Factors Affecting the Financial Performance of Rural Banks in Indonesia

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Abstract: In Indonesia, rural banks (RBs) play an important role in economic development. This study is aimed at analyzing the effect of regional CPI, GRDP, credit risk, rural bank size, CAR, NPL, LDR, portfolio composition and operational efficiency on ROA. Multiple linear regression analysis was performed to test the proposed hypotheses. Result of the study indicated all independent variables simultaneously affect rural bank financial performance. Amongst these variables only operational efficiency, credit risk, loan to deposit ratio and rural bank size that significantly affect RBs financial performance. Accordingly, special attention towards these variables is required to maintain rural banks profitability.

Keywords: Rural Banks; Financial Performance; Credit Risk; Portfolio Composition; Gross Domestic Regional Product; Consumer Price Index; Capital Adequacy Ratio
INTRODUCTION

Financial system plays a very important role in economic development of a country. A financial system itself, according to Fohlin (2014), is the set of institutions and markets that collect excess funds from savers and allocate financial capital to those who have entrepreneurs and others who need credit. The primary function of financial system—which includes the basic payment system through which all transactions clear, the capital markets and financial intermediaries—is to facilitate the allocation and dissemination of economic resources (i.e., factors used in producing goods or providing services) both spatially and across time, in an uncertain environment (Merton, 1990). The economic development of a country, accordingly, is influenced in various ways and magnitudes by the development of its banks, stock markets, insurance sector, pension funds and a government-run central bank with authority over currency and interest rates (Levine, 1997; Levine, Loayza and Beck, 2000; Saci, Giorgioni and Holden, 2009; Adusei, 2012; Gurgul and Lach, 2013; Elsayed, 2013; Saad, 2014; Wasilewski, Oljnyk and Adamenko, 2015; Cojocaru, Falaris, Hoffman and Miller, 2015; Rana and Barua, 2105).

Financial system stability is defined as the capability to allocate funds efficiently and absorb shocks as they arise, thus preventing disruption of real sector activities and the financial system (Bank of Indonesia, 2018) or a state in which the components of the financial system (i.e., financial institutions, financial markets and payment systems) are all resilient to economic shocks (Morison, 2018). Financial system stability is the prerequisite for a sustainable economic growth (Dudley, 2011). This is because a well-functioning financial system is of importance to the economy which includes financial activities, lending to borrowers and facilitating payments between different parties through their respective banks (Hawkesby, 2000). According to Creel, Hubert and Labondance (2013) instability in financial system negatively affects economic growth.

The financial system in Indonesia is a bank-based system. As of December 2015, the total assets of the Indonesian financial system accounted for approximately 71.7 percent of GDP, of which 55.4 percent (equivalent to 77.27 percent) represent banks (World Bank, 2017; International Monetary Fund, 2017). Accordingly, Indonesia’s banking system stability is extremely important for its financial system stability. This is in line with Jahn and Kick (2012) who state that a safe and healthy banking system ensures an optimal allocation of capital resources, so that regulators have an interest in preventing a crisis in the banking system and its impact on the system economy. Additionally, empirical evidence from Italy indicates that there is a positive relationship between bank performance and financial stability (Barra and Zotti, 2017) meanwhile well-performing bank is a solid approach to risk management as part of the Canadian banking system (Beck, Levine and Loayza, 2008).

There are three different measures of bank performance namely traditional measure, economic-based measure and market-based measure. Traditional measures consist of return on assets (ROA), return on equity (ROE), cost-to-income ratio (CIR) and net interest margin (NIM); economic-based measures are economic value added (EVA) and risk-adjusted return on capital (RAROC); and market-based measures include total share return (TSR), price-earnings ratio (PER), price-to-book value (PBV) and credit default swap (CDS) (European Central Bank, 2010).
Measures of after-tax rates of return, such as the return on average total assets (RoA) and the return on total equity (RoE), are widely used to assess the performance of firms, including commercial banks (Gilbert and Wheelock, 2007). Since a healthy and profitable banking sector has a greater ability to face adversity and contribute to the robustness of the financial system as a whole (Athanasoglou, Brissimis and Delis, 2008), it can be concluded that bank profitability and its determinants are key aspect of the financial system stability (Mörttinen, Poloni, Sandars and Vesala, 2005).

Converting savings and deposits into productive investments is believed as the primary economic role of financial sector—banking industry in particular—through which it provides financial intermediation and economic development acceleration. Accordingly, developing profitable banking sector is of importance towards economic growth sustainability because it has the ability to stand negative shocks and, more importantly, contribute to the stability of the financial system. Economic growth is closely associated with corporate financial performance. Since banking industry play an important role in supporting economic growth, financial performance within this industry receives much attention. A number of studies on statistical determinants of financial performance of banks have been accomplished which arrived at different conclusion.

In Indonesia, banks are categorized into two major categories namely commercial banks and rural banks (Financial Service Authority, 2018). Although its total assets are much lower than that of commercial banks, rural banks which by November 2016 numbered 1637 (Financial Service Authority, 2017) serving no less than 50 million small, micro and medium-sized businesses—primarily those in the informal sector—the roles of rural banks in Indonesia cannot be ignored because it serves as a source of income for owners, both private and government and others parties (Heimann, 2014).

In spite of facing a very tight competition and are exposed to various factors which have the potential to affect its financial performance, in Indonesia banking sector is assumed as the most valuable industries. In the banking system in Indonesia, rural banks, judging from the amount of assets, third party funds and the number of customers, is much smaller than commercial banks (Financial Service Authority, 2017). However, since the rural banks have a specific client, namely low-income communities and micro and small business owners which are in the informal sector, in the last ten years has developed significantly. Additionally, a number literature indicates that rural banks in Indonesia have significant contribution to the welfare, socially and economically, of the rural population, especially those which work within informal sectors (Heimann, 2014).

In Indonesia, according to Sugiharto et al. (2012), rural banks account for relatively substantial share of microfinance. Therefore, this study, which is focused on analyzing the affecting factors of rural bank financial performance, is conducted. More specifically, the primary objective of this study is to determine the importance of micro- and macro-economic factors in affecting the financial performance (i.e., profitability) of rural banks in Indonesia.
LITERATURE REVIEW

The Role of Rural Bank in the Indonesia’s Economy

Financial system, which is defined as the set of institutions and markets that collect excess funds from savers and allocate financial capital to those who have entrepreneur and others who need credit (Fohlin, 2014), is assumed to have to have potential influence on economic development of a country. A healthy and well-functioning financial system of any countries plays various substantial roles in the economy. This includes financial activities, lending to borrowers and facilitating payments between different parties through each bank account (Hawkesby, 2000). Accordingly, to Dudley (2011), financial system stability as of importance to sustainable economic growth as well as economic development. In the mean times, Crockett (1997) argues that financial stability revolves around the stability of key institutions and markets that are part of the financial system. Indonesia’s financial system is categorized as bank-based one where more than three-quarter of the total of its financial system belong to banks (World Bank, 2017; International Monetary Fund, 2017). Therefore, in Indonesia, banks play a very important roles in maintaining financial stability of the country. Financial stability is determined by two major categories of factors i.e., micro-prudential indicators and macro-economic indicators. Banks’ revenues and profit are two of a number of micro-prudential indicators of financial stability (Central Bank of Indonesia, 2018). This indicates that banks’ profitability is of importance to the Indonesia’s financial stability.

In general, banks in Indonesia are categorized into two major group i.e., commercial banks and rural banks (Financial Service Authority, 2017). Total assets, third party funds and distributed funds comparisons between Commercial Banks and Rural Banks as of December 2016 is depicted in Table 1. As shown in the table, rural banks in terms of total assets, third party funds and distributed funds, rural banks are far below commercial banks. However, based on its number of banks and number of small, micro and medium-sized business that it serves, contribution of rural banks to the economic development should be considered (Heimann, 2014). Accordingly, rural banks’ financial performance has the potential to influence Indonesia’s financial system stability and, in turn, to its economic development.

Table 1: Total asset, third party funds and distributed funds of commercial banks and rural bank in Indonesia

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Commercial Banks</th>
<th>Rural Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trillion IDR</td>
<td>Percent</td>
</tr>
<tr>
<td>Total Assets</td>
<td>6,707.26</td>
<td>98.34</td>
</tr>
<tr>
<td>Third Party Funds</td>
<td>5,399.21</td>
<td>98.30</td>
</tr>
<tr>
<td>Distributed Funds</td>
<td>6,570.90</td>
<td>98.36</td>
</tr>
</tbody>
</table>

Source: Financial Service Authority (2017)

Rural Bank Profitability and Its Determining Factors

Rural bank in Indonesia, as aforementioned, based on its total assets, third party funds and distributed funds is smaller than those of commercial bank. However,
from its unit numbers and customers (accounts) which, as of December 2016, counted for 1637 units and 14.12 million customers (accounts), contribution of rural bank to the economy must be considered. Profitability of rural banks, accordingly, has potential impact towards national financial system stability. In a number of recent literatures, bank profitability typically measured by the return on assets (ROA) and or the return on equity (ROE) reported by a bank through its financial reports (i.e., balance sheet and income statements). These measures are also used in the Indonesia’s banking system (Central Bank of Indonesia, 2018).

The determinant of these profitability measures is generally divided into two broad categories, namely internal and external determinants. The internal determinants are variables that are mainly influenced by a bank's management decisions and policy objectives. These factors, therefore, could be termed as micro determinants or bank-specific determinants of rural banks profitability. The external determinants, meanwhile, are variables which reflect economic and legal environment in which banks are operated that have the potentials to affect the operation and, in turn, financial performance of banks (Dietrich and Wanzenried, 2009). A number of explanatory variables have been proposed for both categories. Those variables which are categorized as internal determinants include rural bank size, capital adequacy ratio, provisioning policy, operating efficiency, savings, deposits and liquidity (Jabbar, 2015; Samad, 2015; Gutu, 2015; Agyei-Mensah, 2012; Donkor and Tweneboa-Kodua, 2013; Amel and Prager, 2014; Owusu-Antwi, Antwi and Crabbe, 2014; Nsobilla, 2015). On the other hand national and or regional economic growth (i.e., gross domestic product—GDP and or gross regional domestic product—GRDP), rate of inflation and market interest rates are examples of external determinants that have the potentials to substantially affect bank financial performance—profitability (Dietrich and Wanzenreid, 2009; Gutu, 2015; Agyei-Mensah, 2012; Donkor and Tweneboa-Kodua, 2013; Amel and Prager, 2014; Owusu-Antwi, Antwi and Crabbe, 2014; Nsobilla, 2015). Determinants, both internal or microeconomic and external or macroeconomic, of bank profitability are summarized in Figure 1 below.

![Figure 1: Determinants of bank profitability](image-url)
Internal and External Determinants of Rural Bank Profitability

A number of studies on factors, both internal and external, determining rural bank profitability arrived at varying results. This is assumed to relate with either datasets (i.e., number of studied rural banks, time horizons or time length of the study and number of studied factors or variables) or business environments differences (i.e., different countries, different region and different time). Some determinants that are commonly recognized include, amongst others, rural bank size, credit risk, portfolio composition, bank operating efficiency, non-performing loan, liquidity, economic growth (i.e., GDP and or GRDP) and inflation rates (Agyei-Mensah, 2012; Donkor and Tweneboa-Kodu, 2013; Amel and Prager, 2014; Owusu-Antwi, Antwi and Crabbe, 2014; Nsobilla, 2015). Boadi, Li and Lartey (2016), for example, recognized that rural and community banks profitability is generally affected in different magnitudes and directions by both internal and external variables. These include capital adequacy ratio, asset quality, liquidity management, investment, gross domestic product growth rate, inflation, funding risk and bank resilience risk.

Credit risk

Empirical results of the study of Athanasoglou, Brissimis and Delis (2008) indicate that credit risk significantly affects in a negative way rural bank profitability meaning that those banks with high credit risk tend to achieve lower profitability. The primary finding of study of Ali, Akhtar and Ahmed (2011) is in line with Athanasoglou, Brissimis and Delis (2008) who study on Islamic banks profitability in Pakistan which indicate that profitability, which is measured by return on assets (ROA), is negatively affected by credit risk. The higher the credit risk the lower the profitability of a bank. 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) found that greater provisions for loan losses is a lower indicative of lower bank profits. They however indicate that the ratios of loans/assets and loans under follow-up/loans are significantly and negatively impact ROA. Findings of Sufian and Chong (2008), however, are different from the abovementioned results who indicate a positive relationship between credit risk and profitability. The proposed hypothesis which relates credit risk and bank financial performance is as follow:

**Hypothesis 1 (H1):** Rural bank credit has positive effect on rural bank financial performance which means that those rural bank with high credit risk (i.e., willing to take higher risk) will have higher financial performance

Rural bank size

Size has been considered basically to account for existing economies or diseconomies of scale in the market. Financial performance of commercial banks in Saudi Arabia was studied by Ahmed and Khababa (1999). They analyzed the effect of business risk, concentration and market size on the profitability of the bank measured which is measured using return on assets (ROA) and return on equity (ROE). Results from the study that bank size are one of the main variables which drives banks’ profitability. Alper and Anbar (2011), through their study, found that
asset size has a positive and significant effect on profitability. It implies that larger banks tend to achieve a higher ROA and ROE. Also, the positive and significant coefficients of asset size variable provide evidence for the economies of scale theory. Findings of Gefli (2012) through his study suggest that rural bank size and non-interest income are found as internal variables that affect rural bank profitability. In their study on rural banks financial profitability in Ghana, Mills and Amowine (2013), recognized that rural bank size and non-interest income serve as internal variables of rural bank financial profitability. Additionally, Molyneux and Seth (1996) indicated 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. Thus, the following hypothesis is proposed:

**Hypothesis 2 (H2):** rural bank size has positive effect on rural bank financial performance meaning that larger rural bank will have higher financial performance

*Capital adequacy ratio*

Sayilgan and Yildirim (2009) 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 seems to be more profitable. Again, Javaid, Anwar and Gafoor (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 (2005) 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 agrees with Al-Tamimi, 2005 and Naceur, Steiner and Goaied, 2001 as their study stated that the problem of maintaining capital reveals the negative relation with profitability. The study of Ejoh and Iwara (2014) and Ogbeja, Adelakun and Olufemi (2015) in Nigerian banking industry revealed a positive relationship between capital adequacy ratio and profitability. Accordingly, the following hypothesis is formulated and proposed:
Hypothesis 3 (H₃): rural bank capital adequacy ratio has positive effect on rural bank financial performance implying that those rural bank with high capital adequacy ratio will have higher financial performance

Operating efficiency
Chou and Buchdadi (2016) examining the determinant of rural bank profitability in Indonesia also found that besides non-performing loans, operating efficiency is identified as another important determinant of rural bank profitability. Similar to Chou and Buchdadi (2016), Saifun (2016) found that operating efficiency plays as an important determinant of rural bank profitability in Yogyakarta, Indonesia, in addition to capital adequacy ratio and asset quality rate (i.e., non-performing loan). Guru, Staunton and Shanmugam (2002) studies on a sample of seventeen commercial banks in Malaysia from 1986-1995 time periods. In their study, they found that efficient expenses management is one of the most significant in explaining high bank profitability. Operating efficiency among the rural banks in Ghana, according to Antwi and Apau (2015), is found to be very poor and, as it incurs more non-interest expenses, it has had a negative impact on rural bank financial performance. Accordingly, the proposed hypothesis which relates operating efficiency and bank financial performance is as follow:

Hypothesis 4 (H₄): rural bank operation efficiency has negative effect on rural bank financial performance implying that those rural bank with low operation efficiency will have lower financial performance

Portfolio composition
Ali, Akhtar and Ahmed (2011) indicate that profitability is positively affected by bank size, operating efficiency, portfolio composition and asset management. This finding, is similar with that of Al-Tamimi (2005), who found that portfolio composition is significantly affect profitability. The significant relation between operating efficiency with profitability is in accordance with the findings of previous studies i.e., Alexiou and Sofoklis (2009) and Sufian and Habibullah (2009). The proposed hypothesis, accordingly, is as follow:

Hypothesis 5 (H₅): rural bank portfolio composition has negative effect on rural bank financial performance implying that those rural bank with low operation efficiency will have lower financial performance

Loan to deposit ratio
Loan-to-deposit ratio (LDR) is a statistic that is commonly used to assess liquidity of bank. It is estimated by dividing the total loans of bank by its total deposits (Ndubuisi, Chinyere, Chidoziem and Beatrice-O, 2017). For rural banks in Indonesia, according to Central Bank of Indonesia (2012), LDR is estimated by dividing the total loan by total deposits and core capital. It is regarded as the primary source of profit of banks, including rural banks (Chou and Buchdadi, 2016) which has the potential to affect bank performance. Study of Rengasamy (2014) on commercial banks in Malaysia indicated that there are positive association between loan to deposit ratio (LDR) and bank financial performance (i.e., return on asset—ROA). Trinugroho, Agusman and Tarazi (2014) stated that LDR stands for liquidity
risk where the higher the ratio, the higher the liquidity risk and, in turn, the lower the bank holds reserves. Additionally, they found that LDR has a positive association with bank margins. In accordance with the above statement, the following hypothesis is proposed:

**Hypothesis 6 (H₆):** rural bank loan to deposit ratio has positive effect on rural bank financial performance which implies that those rural bank with high loan to deposit ratio will have higher financial performance

**Non-performing loan**

Study of Chou and Buchdadi (2016) examining the determinant of rural bank profitability in Indonesia found that non-performing loans and operating efficiency as important determinant of rural bank profitability. Saifun (2016) in her recent study on determinants of rural bank profitability in Yogyakarta, Indonesia, found that capital adequacy ratio, asset quality rate (i.e., nonperforming loan) and operating efficiency as determinants of rural bank profitability, which measured using return on asset ratio (ROA). Results of Nsobilla’s (2015) study in Ghana revealed that non-performing loans, cost-income ratio, loan recovered and total revenue significantly affect rural bank profitability. The proposed hypothesis, therefore is as follow:

**Hypothesis 7 (H₇):** rural bank non-performing has negative effect on rural bank financial performance which means that those rural bank with high non-performing loan will have lower financial performance

**Inflation rate (Consumer price index)**

The issue of the relationship between bank profitability and inflation was studied by Revell (1979) and found that the effect of inflation on bank profitability is related with bank operating expenses. A positive relationship between inflation and bank profitability was identified by Bourke (1989) and Molyneux and Thornton (1992). Athanasoglou, Delis and Stakouras (2006) in their study proved that inflation significantly affects profitability. Empirical evidence which show that the consumer price inflation positively related to profitability was in line with were provided by Alexiou and Sofoklis, (2009). Naceur’s (2003) findings are different from the results of the previous studies where 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 agrees with the findings of (Sayilgan and Yildirim, 2009) as indicated above. They however, find a positive but insignificant relationship between consumer price index and profitability (as measured by ROE). The following hypothesis which represents the
relationship between inflation rate (i.e., consumer price index) and rural bank financial performance is proposed:

**Hypothesis 8 (H₈):** inflation rate has negative effect on rural bank financial performance implying that those rural banks operated within business environment with higher inflation rate will have lower financial performance.

*Economic growth (Gross regional domestic product)*

Dietrich and Wanzenried (2009) through their study found that economic growth rate as one macroeconomic indicator that has the most important influence on the bank profitability. It is not different from findings of Alexiou and Sofoklis (2009) studies in which economic growth has significant and positively effect on profitability as well as Ali, Akhtar and Ahmed’s (2011) findings indicating positive and significant relation between economic growth and profitability. They used ROA and ROE as proxies of bank profitability. However, this contradicts with the findings of Hassan and Bashir (2005) who found that income per capita has no significant impact on 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 are not significantly affected by real GDP per capita fluctuations. The proposed hypothesis, thus, is as follow:

**Hypothesis 9 (H₉):** regional economic growth has positive effect on rural bank financial performance implying that those rural banks operated within business environment with high economic growth will have higher financial performance

**METHODOLOGY**

**Research Model and Variables**

Financial performance of rural banks, which serves as dependent variable, is represented by return of assets (ROA). Factors that have the potentials to affect rural banks financial performance (i.e., independent variables) include consumer price index, economic growth (macroeconomic indicators or external factors), credit risk, bank size, capital adequacy ratio, portfolio composition and operational efficiency (microeconomic indicators or internal factors). In Table 2 (see page 119), which follows, technical descriptions of these variables (i.e., dependent and independent variables) are depicted.

Automatic linear model (multiple linear regression analysis) and partial classical assumption tests or model diagnosis (i.e., multicollinearity test and autocorrelation test) are performed to analyze data. General regression model of the above proposed research model is postulated in equation 1. The multiple linear regression analysis was performed to analyze the effect of all independent variables on the dependent variable and their ability to explain the variability of the dependent variables (i.e., coefficient of determination-R²). Research model, which illustrates causal relationships between independent variables and dependent variable, is depicted in Figure 2.
Factors Affecting the Financial Performance of Rural Banks

ROA= \alpha + \beta_1 CR + \beta_2 RBS + \beta_3 OE + \beta_4 PC + \beta_5 NPL + \beta_6 LDR + \beta_7 CPI + \beta_8 GRDP + \epsilon \quad \text{(1)}

where:

ROA : Return on asset (rural banks financial performance/dependent variable);
A : Constant (intercept);
CR : Credit risk;
RBS : Rural bank size (total assets);
OE : Operational efficiency;
CAR : Capital adequacy ratio;
PC : Portfolio composition;
NPL : Non-performing loan;
LDR : Loan to deposit ratio;
CPI : Consumer price indices (rate of inflation);
GRDP : Gross domestic product (economic growth);
B : Regression coefficients; and
E : Error term.

Table 2: Technical description of research variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Proxies</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>Return on Assets</td>
<td>Net Profit/Total Assets</td>
</tr>
<tr>
<td>CR</td>
<td>Credit Risk</td>
<td>Loan Loss Provision/Total Loans</td>
</tr>
<tr>
<td>RBS</td>
<td>Rural Bank Size</td>
<td>Total Assets</td>
</tr>
<tr>
<td>CAR</td>
<td>Capital Adequacy Ratio</td>
<td>Equity/Total Assets</td>
</tr>
<tr>
<td>OE</td>
<td>Operational Efficiency</td>
<td>Total Operational Expenses/Total Operational Income</td>
</tr>
<tr>
<td>PC</td>
<td>Portfolio Composition</td>
<td>Total Deposits/Total Assets</td>
</tr>
<tr>
<td>LDR</td>
<td>Loan to Deposit Ratio</td>
<td>Total Loan/Total Deposits</td>
</tr>
<tr>
<td>NPL</td>
<td>Non-Performing Loan</td>
<td>Total NPL/Total Loans</td>
</tr>
<tr>
<td>CPI</td>
<td>Consumer Price Indices</td>
<td>Inflation Rate</td>
</tr>
<tr>
<td>GRDP</td>
<td>Gross regional domestic product</td>
<td>Economic Growth</td>
</tr>
</tbody>
</table>

Figure 2: The proposed research model
Sampling Procedures

One hundred and eight rural banks in Indonesia (approximately 8 percent of the population) were involved in this study. These rural banks were derived from 1507 rural banks in 2008, 1565 in 2009, 1623 in 2010, 1611 in 2011 and 1669 in 2012. Rural banks that will be selected as sample should satisfy the following conditions:

(i) exists in the whole research period (i.e., 2008-2012);
(ii) provides financial reports (i.e., balance sheets and income statements); and
(iii) provides all research variables (i.e., credit risk, portfolio composition, total assets, non-performing loan, loan to deposit ratio, capital adequacy ratio and operational efficiency measure).

In addition, based on research variables of the selected rural banks as samples of the study, were further tested for outliers. Sampling procedures, including outlier identification, are depicted in Figure 3 which follows.

![Figure 3: Sampling procedures](image)

As clearly depicted in the figure above, from 1507 rural banks in 2008 and 1660 rural banks in 2012, only 1139 rural banks that exist during the whole five years period (i.e., 2008-2012) where 421 of which that satisfy research conditions and objectives i.e., provide a complete financial report for the whole research period of 2008-2012. Proportionated sampling methods was then performed to select rural bank sample and 150 rural banks were selected. The next step is to perform outlier test on the selected samples to identify outlier within these samples. Forty two of 150 rural banks were detected to have outliers in at least one research variables. Accordingly, we have only 108 rural banks that can be used as samples in this study.
Panel data set comprising research variables was used in this study. Financial reports which include balance sheets and income statements of the rural banks covering the period 2008-2012 serve as the primary sources of data. Therefore, the sample size of this study is 540 (i.e., 108 rural banks x 5 periods). These were obtained from the Financial Services Authority of Indonesia and Central Bank of Indonesia. Other data (i.e., regional economic development and consumer price index) was obtained from Statistics Indonesia.

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Table 3 reveals the results of descriptive analysis of dependent and independent research variables are described. As clearly shown in the table, rural banks profitability, which is represented by return on asset, substantially varied. It ranges from as low as -27.46 percent to as high as 963 percent. Substantial divergences are also found in loan to deposit ratio (ranges from 5.20 percent to 8,859 percent), capital adequacy ratio (ranges from -1.75 percent to 3,476 percent), credit risk (ranges from 0.02 percent to 59.80 percent) and non-performing loans (ranges from -1.67 percent to 95 percent). These variations amongst rural banks’ variables were also indicated by their related coefficient of variations which are higher than 100 percent (i.e., their standard deviations are higher than their mean). These substantial variations indicate that management quality amongst rural banks—represented by the levels or intensities of good corporate governance (GCG) implementation—which are varied (InfobankNews, 2016).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Stdev*</th>
<th>CV**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Asset</td>
<td>-27.46</td>
<td>963.00</td>
<td>9.43</td>
<td>48.34</td>
<td>512.62</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.02</td>
<td>59.80</td>
<td>2.75</td>
<td>3.44</td>
<td>125.09</td>
</tr>
<tr>
<td>Rural Bank Size</td>
<td>13.10</td>
<td>19.78</td>
<td>16.43</td>
<td>1.16</td>
<td>7.06</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>-1.75</td>
<td>3476.00</td>
<td>40.99</td>
<td>133.52</td>
<td>325.74</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>43.44</td>
<td>511.67</td>
<td>83.18</td>
<td>25.73</td>
<td>30.93</td>
</tr>
<tr>
<td>Portfolio Composition</td>
<td>0.07</td>
<td>91.56</td>
<td>39.43</td>
<td>22.089</td>
<td>56.02</td>
</tr>
<tr>
<td>Loan to Deposit Ratio</td>
<td>5.20</td>
<td>8859.00</td>
<td>106.68</td>
<td>419.37</td>
<td>393.11</td>
</tr>
<tr>
<td>Non-performing Loans</td>
<td>-1.67</td>
<td>95.00</td>
<td>6.32</td>
<td>8.94</td>
<td>141.46</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>107.29</td>
<td>147.79</td>
<td>120.35</td>
<td>8.61</td>
<td>7.15</td>
</tr>
<tr>
<td>Gross regional domestic product</td>
<td>8.68</td>
<td>13.91</td>
<td>12.94</td>
<td>0.99</td>
<td>7.65</td>
</tr>
</tbody>
</table>

Note: * Standard deviation; ** Coefficients of Variation

Mediocre variations or discrepancies are found in the following research variables such as portfolio composition and operational efficiency. Less variations,
in the meantime, are found in rural bank size, consumer price index and Gross regional domestic product, as indicated by their related coefficient of variations.

The dependent variable (i.e., Return on Assets—ROA) as shown in Table 3 (see page 121) is extremely varied ranged from as low as -27.46 percent to as high as 963 percent with standard deviation of 48.39 and coefficient of variance 512.62 percent. To address this case, outliers’ analysis with SPSS was performed. It was found that ROA greater than 14.00 percent and smaller than -4.00 percent are categorized as outliers. Accordingly, data set having these outliers were deleted. There were 42 rural banks that found to have outliers, therefore the resulting new sample size is 540 (i.e., 108 x 5). Descriptive statistic of the resulting new data set is depicted in Table 4 below.

### Table 4: Descriptive statistics of new data set of research variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td>Return on Asset</td>
<td>-3.18</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.06</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>1.85</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>47.80</td>
</tr>
<tr>
<td>Portfolio Composition</td>
<td>0.07</td>
</tr>
<tr>
<td>Loan to Deposit Ratio</td>
<td>10.46</td>
</tr>
<tr>
<td>Non-performing Loans</td>
<td>0.04</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>107.74</td>
</tr>
<tr>
<td>Gross regional domestic product</td>
<td>10.01</td>
</tr>
</tbody>
</table>

Note: * Standard deviation; ** Coefficients of Variation

### Model Diagnostic Test

Based on the results of model diagnostic tests, it is clear that the resulting model is acceptable. Accordingly, the model can be regarded as the best linear unbiased estimator of return to assets (profitability) of rural banks in Indonesia. Results of model diagnostic which include autocorrelation test and multicollinearity test are summarized in Table 5 below.

### Table 5: Summary of model diagnostic of research variables

<table>
<thead>
<tr>
<th>Diagnostic test</th>
<th>Method</th>
<th>Results</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocorrelation</td>
<td>Durbin-Watson</td>
<td>1.860</td>
<td>No autocorrelations</td>
</tr>
<tr>
<td>Multicollinearity</td>
<td>Variance Inflation Factors (VIF)</td>
<td>1.036-1.407</td>
<td>No multicollinearity</td>
</tr>
</tbody>
</table>

### Multiple Linear Regression Analysis

Results of multiple regression analysis which represent the magnitudes, directions and significances of causal relationship amongst research variables (i.e., independent variables and dependent variable), is presented in Table 6 (See page 124).

Referring to the results of analysis of variance (ANOVA) or F-test, it is revealed that profitability of rural banks, which represented by return on asset (ROA), is
significantly affected by all independent variables which include credit risk, rural bank size, capital adequacy ratio, operational efficiency, portfolio composition, loan to deposit ratio, non-performing loans, consumer price index and gross regional domestic product, in simultaneous way (p<0.01). The ability of these variables to explain the variability of rural banks profitability or to influence rural banks profitability is fairly moderate, as represented by the value of coefficient of determination ($R^2$), i.e., 43.80 percent. However, as highlighted in Table 6, only three out of nine independent variables that have significant effect on rural banks financial performance i.e., operational efficiency, credit risk and loan to deposit ratio. Rural banks with higher operation efficiency tend to have better financial performance (i.e., higher return of asset—ROA).

**Table 6:** Regression coefficients of causal relationships between independent and dependent variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regression Coefficients</th>
<th>t-value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant¹</td>
<td>21.584</td>
<td>5.916</td>
<td>0.000***</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>0.370</td>
<td>5.018</td>
<td>0.000***</td>
</tr>
<tr>
<td>Rural Bank Size</td>
<td>-0.183</td>
<td>-1.791</td>
<td>0.074*</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>0.005</td>
<td>1.007</td>
<td>0.314</td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>-0.155</td>
<td>-17.495</td>
<td>0.000***</td>
</tr>
<tr>
<td>Portfolio Composition</td>
<td>0.006</td>
<td>1.311</td>
<td>0.191</td>
</tr>
<tr>
<td>Loan to Deposit Ratio</td>
<td>0.021</td>
<td>2.691</td>
<td>0.007***</td>
</tr>
<tr>
<td>Non-performing Loans</td>
<td>0.000</td>
<td>-0.013</td>
<td>0.990</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>-0.017</td>
<td>-1.304</td>
<td>0.193</td>
</tr>
<tr>
<td>Gross domestic regional product</td>
<td>-0.172</td>
<td>-1.392</td>
<td>0.165</td>
</tr>
</tbody>
</table>

$R^2$ = 0.438

F-test $= 45.817$ (significant at alpha 1 percent; p<0.01)

Note: *** Significant at 0.01 level; ** Significant at 0.05 level; * Significant at 0.10 level

This finding suggests that rural banks managers should pay adequate attentions toward these variables, either internal variable (i.e., credit risk, rural bank size, capital adequacy ratio, operational efficiency, portfolio composition, loan to deposit ratio, non-performing loans) or external variables (i.e., consumer price index and gross regional domestic product), in managing their bank. More specifically, in maintaining or improving rural banks financial performance or profitability, attentions and or considerations towards these variables or determinants are required.

In general, this finding-to some extent and in different magnitude and sovereignties-is in line with the finding of previous studies (e.g., Agyei-Mensah, 2012; Gefli, 2012; Donkor and Tweneboa-Kodua, 2013; Amel and Prager, 2014; Owusu-Antwi, Antwi and Crabbe, 2014; Trinugroho, Agusman and Tarazi, 2014; Rengasamy, 2014; Nsobilla, 2015; Saifun, 2016; Chou and Buchdadi, 2016). These indicate that both internal variables (microeconomic indicators) and external variables (macroeconomic indicators) are of importance to the management of rural banks.
Amongst nine independent variables, which consists of seven internal variables and two external variables, as shown in table 6, only four variables that are found to have partial and significant effect on rural bank profitability. These include operational efficiency (p<0.01), credit risk (p<0.01), loan to deposit ratio (p<0.01) and rural bank size (p<0.10). These findings are consistent with those findings of previous studies such as, amongst others, Saifun (2016), Chou and Buchdadi (2016), Boadi, Li and Larvey (2016), Mills and Amowine (2013), Rengasamy (2014) and Trinugroho, Agusman and Tarazi (2014). This suggests that special attentions should be paid towards these variables in order to preserve the most favorable or optimum levels of rural banks financial performance or profitability.

Converting savings and deposits (i.e., third party funds) into productive investments—in this case loans, as mentioned earlier in this study, is the primary role of banks, including rural banks, as intermediary institutions within economic and financial systems. On the other hands, making profit is one of the most motivating objectives of establishing business organization including rural banks. Findings of this study where the most important determinants of rural banks profitability are operational efficiency—ratio total operational expenses and total operational income is in accordance with these statements. Contribution of this internal variable in influencing rural banks return on asset is approximately 88.00 percent (i.e., 38.54 percent from total contribution [R²] 43.80 percent). Meanwhile, other internal variable that is recognized to partially or individually affect rural banks profitability are credit risk, loan to deposit ratio and rural bank size. Contribution of these variables in affecting rural banks return on asset are, respectively, approximately 7.00 percent, 2.00 percent and 1.00 percent (i.e., 6.16, 1.76 and 0.88 percent from total contribution [R²] 43.80 percent).

Accordingly, it can be summarized that rural banks with more efficient (i.e., those rural banks with better management practices by implementing good corporate governance principles more intensely) which is represented by better operational efficiency, combined with better risk management practice which is represented by relatively lower credit risk, tend to have the capacity to generate higher profit.

Interestingly, there is no external variable that has partial effect on rural banks profitability. In general, it can be concluded, that both regional rate of inflation, which is represented by consumer price index (CPI) and regional economic development, which is represented by gross regional domestic product (GRDP) have no significant influences on rural banks’ profitability. However, changes in these variables which is beyond the control of rural bank managements should be monitored and considered in making any decisions relating to rural banks profitability.

**CONCLUDING COMMENTS**

Rural banks financial performance or profitability which is represented by return on asset in general was recognized as a function of both internal variable (i.e., credit risk, rural bank size, capital adequacy ratio, operational efficiency, portfolio composition, loan to deposit ratio, non-performing loans) and external variables (i.e., consumer price index and gross regional domestic product). Its value is simultaneously affected by these variables for approximately 43.80 percent.
Variables that are found to have partial effect on rural banks profitability include operational efficiency (OE) and credit risk (CR) and loan to deposit ratio (LDR).

In achieving the best possible rural banks profitability (i.e., return on asset), it is therefore suggested to consider these variables—especially operational efficiency, credit risk, loan to deposit ratio—in a particular way. Rural bank size which has significant effect at alpha 10 percent (p<0.10), in the mean times, needs special attention since it has negative effect on rural bank profitability where those bigger rural banks tend to have lower financial profitability. Managers’ decisions which directly and indirectly have the potentials to affect rural banks profitability should include these variables into considerations. Both external variables, although they have insignificant impact on rural bank profitability, still require considerations. It is believed that fluctuations in these variables have potential to indirectly affect rural bank financial profitability.

LIMITATION OF THE STUDY

In the present study rural banks performance is only measured by return on asset. Further research that include other measures such as return on investment, return on equity and net interest margin should be considered. In addition, expenses ratio (i.e., BOPOs) needs to be included as an independent variable beside capital adequacy ratio, nonperforming loan and loan-to-deposit ratios.

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REFERENCES


