recorded a consistent downward trend since 2007. It will, therefore, be very helpful for NRB's management to initiative proactive actions to curtail its continuous decline. Table VI presents the capital adequacy indicators of NRB and the nationwide network of RCBs from 2006 to 2010.

### 5.3 Financial intermediation efforts of Naara Rural Bank

Its financial intermediation indicators are above the national average. In particular, its deposits, loans and advances have been consistently above the average of the RCB industry. Its size measured by the total assets also exceeds the average of the nationwide network of RCBs.

These findings may imply that NRB has done quite creditably in the mobilization of savings from surplus units and the allocation of credit to rural households and microenterprises for investments. The financial intermediation indicators and total assets are presented in Figures 2–4.

## 6. Conclusions and policy recommendations

This study shows that there is a significant relationship between financial performance and bank-specific factors such as bank capital, loan advances, liquidity and macroeconomic factors such as inflation and T.bill rates. The study concludes that the financial performance of NRB has been stable over the past fifteen (15) years. Its financial performance is above the average of the nationwide network of RCBs. However, the contagion effect of the MFIs' crisis which has compelled some customers to divert their deposits into T.bills seems to have affected its performance adversely especially during periods of increasing T.bill rates.

Ratio	Naara Rural Bank	RCB industry average
Return on equity (%)	5.09	2.48
Return on asset (%)	0.54	-0.57
Return on earning assets (%)	0.63	0.26
Net worth per return (GHS)	485,700	521,633
Capital adequacy ratio (CAR, %)	14.62	17.90
CAR per return (%)	14.60	17.90
Non-performing loans (%)	0.03	1.82
Expense per income (GHS)	66.10	92.72
Liquidity (primary and secondary, %)	51.98	62.79

**Source:** Bank of Ghana data on RCBs, 2006–2010

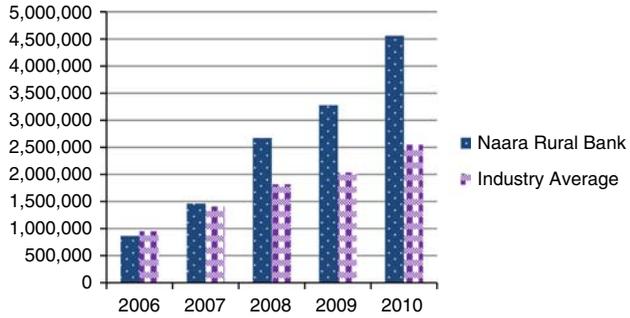
**Table V.**  
Five year (2006–2010)  
averages of key  
performance  
indicators

Year	Capital adequacy ratio (CAR, %)		CAR per return (%)	
	NRB	RCB industry	NRB	RCB industry
2006	15.59	12.77	15.59	12.77
2007	15.14	19.70	15.14	19.70
2008	13.77	18.26	13.77	18.26
2009	15.05	19.75	15.05	19.03
2010	13.56	19.03	13.46	19.03

**Source:** Bank of Ghana data on RCBs, 2006–2010

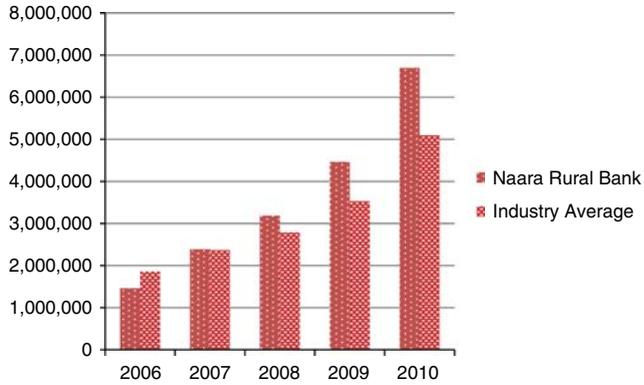
**Table VI.**  
Capital adequacy  
indicators, 2006–2010

**Figure 2.**  
Comparison of loans  
of NRB with industry  
average



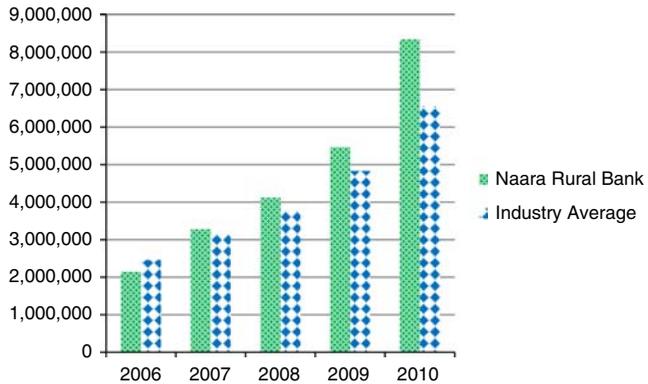
**Source:** Authors' construction based on Bank of Ghana data on RCBs

**Figure 3.**  
Comparison of  
deposits of NRB with  
industry average



**Source:** Authors' construction based on Bank of Ghana data on RCBs

**Figure 4.**  
Comparison of assets  
of NRB with industry  
average



**Source:** Authors' construction based on Bank of Ghana data on RCBs

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In line with the findings of the study and for the bank to continue to survive through growth and profitability, we recommend the following to NRB:

- (1) The bank should intensify its loan screening and monitoring activities to increase the loans recovery rate. It can improve upon its loan recovery rate by designing group lending models. The group lending schemes can be designed along the lines of ROSCAS, *susu* and *nnobua*. These traditional/informal financial groupings have inbuilt peer and social monitoring systems which can reduce moral hazards, adverse selection, information asymmetry and hence reduce loan delinquencies.
- (2) Individual loans should be secured by microinsurance products and marketable securities so that in the event of default, such securities can be sold to defray the debt.
- (3) The bank may need to conduct qualitative research into the trend of its NPL and the effects of the T.bill rate on its profitability.
- (4) The prudential measures should be tightened to prevent the decline in the CAR.

### 6.1 Policy recommendations for the RCB sector

The findings are also very essential for policy guidance. A raise in the minimum capital of RCBs will enhance their capacity to mitigate the likelihood of losses that interrupt rural financial intermediation and triggers RCBs' failures. Also, increasing the capital requirement will equip rural banks to finance bigger projects. It is, therefore, interesting that the Central Bank has decided to increase the regulatory capital of RCBs.

The new regulatory capital has a transition period of three years during which RCBs are required to raise their capital to GHS300,000 (\$75,000) by December 2015 to GHS500,000 (\$125,000) by December 2016 and to GHS1,000,000 (\$250,000) by December 2017 (Bank of Ghana, 2015b). Although the raise in the regulatory capital is good, the transitional arrangement should be done carefully to avoid high bank consolidation and the folding up of the relatively smaller RCBs in the remotest parts of the country. A high consolidation and mergers due to the new capital requirements may compel some RCBs to reduce their rural presence.

Even though RCBs were set up to serve the rural population, a critical review of their branch network shows a greater movement of many RCBs to urban and sub-urban centers to the detriment of the rural areas. This trend is likely to defeat the original idea underlying the rural banking concept. It is, therefore, imperative that certain policies such as the tax incentive that exempt rural banks from corporate tax for ten years should be revised to focus solely on those banks which are predominantly rural in financial intermediation and operations.

The recent universal banking and microfinance crisis that Ghana experienced has shaken the confidence of the general public not only in those specific universal banks and MFIs but in rural banks as well. This negative spillover effect can reduce not only the deposits and savings rate that RCBs mobilize from rural households but it can destroy the whole financial system. Hence RCBs under the auspices of ARB Apex Bank[5] will need to educate and re-assure their customers of the financial integrity of the rural banking system and most importantly differentiate their services from the other financial institutions within the space of the rural financial architecture.

This study is limited by scope because of data challenges so future research can take a different angle of this topic by conducting a longitudinal study into RCBs' performance. A qualitative research can also be undertaken into the extent of the banking and MFIs' financial on household welfare and on RCBs' performance.

**Notes**

1. Certain microenterprises and households savings running into more that GHS700m (\$184.21 m) have been destroyed by microfinance firms through Ponzi and pyramid schemes. This necessitated the Parliament of the Republic of Ghana to summon the Finance Minister and the Governor of the Bank of Ghana to explain the events that led to the MFIs' crisis. The situation was so serious to the extent that the President of the Republic of Ghana in the 2016 State of the Nation Address to Parliament had to use much time to explain the crisis and how the government intends to resolve it.
2. Ghana is divided into 216 administrative districts.
3. The total banking industry is defined here to include deposit money banks (DMBs, i.e. large commercial banks), microfinance institutions (MFIs) and rural and community banks (RCBs).
4. The Bank of Ghana is the central bank and regulator of the banking industry in Ghana.
5. ARB Apex Bank is the mini-central bank of the rural banking sector. It supervises the RCBs under the regulation of the main Central Bank (Bank of Ghana).

**References**

- Aboagye, A.Q. and Otioku, J. (2010), "Are Ghanaian MFIs' performance associated with corporate governance?", *Corporate Governance: The International Journal of Business in Society*, Vol. 10 No. 3, pp. 307-320.
- Achou, F.T. and Tenguh, N.C. (2008), "Bank performance and credit risk management", master's degree thesis, School of Technology and Society, University of Skovde.
- Afriyie, O.H. and Akotey, J.O. (2013), "Credit risk management and the profitability of rural banks in the Brong Ahafo Region of Ghana", *European Journal of Business and Management*, Vol. 5 No. 24, pp. 24-33.
- Akotey, J.O. and Adjasi, C.K.D. (2014), "The impact of microinsurance on household asset accumulation in Ghana: an asset-index approach", *Geneva Papers on Risk and Insurance – Issues and Practice*, Vol. 39 No. 2, pp. 304-321, doi: 10.1057/gpp.2014.6.
- Athanasoglou, P.P., Brissimis, S.N. and Delis, M.D. (2008), "Bank-specific, industry-specific and macroeconomic determinants of bank profitability", *Journal of International Financial Markets, Institutions and Money*, Vol. 18 No. 2, pp. 121-136.
- Bank of Ghana (2006), "Bank of Ghana", available at: [www.bog.gov.gh](http://www.bog.gov.gh) (accessed May 20, 2012).
- Bank of Ghana (2013), "The 2013 annual report", Bank of Ghana, Accra, available at: [www.bog.gov.gh](http://www.bog.gov.gh) (accessed January 18, 2018).
- Bank of Ghana (2015a), "The 2013 annual report", Bank of Ghana, Accra, available at: [www.bog.gov.gh](http://www.bog.gov.gh) (accessed January 18, 2018).
- Bank of Ghana (2015b), *Rural Banks and Microfinance Institutions: Revision of the Minimum Paid-Up Capital*, Bank of Ghana, Accra.
- Berger, A., Hanweck, D. and Humphrey, D. (1987), "Competitive viability in banking: scale, scope and product mix economies", *Journal of Monetary Economics*, Vol. 20 No. 3, pp. 501-520.
- Brigham, F.E. and Ehrhardt, C.M. (2002), *Financial Management: Theory and Practice*, 10th ed., South-Western Thomson Learning, New York, NY.
- Buyinza, F. (2010), *Determinants of Profitability of Commercial Banks in Sub-Saharan Africa Countries*, Johanssen Kepler University, Linz.
- Clair, S.R. (2004), "Determinants of banking financial performance and resilience in Singapore", MAS Staff Working Paper No. 38, Monetary Authority of Singapore, Singapore.
- Delis, M.D. and Papanikolaou, N.I. (2009), "Determinants of bank efficiency: evidence from a semi-parametric methodology", *Managerial Finance*, Vol. 35 No. 3, pp. 260-275.
- Greene, W.H. (2003), *Econometric Analysis*, 5th ed., Pearson Education, Upper Saddle River, NJ.

- Hansen, L. (1982), "Large sample properties of generalized method of moments estimators", *Econometrica*, Vol. 50 No. 4, pp. 646-660.
- Harker, P.T. and Zenios, S.A. (1998), "What drives performance of financial institution", Wharton Financial Institutions Center Paper Series No. 98-21, University of Pennsylvania.
- Haron, S. (2004), "Determinants of Islamic bank profitability", *Global Journal of Finance and Economics*, Vol. 1 No. 1, pp. 1-22.
- Hassan, M.K. and Bashir, A.H.M. (2003), "Determinants of Islamic banking profitability", *10th Annual Conference of the Economic Research Forum, Marakesh*, available at: [www.kantakji.com/media/3016/kabir\\_bashir.pdf](http://www.kantakji.com/media/3016/kabir_bashir.pdf) (accessed May 10, 2012).
- Hosna, A., Bakaeva, M. and Sun, J. (2009), "Credit risk management and profitability in commercial banks", Master's Degree Project No. 2009:36, School of Business, Economics and Law, University of Gothenburg.
- Ibrahim, M. (2010), "Performance evaluation of regional rural banks in India", *International Business Research*, Vol. 3 No. 4, pp. 203-211.
- IFAD (2008), *The Republic of Ghana Rural and Agricultural Finance Program*, International Fund for Agricultural Development, Rome.
- Javaid, S., Anwar, J., Zaman, K. and Gafoor, A. (2011), "Determinants of bank profitability in Pakistan: internal factor analysis", *Journal of Yasar University*, Vol. 23 No. 6, pp. 3794-3804.
- Kosak, M. and Zajc, P. (2006), "Determinants of bank efficiency in the new EU member countries", *Baltic Journal of Economics*, Vol. 9 No. 2, pp. 67-90.
- Malhotra, R. (2002), "Performance of India's regional rural banks (RRBs): effect of the umbilical cord", available at: [www.alternativefinance.org.uk/rtf/rbbsmalhotra.rtf](http://www.alternativefinance.org.uk/rtf/rbbsmalhotra.rtf) (accessed February 10, 2012).
- Marwa, N. and Aziakpono, M. (2014), "Efficiency and profitability of Tanzanian saving and credit cooperatives: who is a star?", *Journal of Economics and Behavioral Studies*, Vol. 6 No. 8, pp. 658-669.
- Marwa, N. and Aziakpono, M. (2016), "Technical and scale efficiency of Tanzanian saving and credit cooperatives", *Journal of Developing Areas*, Vol. 50 No. 1, pp. 29-46.
- Mishkin, F.S. (2007), *The Economics of Money, Banking and Financial Markets*, Pearson Addison-Wesley, Boston, MA.
- Mushonga, M., Arun1, T.G. and Marwa, N.W. (2018), "Drivers, inhibitors and the future of co-operative financial institutions: a Delphi study on South African perspective", *Technological Forecasting & Social Change*, Vol. 133, pp. 254-268, doi: [org/10.1016/j.techfore.2018.04.028](https://doi.org/10.1016/j.techfore.2018.04.028).
- Naceur, S.B. (2003), "The determinants of the Tunisian banking industry profitability: panel evidence", Universite Libre de Tunis Working Paper, Tunis.
- Ramlall, I. (2009), "Bank-specific, industry-specific and macroeconomic determinants of profitability in Taiwanese banking system: under panel data estimation", *International Research Journal of Finance and Economics*, Vol. 34, pp. 160-167.
- Reilly, F.K. and Brown, K.C. (2006), *Investment Analysis and Portfolio Management*, 8th ed., Mason: Thomson/South-Western.
- Robison, L.J. and Barry, P.J. (1977), "Portfolio adjustments: an application to rural banking", *American Journal of Agricultural Economics*, Vol. 59 No. 1977, pp. 311-312.
- Sawada, M. and Okazaki, T. (2006), "Effects of bank consolidation promotion policy: evaluating bank law in 1927 Japan", RIETI Discussion Paper Series No. 04-E-004.
- Shaffer, S. (1985), "Competition, economies of scale, and diversity of firm sizes", *Applied Economics*, Vol. 17 No. 3, pp. 467-476.
- Silva, T.P., Leite, M., Guse, J.C. and Vanderlei, G. (2017), "Financial and economic performance of major Brazilian credit cooperatives", *Contaduría y Administración*, Vol. 62 No. 5, pp. 1442-1459.
- StataCorp (2009), *Stata release 11: Statistical Software*, StataCorp LP, College Station, TX.

Wong, J., Fong, T., Wong, E. and Choi, K. (2007), "Determinants of the performance of banks in Hong Kong", Hong Kong Monetary Authority Quarterly Bulletin, Hong Kong Monetary Authority, Hong Kong, September.

Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data*, The MIT Press, Boston, MA.

Yaron, J., Benjamin, M. and Chariotenko, S. (1998), "Promoting efficient rural financial intermediation", *World Bank Research Observer*, Vol. 13 No. 2, pp. 147-170.

Zaman, H. (2004), "The scaling-up of microfinance in Bangladesh: determinants, impact, and lessons", World Bank Policy Research Working Paper No. 3398, World Bank, Washington, DC.

#### **Further reading**

Naara Rural Bank (2006), "Silver jubilee report", Naara Rural Bank Limited, Navrongo.

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