The Impact of Rural Bank Loans on Regional Economic Growth and Regional Poverty in Indonesia

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Abstract

There is growing support for the claim that banks are not neutral to regional development. Banks may contribute to regional development and poverty reduction by producing a unique regional pattern of credit availability. This study examines whether there is a strong empirical association between rural bank loans and economic growth, and between rural bank development and poverty rate in the regional area of Indonesia. This model is estimated by two-stage least squares using a set of panel data on 27 regions in Indonesia over the period of 2000-2014.

The findings suggest that the predetermined components of rural bank loan development show a statistically significant impact on regional economic growth and regional poverty rate. The estimated coefficients indicate that rural bank loan increases regional economic growth and reduces regional poverty rate, at least during the period of the study.

I. INTRODUCTION

Many economists believe that well-functioning financial institutions are essential for economic growth. As early as 1911, Schumpeter argued that financial intermediaries are needed for economic development (Schumpeter & Elliott, 2012). A well-functioning financial system helps to promote economic growth and stability by encouraging savings and by properly directing these savings into the most productive possible investments. In contrast, a poorly functioning financial system can create serious problems for an economy. This proposition has been explored extensively with empirical evidence pointing towards financial development influencing economic growth (for example, in King & Levine, 1993; Christopoulos & Tsionas, 2004; Honohan, 2004).

Following the studies on the finance-growth nexus, a question on the contribution of financial development on poverty reduction has been raised. Levine (2004) stated that there are two opposite theories on the role of financial institutions to reduce poverty in developing countries. Some believe that only the rich will benefit from more developed financial institutions because the poor do not possess the financial, physical, and human capital resources needed to get loans or benefit from a well-functioning financial system. Moreover, other studies have argued that financial development does not help the poor because a more developed financial sector brings more risks for this group. A developed financial sector offers more opportunity for speculation which may cause bubbles and crises (Kirkpatrick, Sirageldin, & Aftab, 2000; Zhuang et al., 2009). The opposite theory states that better functioning financial intermediaries can offer financial services to larger segments of the population. More credit means more entrepreneurship, more firm formation, and economic growth (Aghion & Bolton, 1997). The other way financial development can reduce poverty is by providing financially disadvantaged

families with low cost loans (Tiwari, Shahbaz, & Islam, 2013) or increasing access to various sources of funding (Boukhatem, 2015).

Some studies have attempted to narrow the research scope by identifying the importance of specific financial institutions in this process, such as rural banks or community banks (Burgess & Pande, 2005; Collender & Shaffer, 2003; Kendall, 2009; Meslier-Crouzille, Nys, & Sauviat, 2012). The belief is that rural or community banks act differently from large commercial banks as they usually have the advantage of access to local information, better relationships with their customers, and a greater commitment to the development of the local community. Hence, they are better placed to monitor and assess the risk of local enterprises (Meslier-Crouzille et al., 2012). These kinds of banks, mostly found in developing countries, are intentionally designed to provide financing opportunities to small and medium enterprises (Ministry of Cooperatives and SMEs of Indonesia). Rural banks cover an important gap in the market, due to the reluctance of commercial banks to finance SMEs. This is because the loans are usually relatively small in value (less than US$ 1,000) (Todaro & Smith, 2012).

The object of this study is Indonesian regional areas and the banking sector. The preference is based on several reasons. First, Indonesia is a developing country. Previous studies have found that the relationship between financial development and economic growth is more prominent in a developing country compared to a developed country. Second, Indonesia has extensive and varied regional areas. Previous studies have stated that a regional study provides better understanding of the sources of both strengths and weaknesses of an economy. Third, Indonesia has a bank-based financial system. Failures in the system caused a major financial crisis in 1997 that shattered the economy. Therefore, an investigation of banking's contribution to the economy will be beneficial for policy makers.

Research on the relationship between financial development and economic growth has been carried out for the case of Indonesia, but generally such research has employed time series national data. When performing causality analysis, some studies have found bi-directional causality between financial development and growth (Hasiholan & Adiningsih, 2003; Hidayati, 2009; Inggrid, 2006; Setiawati, 2008). Other studies have reported that financial development positively and significantly affects Indonesian GDP per capita (Abdurohman, 2003; Agung & Ford, 1998; Zulverdi, Syarifuddin, & Prastowo (2005), while Mukhopadhyay and Pradhan (2011) showed that financial development in Indonesia has very little impact on economic growth. These inconclusive findings have been the reason for carrying out this study. Another important study by Nasrudin and Soesilo (2004) also has been an encouragement in doing this study. Nasrudin and Soesilo found that commercial banks had no contribution to regional economic growth over the period 1987-1998. Given the findings from previous studies that small banks act differently from large commercial banks, there is need to investigate the contribution of rural banks to regional economic growth.

Indonesia is located in the south east of Asia. The United Nations (2014) classifies Indonesia as a developing country and with a population of 254.5 million, it is the fourth most populated country in the world. Indonesia ranks 10th of the world's largest economies in terms of purchasing power parity (World Bank, 2015).

Indonesia experienced rapid growth before the Asian Financial Crisis in 1997, which had a massive impact on Indonesian economy. In 1998, Indonesia registered negative growth of 13.13%, significantly below the 7.8% recorded in 1996. Since then, after

efforts to improve banking supervision and regulation as well as the macroeconomic condition, Indonesia registered an average growth of 5% per year over the 2000-2014 period. The poverty rate decreased from 15.42% in 2008 to 11.60% in 2012. The unemployment rate also decreased from 10.26% in 2005 to 5.94%, in 2014 (BPS, 2015).

The Indonesian financial sector comprises three broad categories: bank, non-bank, and capital market. Non-bank financial institutions include insurances, financing companies, pension funds, and microfinances. The financial system in Indonesia is largely bank-based. Indonesia has a well-functioning stock market, but only the largest corporations are listed in the country's stock exchange. Hence, it can be said that funding for the majority of businesses in the country is sourced primarily from banks and not through stock markets. According to Fry (1997), the dominant role of banks in the financial system is a specific characteristic of a developing country.

Indonesian banking institutions can be divided into two categories: commercial banks and rural banks. Commercial banks include both state and private banks. Private banks can be differentiated into regional development banks, conventional private banks, and Islamic private banks. Rural banks were originally rural financial institutions. However, these banks have evolved into community banks and are mostly established in urban areas. Having said that, rural banks are different from commercial banks. The particular objective of rural banks is to provide financial services in particular areas with a financing focus of small and medium enterprises (SMEs) and local communities. Because rural banks operate at a local level , they are considered to have important roles in local economic development. The number of rural banks in Indonesia in 2014 was 1,643 units, more than 10 times the 119 commercial banks (Bank Indonesia, 2015). However, the assets held by rural banks were less than 2% of the assets held by commercial banks. By the end of 2012, the total assets of commercial banks amounted to IDR 5,615,150 billion, whereas the assets of rural banks totalled IDR 89,878 billion (Bank Indonesia, 2015). Despite their relatively small size in the Indonesian banking sector, the central bank considers rural banks to be particularly important in supporting the programme of financial inclusion. This role of rural banks was stressed by the Governor of Bank Indonesia in his 2008 annual speech. He stated that "the role of rural banks should be enhanced and directed to provide service to the SMEs and local economy" .

This present study intends to empirically examine the links between rural bank development, economic growth, and the poverty rate at the sub-national (regional) level in Indonesia. The contribution of this research is to take into account the varieties of each region in explaining the complex relationship. The inter-regional and inter-temporal variations in the prevalence of rural banking provide an opportunity to estimate their effects on economic growth and poverty elimination. The objective of this study is to analyse whether central bank policies or regional government policies on rural banks have impacts on the development of the banks in Indonesia, and particularly whether the policies have impacts on the contribution of rural banks to regional economic growth and regional poverty rate reduction.

Structurally, this paper consists of five sections. After introduction, it discusses the underlying literature. Section three discusses the construction of the models. Next is the description of the data. Estimation results, sensitivity analyses, and discussions are presented in the fourth section. The last section summarises the paper.

II. BRIEF LITERATURE REVIEW

2.1 Financial Institutions and Economic Growth

Traditional growth models do not explicitly include financial development. Some economists have hypothesised that the financial sector directly contributes to economic growth (e.g., Schumpeter in 1911 and McKinnon and Shaw in 1973). In 1911, Schumpeter stated that services provided by financial intermediaries are essential for technological innovation and economic development (Schumpeter & Elliott, 2012). McKinnon and Shaw argued that alleviating financial repression[1] can positively affect growth (Gemech & Struthers, 2003). However, it was only after King and Levine's study in 1993 that economists began to consider financial development as an important part in constituting economic growth. As stated by Honohan (2004), studies on the relationship between financial development and economic growth flourished extensively after the publication of King and Levine's study. Their study showed that financial development variables are strongly associated with real per capita GDP growth, the rate of physical capital accumulation, and improvements in the efficiency with which economies employ physical capital (King and Levine, 1993).

The study by King and Levine (1993) was considered as the trigger of subsequent studies on the financial development and economic growth topic (Honohan, 2004). King and Levine (1993) built the basic econometric model to analyse the relationship between financial development and economic growth which is as follows:

$$G(j) = \alpha + \beta F(i) + \gamma X + \varepsilon \quad (1)$$

where $G(j)$ represents the value of the j^{th} growth indicator (e.g., per capita GDP, per capita capital stock, productivity), $F(i)$ represents the value of the i^{th} indicator of financial development (e.g., liquid liabilities of the financial system/broad money, ratio of bank credit divided by bank credit plus central bank domestic assets, ratio of credit to private enterprises to total domestic credit, and credit to private enterprises divided by GDP), and X represents a matrix of conditioning information to control for other factors associated with economic growth (e.g., income per capita, education, political stability, indicators of exchange rate, trade, fiscal, and monetary policy). The model has been replicated extensively in the literature of financial institution-growth nexus. Different financial development variables, as well as control variables were used in the studies following King and Levine, adjusted to different objectives and contexts.

King and Levine (1993) employed cross-country data from 80 developed and developing countries over the period 1960-1989. Firstly, they carried out a correlation test between the financial indicators and the growth indicators. The results indicated a positive and significant correlation between each financial indicator and each growth indicator. When they categorised the dataset into four categories (very fast, fast, slow, and very slow growth), they found that the rate of growth was positively associated with financial development. Countries with a faster rate of growth were more likely to have a more developed financial sector. Secondly, King and Levine (1993) investigated the strength of the partial correlation between financial development indicators and growth indicators. The cross-country regressions results suggested that the four financial development indicators had positive and significant coefficients when the growth indicators were the dependent variable.

[1] Artificial ceiling on interest rate, set by the government (Gemech & Struthers, 2003).

Since King and Levine's (1993) study, studies on the topic have grown. The studies have classified cross-country data into developed, developing, transition economies[2], and regional economies. Some examples of regional economies classification are Asia Pacific countries (Abdullah, Sanusi, Kamil, & Hasan, 2008), Organisation for Economic Cooperation and Development (OECD) countries (Shan, Morris, & Sun, 2001), island countries (Seetanah, Ramessur, & Rojid, 2009), African countries (Oluitan, 2012), Central and East European countries (Dawson, 2003), and Latin American countries (De Gregorio & Guidotti, 1995). The method preferred for these cross-country studies has been panel regression (i.e., King & Levine, 1993; Abdullah et al., 2008) or Generalised Method of Moment/GMM (Beck, Georgiadis, & Straub, 2014; Koetter & Wedow, 2010; Levine, Loayza, & Beck, 2000; Rousseau & Wachtel, 2011; Seetanah et al., 2009).

However, there were also a certain amount of opposing evidence. De Gregorio and Guidotti (1995) found a robust and significant negative correlation between financial development and growth in Latin America over the period 1950-1985. This effect occurred because extreme experiments on financial liberalisation in Latin America during the 1970s and 1980s subsequently collapsed and led to a negative relationship between the degree of financial intermediation and growth. Ram (1999) pointed out that previous evidence that finance promoted growth was still not encouraging. He compared results from previous cross-country studies (King & Levine, 1993; Odedokun, 1998) with his individual-country study. He argued that results from the cross-country studies might be spurious. Shan et al. (2001) also found no evidence that finance led to growth in nine OECD countries and China.

Arestis and Demetriades (1997) warned against the over-simplified nature of results obtained from cross-country regressions in that they might not accurately reflect individual country circumstances such as the institutional structure of the financial system, the policy regime, and the degree of effective governance. Ram (1999) added that the effect of financial development on growth was relative to each country, thus an individual-country study was better than a cross-country study. The view was supported by Rousseau and Wachtel (2011) who argued that the relationship between financial development and growth is complex. To have a better understanding of the relationship, one should do a systematic study of the financial development of individual countries, including investigating the appropriate policy regarding financial sector reform and regulation in the respected countries.

Some studies have considered that using time series data at a national level is not enough to explain the relationship complexity between financial development and growth in a country. Particularly in the case of countries that consist of extensive regional areas, there is a question about financial integration among these regions. Regional disparities within one country should also be taken into account. These questions have encouraged studies to examine the role of financial markets and institutions with respect to regional economic growth.

[2] Countries which are in the process of changing from centrally planned (socialist) economies to market (capitalist) economies (Akimov, Wijeweera, & Dollery, 2009).

2.2 Financial Institution and Poverty

There are two opposite theories on the role of financial institutions to reduce poverty in developing countries (Levine, 2004). Some believe that only the rich will benefit from more developed financial institutions because the poor do not possess financial, physical, and human capital resources needed to get loans. That condition is described by Stiglitz (1993) as market imperfections. The market behaviour will benefit those who can provide collateral and those with whom the financial institutions have an established relationship. Hence, this will lead to wider income disparity (Jalilian & Kirkpatrick, 2005; Shahbaz & Islam, 2011). The financial institutions described by Stiglitz (1993) are formal ones, for example, banks.

Other studies have argued that financial development does not help the poor because a more developed financial sector brings more risks. A developed financial sector offers more opportunity for speculation which may cause bubbles and crises (Kirkpatrick et al., 2000; Zhuang et al., 2009). Akther and Daly (2009) and Jeanneney and Kpodar (2008) also stated that financial instability is detrimental for the poor.

The opposite theory states that better functioning financial intermediaries can offer financial services to larger segments of a population. More credit means more entrepreneurship, more firm formation, and economic growth (Aghion & Bolton, 1997). The other way financial development can reduce poverty is by providing financially disadvantaged families with low cost loans. Families can use the loans to invest in the education and health of their children, an investment to get out of poverty (Tiwari et al., 2013). Financial development is beneficial for the poor because it increases access to various sources of funding. Increases in M3 to GDP or bank credits to GDP ratios directly translate into improved the living conditions of the poor. Finance facilitates transactions. It also provides the opportunity to accumulate assets and to smooth consumption (Boukhatem, 2015).

While studies investigating the relationship between financial development and economic growth are numerous, empirical evidence linking financial development and poverty is more limited. Evidence that financial development contributes significantly to reducing poverty can be found in the studies of Burgess and Pande (2005), Boukhatem (2015), Hamori and Inoue (2012), Inoue and Hamori (2011), Odhiambo (2009), Perez-Moreno (2011), Pradhan (2013), and Rehman and Shahbaz (2014) among others. Financial development has also been found to reduce inequality in several studies (Bittencourt, 2012; Deng & Su, 2011; Kappel, 2010).

The basic model to investigate the relationship between financial development and poverty is as follows (Boukhatem, 2015):

$$pov_{it} = \beta_0 + \beta_1 loggdp_{it} + \beta_2 FD_{it} + \beta_3 X_{it} + u_i + \vartheta_t + \varepsilon_{it} \quad (2)$$

where pov_{it} is the poverty indicator, gdp_{it} is the gross domestic product per capita, FD_{it} is financial development indicator, X_{it} is a vector of control variables (inflation rate, trade openness, financial openness), u_i is the country-specific effect, ϑ_t is the time-specific effect, ε_{it} is the error term, i is the individual dimension of the panel (country), t is the temporal dimension. The model had been adjusted by previous studies to suit different objectives and contexts.

2.3 The Development of Rural Banks in Indonesia

In the beginning of the 19th century, rural banks in Indonesia were formed from village barns, village banks, agricultural banks, and rural commercial banks. In 1988, a financial market policy package called PAKTO 1988 provided clarity regarding the existence and business activities of rural banks. Even though the banks originated from rural financial institutions, the banks are now mostly found in urban areas. This is because the Indonesian economy has tended to grow through its manufacturing sector, like many other developing countries in the world. Urbanization is growing with more people living in urban areas. In 2012, 54% of the population was living in urban areas, an increase from 49.8% in 2010 ("Hampir 54 Persen Penduduk Indonesia Tinggal di Kota," 2012).

The official name of rural banks in Indonesia is Bank Perkreditan Rakyat (BPR) or People Credit Banks. However, Bank Indonesia uses the term 'rural bank' as the official translation of BPR. Nowadays, the central bank considers rural banks as community banks because they have characteristics of community banks which are locally owned. Local owners are expected to have better understanding of the economic activities of their community so that they can help the community to grow. Rural banks are expected to be banks which are able to provide financial services in a particular area with a financing focus on SMEs and rural communities. Moreover, the owner of the banks is expected to be an individual and/or a legal entity with a vision of local economic development (Bank Indonesia, 2012).

Deposits at rural banks are also guaranteed by Indonesian deposit insurance agency, LPS. Because rural banks serve riskier customers, they set higher interest rates on deposits and loans. LPS guarantees deposits a maximum interest rate of 7.75% for commercial banks and 10.25% for rural banks (LPS, 2015). This higher deposit interest rate has attracted customers to save their funds in rural banks. The third party funds in rural banks are mostly in the form of time deposits, accounting for 53.83% of total deposits in rural banks (Bank Indonesia, 2015). Rural banks offer high deposit rates, but also charge high lending rates. In 2014, the banks charged an average lending rate of 27.8% p.a., while commercial banks' average lending rate was 12.6% p.a. (Bank Indonesia, 2015).

In 2013, 99.99% of total business units in Indonesia were considered to be SMEs. In the same year, this kind of business had absorbed 96.99% of Indonesia's total labour force and contributed to 57.56% of Indonesia's total GDP (Ministry of Cooperatives and SMEs of Indonesia, 2014). The importance of SMEs to Indonesian economic growth is because SMEs (Bank Indonesia, 2012)

1. have become the backbone of the Indonesian economy, regionally and nationally;
2. have become the main labour force and technology innovation absorber;
3. can improve income distribution and community welfare;
4. can be a foundation of a market economy and the embryo of large industries.

The number of rural banks in Indonesia in 2014 was 1,643 units, more than 10 times the 119 commercial banks (Bank Indonesia, 2015). This is because opening a new rural bank does not require the large amount of capital needed to open a commercial bank. The newest regulation on rural banks was formulated by Indonesia's Financial Service Authority (OJK), the macro prudential regulator of financial institutions in Indonesia. In OJK Regulation No.20/OJK/2014, OJK categorises the required capital based on the 'zone' where the new rural bank is to be established. The zone classification is based on

economic potential and level of banking competition in a region. The zone is classified into 4 groups. Zone 1 shows a region with higher economic potential and tighter bank competition, while zone 4 shows lower potential and more relaxed competition. To open a new rural bank in zone 1, the required capital is IDR 14 billion. Zone 2, zone 3, and zone 4 require capital of IDR 8 billion, IDR 6 billion, and IDR 4 billion, respectively (OJK, 2014). In comparison, to open a new commercial bank, the required capital is IDR 3 trillion.

The number of rural banks decreased during the 2000-2014 period because of mergers and liquidations. Bank Indonesia tightened the supervision of rural banks because of the large number of non-performing loans. However, assets, loans, and deposits of rural banks significantly increased during those years (Table 1).

Table 1: Rural Bank Indicators

	2000	2005	2014
Unit of rural banks per unit of commercial banks	2,419	2,009	1,643
Asset (billion IDR, real value)	4,731	12,951.1	30,910.8
Loan (billion IDR, real value)	3,619	9,306.4	23,521
Deposits (billion IDR, real value)	3,082	8,369	20,205.3

Source: Bank Indonesia (2015)

The role of rural banks in disbursing SME loans was still very low in the 2000-2014 period. In 2005 and 2014, rural banks could only disburse 4.1% and 5.1% of total SME loans, respectively (Table 2). The loan was still dominated by state banks. However, rural banks' SME loans grew 28.4% in the period 2005-2014, while other banks' SME loans could only grow 2.5%. By linking figures in Tables 1 and 2 it seems that Bank Indonesia's efforts to promote rural banks' contribution to SME loans were successful. Over the period 2005-2014, share of SME loans to total loans decreased. However, the contribution of rural banks to the loans increased. This could be the result of tighter regulation on rural banks. The occurrence of credit defaults and mismanagement was minimised. The growth of SME loans provided by rural banks was also significantly higher than other banks' growth.

Table 2: SME Loans by Group of Banks (in billions of IDR)

Bank	2005	Share of 2005 (%)	2014	Share of 2014 (%)	Growth 2005 – 2014 (%)
Rural banks	9,571.1	4.1	12,292	5.1	28.4
Others	225,393.3	95.9	231,017.8	94.9	2.5
Total	234,964.4	100	243,309.9	100	

Source: Bank Indonesia, 2015

The small number of SME loans forced Bank Indonesia to enact a regulation on the Granting of Credit or Financing and Technical Assistance in the Framework of Developing Micro, Small and Medium Enterprises in December 2012. The regulation obliges commercial banks to distribute credit for the development of SMEs—gradually to 2018, the banks have to distribute SME loans of at least 20% of their total loans. This raises an important question whether the regulation will counteract the role of rural banks to finance SMEs as promoted by Bank Indonesia.

2.4 Regional Differences in Indonesia

Most studies on the link between financial development and economic growth have been cross-country studies. One key aspect found from the studies is that financial development contributes more to growth in developing countries than in developed ones (Calderón & Liu, 2003; Dawson, 2010). Calderon and Liu (2003) pointed out that the reason behind this finding is because developing countries have more room for financial and economic improvement. If we want to focus on an individual developing country, we need to take into account the characteristics and geographical scope of the link on a sub-national level. According to Spiezia and Weiler (2007), this will provide better understanding of the sources of both the strengths and weaknesses of an economy, assuming a national economy is effectively an aggregation of its regional parts. Samolyk (1994) promoted the hypothesis that "the health of the regional financial sector (in terms of the credit quality of local banks and non-banks borrowers) can influence investment activity and regional economic growth by affecting a region's ability to fund local projects". In addition, Carbó-Valverde and Rodriguez-Fernández (2004) argued that a regional definition appears to provide more accurate measures when analysing the relationship between the banking sector and economic growth because the interaction between financial intermediaries and households and firms can be defined more precisely.

Hill (1998) stated that Indonesia is well-suited to study regional development. Indonesia is the largest archipelago country in the world. Indonesia consists of five main islands and 17,508 smaller islands in total. Currently, the large area of Indonesia is divided into 34 provinces. The economy of Indonesia represents the geographical aggregation of the different economic conditions of those provinces. The spatial distribution of economic output in Indonesia is very uneven. Some areas experience high local growth, whereas others remain stagnant. A study conducted by the Asian Development Bank (2010) concluded that the growth and poverty rates in Indonesia vary substantially across the regions. Akita (1988) pointed that in response to this situation, the government of Indonesia has a major national policy objective to remove regional disparity in the population and within economic activities. Studying the link between financial development and economic growth in Indonesia is better done on a sub-national level. This would give the policy maker a better understanding of the potential role of financial institutions in regional economic growth.

The numerous islands of Indonesia can be divided into five major regions: Sumatera, Java and Bali, Kalimantan, Sulawesi, and Eastern Provinces (Maluku, Nusa Tenggara, and Papua). A province is the highest tier of local government in Indonesia. Currently, Indonesia consists of 34 provinces. The provinces have a regional autonomy which means they have rights, authorities, and obligations to manage government affairs and public interest in accordance with applicable laws and regulations. The provinces have the authority to manage their regional revenue and expenditure budget.

There are significant differences in economic development and banking activities among provinces in Indonesia. For example, the economy of DKI Jakarta province – the capital city of Indonesia – grew by 6.7% in 2011, while the economy of Papua province had negative growth of -5.3% in the same year (BPS, 2015). Of the main regions, the economies of Java and Bali are the most dominant and accounted for 58.87% of Indonesian GDP in 2012. Sumatra was a distant second, accounting for 23.77% of GDP. Kalimantan, Maluku, Nusa Tenggara, Papua, and Sulawesi, despite their rich natural

resources, together accounted for less than Sumatra's share of GDP and less than one third of that of Bali and Java.

In term of poverty rate, the provinces of Kalimantan have the smallest poverty rate because they are rich in natural resources. In September 2014, the average poverty rate for Kalimantan provinces was 6.32%. Java was in second place with 9.87% living in poverty. The poverty rate in Sumatra, Sulawesi, and Eastern Provinces exceeded the national rate of 10.96%, accounting for 11.82%, 12.27%, and 17.33% respectively (BPS, 2015). It is widely believed that the higher the distance of a region from Java, the less prosperous the region.

In every province of Indonesia, there are different kinds of banks. For example, in the province of Central Java, there were 67 commercial banks and 286 rural banks in 2012 (BPS Jawa Tengah, 2013). The commercial banks in Indonesia, particularly large and foreign banks, mostly reside in wealthy provinces. In 2014, the region of Java had the largest number of rural banks, at 62.15% of total rural banks in Indonesia. It also had the largest share of rural bank deposits, at 61.54% of total rural bank deposits in Indonesia (Bank Indonesia, 2015). The following table describes the total number of rural banks (head offices), percentage of rural banks in each province to total rural banks, deposits at rural banks, and percentage of deposits in each province to total rural bank deposits in 2014.

Table 3: Distribution of Rural Banks in the Provinces of Indonesia, 2014

Province	Number of rural banks	Percentage of rural banks in each province to total rural banks	Deposits at rural banks (billion IDR)	Percentage of deposits in each province to total rural bank deposits
Aceh	5	0.30	85	0.14
North Sumatra	54	3.29	774	1.32
West Sumatra	95	5.78	973	1.66
Riau	33	2.01	787	1.34
Jambi	19	1.16	567	0.97
South Sumatra	19	1.16	715	1.22
Bengkulu	4	0.24	32	0.05
Lampung	26	1.58	3,724	6.34
Bangka Belitung	3	0.18	70	0.12
Riau Islands	40	2.43	3,610	6.14
DKI Jakarta	25	1.52	1,209	2.06
West Java	299	18.20	10,754	18.30
Central Java	252	15.34	13,909	23.67
DI Yogyakarta	54	3.29	2,934	4.99
East Java	325	19.78	6,241	10.62
Banten	66	4.02	1,114	1.90
Bali	137	8.34	5,905	10.05
West Nusa Tenggara	29	1.77	690	1.17
East Nusa Tenggara	11	0.67	309	0.53
West Kalimantan	21	1.28	770	1.31
Central Kalimantan	4	0.24	232	0.39
South Kalimantan	25	1.52	338	0.58
East Kalimantan	14	0.85	191	0.33
North Sulawesi	18	1.10	772	1.31
Central Sulawesi	9	0.55	412	0.70
South Sulawesi	23	1.40	721	1.23

Southeast Sulawesi	17	1.03	94	0.16
Gorontalo	4	0.24	20	0.03
West Sulawesi	1	0.06	3	0.01
Maluku	2	0.12	329	0.56
North Maluku	2	0.12	17	0.03
West Papua	1	0.06	198	0.34
Papua	6	0.37	251	0.43

Source: Bank Indonesia (2015)

III. EMPIRICAL MODEL

Some regions have regulations to promote the development of small medium enterprises (Ministry of Cooperatives and SMEs of Indonesia). There are also regions that have local regulations on rural banks and credit guarantee institutions. Moreover, there are two regulations issued by the Central Bank of Indonesia to increase SME loans and rural bank development. Those regulations might or might not affect regional rural bank loan quantity. Therefore, this chapter attempts to analyse the impact of local regulations and national regulations on rural bank loan supply.

The basic model is replicated from Levine and Zervos (1996). Levine and Zervos examined whether there was strong empirical association between stock market and long run growth using two stage least squares (2SLS) regressions. They use the predetermined component of stock market development to explain economic growth. This study also employs 2SLS regressions. First, we estimate coefficient on rural bank loan. Next, we use the estimated coefficient as an endogenous regressor for regional economic growth and regional poverty.

Panel data technique is used to estimate the equations. The basic approach to estimating 2SLS with panel data, according Wooldridge (2009), involves two steps: 1) using the fixed effects transformation or first differencing to eliminate the unobserved effects from the equations of interest, and 2) finding instrumental variables for the endogenous variables in the transformed equations. We apply fixed effects estimator in the panel estimations because there are many different regional units in the data set and each of them has a different intercept. The data processor program is Stata.

The first stage of the regression employs the following empirical model:

$$rbloan_{it} = \alpha_1 + \alpha_2 dumlocal_{it} + \alpha_3 dumbi_{it} + \rho_i + \varepsilon_{it} \quad (3)$$

where $rbloan_{it}$ is the value of rural bank loan in the region and $dumlocal_{it}$ is a dummy variable for local regulation. There are three types of local regulations: regulations on the development of SMEs, regulations on local credit guarantee institutions, and regulations on the development of rural bank. $dumbi_{it}$ is a dummy for the central bank regulation. There are two important central bank regulations: regulation in 2004 that obligates commercial banks to provide credits to SMEs and regulation in 2011 that suggests a form of cooperation between rural bank and commercial bank.

The second stage is to empirically evaluate whether rural bank development is strongly linked to regional economic growth and regional poverty rate. The regression equations are as follows:

$$lng = \beta_1 X_{it} + \beta_2 rbloan_{it} + \gamma_i + \mu_{it} \quad (4)$$

$$pov = \beta_i P_{it} + \beta_2 rbloan_{it} + \gamma_i + \mu_{it} \quad (5)$$

where lng_{it} is growth of regional gross domestic product, pov_{it} is number of poor people in the regions, X and P is a set of control variables, β_1 is a vector of coefficients on the variables in X, β_2 is the estimated coefficient on $rbloan$, γ_i is the region-specific intercepts (i=1….n), and μ_{it} is an error term. The goal of the empirical analysis is to assess the strength of the independent partial correlation between rural bank development and regional economic growth, also between rural bank development and poverty. As a consequent, we use a large set of control variables, X and P, to control for a variety of factors that may be associated with economic growth and poverty, respectively.

X_{it} includes regional openness, regional labour force, decentralisation, and regional construction. According to Todaro & Smith (2012), labour force and capital stock are considered as important components of economic growth. Other control variables are based on Mahi, Resosudarmo, and Adirinekso (2002). They argued that regional economic growth is determined by endowment capacity, openness of the economy, and government policy. Capital stock and labour force are regional endowment capacity. We use total export minus import to measure openness of the economy. As a proxy of government policy, we use decentralisation. P_{it} includes regional inflation, regional openness, and decentralisation. Higher openness and decentralisation could reduce poverty (Jütting et al., 2004; Rosenzweig, 2003). We add another control variable which is inflation, because higher inflation generally leads to higher poverty (Cardoso, 1992).

Description of the Variables

Rural bank loan (*rbloan*)
The variable is total rural bank loan in the region per capita. Data for rural bank loan are missing for Central Kalimantan in 2000 and 2002, for Southeast Sulawesi in 2000 – 2003, and for North Maluku in 2001 and 2004. The data are compiled from SPI. The unit is in billion Indonesian Rupiah (IDR). The data are in nominal value, and we deflate the value with national Consumer Price Index (CPI) to get real value data. After that, we divide the loan value with population in the region to obtain data of total rural bank loan per capita.

Local regulation dummies (*dumlocal*)
The regulation dummies attempt to capture local regulations supporting the development of SME loans and/or the development of rural bank. The following list of regional regulations (Table 5.1) is composed based on information from the Ministry of Home Affairs of the Republic of Indonesia. The regulations can be classified into: regulations on the empowerment of SMEs (*dregsme*), regulations on rural bank development (*dregb*), regulations on provincial credit guarantee institutions (*dregin*).

Regulations on the empowerment of SMEs were issued because the local government had been aware of the role of the enterprises on supporting local economy which is creating jobs. In the regulations, the government committed to support the development of the enterprises by encouraging them to seek helps and/or advices from the Provincial Office of SMEs and Cooperatives. This office is the provincial working unit under the Ministry of SMEs and Cooperatives of Indonesia. The office could facilitate the enterprises, including but not limited, to promoting and marketing their products, advancing their technologies and dealing with intellectual property rights. Over the

studied period, only eight regions have the SME regulation. They are Aceh, North Sumatera, West Java, Bali, East Nusa Tenggara, Central Kalimantan, East Kalimantan, and South Sulawesi.

Some of local governments attempted to support the development of rural bank by establishing a local government-owned rural bank. Asset of this bank was being backed up by the government. The money to support this bank were taken from local government budget. The local government officially stated the amount of the supported money in the local regulation. There are five regions having this kind of regulation: South Sumatera, West Java, East Java, West Nusa Tenggara, and South Kalimantan.

To mitigate the occurrence of bad SME loans and to increase the value of the loans, some local governments established a provincial credit guarantee institution. The institution will take over the loan payment on behalf of the debtors when the debtors are unable to fulfil their obligation. The debtors pay insurance premium to the institution to get their loan insured. This institution could also serve as a "collateral" for SME loans debtors. When the debtors apply for the loan in a bank, they and the bank also apply for loan bond to the credit guarantee institution. The bank can also apply for the loan bond on behalf of its customers. The credit guarantee institution can guarantee loans from financial institutions and non-bank financial institutions, such as cooperatives. Only ten regions in Indonesia have a provincial credit guarantee institution. The regions are West Sumatera, Riau, South Sumatera, West Java, East Java, West Nusa Tenggara, Central Kalimantan, South Kalimantan, East Kalimantan, and Central Sulawesi. The establishment of this institution is officially stated in the regions' local regulation.

National regulation dummies (*dumbi*)

dumbi is a dummy for the national regulation. Two important regulations issued by the central bank are the regulation in 2004 that obligates commercial banks to provide SME loans that had been the exclusive market segment serviced by rural banks (*dreglsme*) and the regulation in 2011 that suggests cooperation between rural bank and commercial banks (*dregap*). The hypothesis is that the former regulation will reduce the number of rural bank loans. Meanwhile, for the latter regulation, the hypothesis is that it will improve the number of rural bank loans.

Dummy of regional development bank (*drdb*)

We put a dummy of regional development bank into the model to control the existence of regional development bank. This bank is a commercial bank that is owned by local government. Nonetheless, not all regions have their own regional development bank. From the 27 samples in this study, one sample (North Maluku) does not have its own regional development bank. This bank and rural bank seem to have one similiar objective which is to promote regional economic growth. However, in some regions, regional development bank merely acts as a cashier for the local government. The dummy variable is created to check if regional development bank has a significant effect on regional economic growth and regional poverty.

Table 4: Local Regulations on the Development of SMEs and Rural Bank

No	Province	Regulations		
		The Development of SMEs	**The Development of Rural Bank**	**Provincial Credit Guarantee Institutions**
1	Aceh	March 2004	-	-
2	North Sumatera	September 2004	-	-
3	West Sumatera	-	-	December 2012
4	Riau	-	-	June 2010
5	Jambi	-	-	-
6	South Sumatera	-	May 2009	June 2012
7	Bengkulu	-	-	-
8	Lampung	-	-	-
9	DKI Jakarta	-	-	-
10	West Java	August 2010	December 2006	December 2005
11	Central Java	-	-	-
12	DI Yogyakarta	-	-	-
13	East Java	-	June 2000	October 2009
14	Bali	March 2012	-	-
15	West Nusa Tenggara	-	December 2007	December 2008
16	East Nusa Tenggara	February 2004	-	-
17	West Kalimantan	-	-	-
18	Central Kalimantan	December 2008	-	December 2012
19	South Kalimantan	-	August 2004	October 2012
20	East Kalimantan	February 2012	-	June 2012
21	North Sulawesi	-	-	-
22	Central Sulawesi	-	-	October 2009
23	South Sulawesi	April 2006	-	-
24	Southeast Sulawesi	-	-	-
25	Maluku	-	-	-
26	North Maluku	-	-	-
27	Papua	-	-	-

Source: Ministry of Home Affairs of the Republic of Indonesia

Growth of regional domestic product (lng)
Regional growth domestic product (RGDP) is the total final output of goods and services produced by the region's economy by residents and non-residents. The data are compiled from national BPS and the unit are in million IDR. BPS presents RGDP in constant price and current price. RGDP in constant price uses value in the year of 2000 as its base year. Growth of RGDP is calculated using natural logarithm.

Labour force (lab)
To analyse the relation between rural bank development and regional growth, other determinants of the growth have to be taken into account. Mahi, et. al. (2002) suggested several variables that are assumed to determine regional growth in Indonesia. The variables can be classified as endowment capacity (natural resources, human resources, and fiscal resources), openness of the economy (volume of trade goods), and government policy (decentralisation, wage). To measure endowment capacity, we use number of labour force in the region. Labour force are people aged 15 years old and over who, in the previous week, were working, temporarily absent from work but having jobs, and those who did not have work and were looking for work. The data are in number of people, gathered from national BPS.

Construction ($cons$)
This variable is used to measure capital stock which is considered as important components of economic growth according to Todaro & Smith (2012). The World Bank (1994) also argued that a country's success and failure could be determined by its adequacy of infrastructure because infrastructure helps to diversify product, expand trade, cope with population growth, reduce poverty, or improve environmental conditions. Construction activities include, for example, building construction, road, bridge, railway, tunnel subway, viaduct and drainage, sanitary construction, dams, electricity generate building, distribution, transmission and communication network. The activities include planning, preparation, execution, demolition, and repairmen of buildings and other constructions. Construction value is the value of work completed by a contractor during a period of enumeration based on a contract value on the letter of contract and project realized by the contractor. The unit is in thousand IDR. The data are in nominal value, therefore we deflate the data with Indonesian CPI in 2000 to get real-valued construction. After that, we divide the value with population in the region to measure construction per capita. The data are from national BPS.

Openness ($open$)
Openness measures total trade of goods and services with other provinces as well as outside the country. This variable is obtained by calculation of export minus import in the regions. Value of both export and import are obtained from national BPS. The data are in billion USD, presented in real value.

Decentralisation (dec)
In 1999, the Government of Indonesia enacted the law on regional autonomy as well as the law on fiscal balance between the central and local governments. Based on the laws, local government now has fiscal autonomy. The sources of regional government's revenue are original local revenues, balance funds, regional loans, and other legal revenues. Original local revenues consist of local taxes, regional retributions, profits from locally owned enterprises, and/or other local wealth, and other legal revenues. Balance funds refer to the level of transfer between the central and provincial as well as district governments. They consist of a provincial and district share of the revenues from land and property tax, as well as the tax on acquisition of land, building rights and

natural resources (forestry, public mining, fisheries, oil mining, and gas), the General Allocation Fund (GAF) and the Special Allocation Fund (Luqman). GAF varies amongst provinces, depends on local needs and the economic potential of the province. The SAF is designed to help needy areas. It includes a reforestation fund and can be used as well for unpredicted or national priority needs. GAF and SAF are grants from central government to local government. According to the law on Fiscal Balance between Central and Local Government, the grants are intended to help local governments financing their needs so that there is less inequality between regions. The formula of calculating the decentralisation is replicated from Mahi, et.al. (2002):

$$dec_{nominal} = 1 - \left(\frac{grant_{nominal}}{total\ expenditure_{nominal}}\right)$$

Based on the formula, a region with $dec = 1$ means the region is self-sufficient. In other words, the region can finance its expenditure with its own local revenue. In the contrary, if the value of the dec is closer to 0, the region is highly depended on the central government grant. It can be concluded that higher number of dec represents prosperous regions and vice versa. DKI Jakarta, the capital city of Indonesia, has the dec value of 0.9 – 1, while the number for North Maluku is between 0.2 – 0.4. The average percentage of poor people living in DKI Jakarta and North Maluku during 2000 – 2014 is 3.8 percent and 10.4, respectively. The data are compiled from Directorate General of Budget (DJPK), Ministry of Finance Republic of Indonesia. The value is in million IDR. We deflate the data with Indonesian CPI in 2000 to get real-valued decentralisation. After that, I divide the value with population in the region to measure decentralisation per capita.

Poverty (pov)

To measure poverty, BPS uses concept of basic needs approach. Based on this approach, Indonesian poverty line is a minimum standard expenditure required by an individual to fulfil his/her basic necessity for both food and non-food items. Or, in other words, poverty line is an addition of food poverty line (FPL) and non-food poverty line (NFPL). FPL is the expenditure value of food minimum requirements or is equivalent of 2100 kilocalories per capita per day. NFPL is minimum needs for housing, clothing, education, health, and other basic individual needs. This study uses the Head-Count Index data which measures the percentage of the population that is counted as poor, which is in accordance with the UNDP Human Development Report's definition of absolute poverty. The data is percentage of poor people in the region. The data is compiled from national BPS.

Inflation (inf)

The Consumer Price Index (CPI) is the indicator of inflation in Indonesia. Since January 2014, CPI includes 82 cities which consist of 33 capital province and 49 big cities in Indonesia. Inflation is the percentage change of the yearly CPI. The data is compiled from national BPS.

IV. DATA ANALYSIS AND FINDINGS

5.1 Data

The studied period is from 2000 to 2014. The data set consists of 27 provinces in Indonesia. The data set could not start prior to 2000 as the organisation of regional data in Indonesia was different. The macroeconomic regional data (regional GDP per capita

and poverty rate) is from Statistics Indonesia (*Badan Pusat Statistik*/BPS). Bank regional data are from the Banking Statistics Indonesia (*Statistik Perbankan Indonesia*/SPI). Data of regional budget statements are compiled from the Ministry of Finance Republic of Indonesia.

5.2 Descriptive Statistics

The estimations in this study are employed using four datasets: all regions, less developed regions, intermediate regions, and developed regions. Classification of the regions is based on regional gross domestic product. Developed regions include Jakarta, West Java, and East Java. Intermediate regions include Riau and Central Java. Other 22 regions are included in the less developed classification.

Table 5: Summary of the Statistics

Var.	Definition	Mean (Banerjee, Lumsdaine, & Stock)			
		All regions	**Less dev.**	**Intermediate**	**Developed**
lng	Regional growth domestic product (in natural logarithm to obtain growth)	10.372 (1.275)	9.922 (0.921)	11.860 (0.292)	12.681 (0.245)
pov	Regional poverty rate (in percentage)	16.280 (8.161)	17.200 (8.284)	14.332 (5.376)	10.867 (6.373)
rbloan	Regional rural bank loan, per capita	0.050 (0.077)	0.050 (0.083)	0.075 (0.049)	0.035 (0.020)
cloan	Commercial bank loan in a region (does not include SME loan), per capita	2.567 (6.772)	1.344 (1.064)	1.558 (0.821)	12.207 (17.470)
open	Export minus import in a region, per capita	1.582 (4.811)	1.490 (4.964)	3.929 (3.944)	0.692 (3.652)
labour	Total labour force in a region, per capita	473.940 (69.061)	471.22 (73.036)	474.399 (51.317)	493.580 (41.474)
inflation	Changes of year-on-year price in a region	8.350 (4.261)	8.414 (4.384)	8.486 (3.922)	7.786 (3.535)
dec	Ratio of total grant over total regional expenditure	0.595 (0.234)	0.540 (0.220)	0.769 (0.117)	0.874 (0.089)
cons	Value of completed construction work in the region, per capita, per capita	503.344 (565.226)	414.334 (263.651)	523.157 (317.112)	1142.879 (1367.255)
dregin	Dummy variable: 1 if a region has a regulation on the establishment of provincial credit insurance guarantee, 0 = otherwise	0.1111 (0.315)	0.067 (0.250)	0.167 (0.379)	0.333 (0.477)
dregrb	Dummy variable: 1 if a region has a regulation to promote the development of rural bank, 0 = otherwise	0.116 (0.321)	0.055 (0.227)	0 (0)	0.5111 (0.506)
dregsme	Dummy variable: 1 if a region has a regulation to promote the development of SMEs, 0 = otherwise	0.146 (0.353)	0.576 (0.495)	0 (0)	0.667 (0.477)
dreglsme	Dummy variable: 1 for periods after the implementation of Bank Indonesia regulation on SME loan, 0 = otherwise	0.667 (0.472)	0.667 (0.472)	0.667 (0.479)	0.667 (0.477)
dregap	Dummy variable: 1 for periods after the implementation of Bank Indonesia regulation on APEX program, 0 = otherwise	0.267 (0.443)	0.267 (0.443)	0.267 (0.450)	0.267 (0.447)
drdb	Dummy variable: 1 if a region has regional development bank, 0 = otherwise	0.963 (0.189)	0.955 (0.209)	1 (0)	1 (0)

Table 5 provides descriptive statistics of the variables for all categories. The table highlights that there is substantial variation between regions. Poverty and regional gross domestic product growth are higher in less developed regions, compared to intermediate

and developed regions. Rural banks are more accepted in less developed and intermediate regions, shown by higher mean of rural bank loans and assets. Interestingly, developed regions have lowest mean of loans but highest mean of bad loans. As expected, developed regions have highest value of commercial bank loans. The difference between mean of commercial bank loans in developed regions, intermediate regions, and less developed regions is very high (12.207, 1.558, and 1.344, respectively).

The macroeconomics variables also tell interesting facts. Developed regions have lowest trade value, while intermediate regions have highest trade value. This could mean developed regions import more than intermediate and less developed regions because we obtain trade value by subtracting export with import. Developed regions have the highest labour force. Inflation is the lowest in developed regions. Decentralisation and construction are highest in developed regions. This proves that construction is still centralised in the capital area and its surrounding.

The dummy variables show that developed regions have more regulations on SME and rural bank. Yet, the regions have the lowest rural bank loans. Intermediate regions even do not have that kind of regulations. This suggests that local regulations do not significantly affect rural bank loan supply.

5.3 Regression Results

Table 6 presents the estimated results using all samples (all regions, less developed regions, intermediate regions, and developed regions). The findings reveal that local credit guarantee institutions help to increase the value of rural bank loans in intermediate regions. Regulations on rural banks help increase rural bank loans in developed regions. Regulations on the development of rural banks and SMEs are positive and significant for less developed and developed regions, implying that the regulations promote the value of rural bank loans.

The central bank regulation on SME loan reduces the loan of rural bank in less developed regions. This is as expected, that this regulation will put rural bank to compete with commercial bank to provide SME loans. However, the regulation increases rural bank loans in all regions and developed regions. This could be because rural banks try to compete with commercial banks by increasing their loans after the regulation implemented. The central bank regulation on the cooperation between rural bank and commercial bank has significant and positive effect on all samples.

Rural bank loans contribute to regional growth for all samples, except for intermediate regions. The estimated coefficients are positive and statistically significant, suggesting that rural bank loans increase regional growth. Two provinces in developed regions, West Java and East Java, have most rural bank loans in Indonesia. The local governments also put great attention on the development of SMEs and rural bank. Both regions have local regulations on the development of rural bank and SMEs, and has a provincial credit guarantee.

Commercial bank loans have no significant effect on regional growth for all samples. It should be noted that the variable has negative sign for less developed and developed regions, implying that larger commercial bank loans lead to slower regional growth. Cournede and Denk (2015) pointed out that bank loans could lead to slower economic growth if lower quality loans increase and the proportion of household (commercial)

loans over business credit goes up. Slower regional growth as an effect of higher commercial bank loans demonstrates that, generally in all Indonesian regions, there are more consumption loans compared to business loans and the value of bad loans increase. The growth of business loans over the period of the study was 276.2%, while commercial loans grew 765.90%. Value of bad consumption loans jumped 134.59% from its value in 2000 to 2014, while the value of business loans contracted 59.53%. Nasrudin and Soesilo (2004) stated that commercial bank loan could reduce regional growth if the loan was not being used to support investment in the region.

Table 6: Results of Regressions

Variables	**Coefficients**			
	All regions	**Less developed regions**	**Intermediate regions**	**Developed regions**
Depvar: rbloan				
dregin	0.045672	-0.0220227	0.0464314***	0.0035297
dregrb	-0.0150771	0.0214053	0	0.0087172**
dregsme	0.0111413	0.0680927***	0	0.0120892***
dreglsme	0.0160433***	-0.0449489***	0.0403131***	0
dregap	0.0387327***	0.0434172***	0.0471191***	0.0204845***
constant	0.0279035***	0.0291241***	0.0276252***	0.0191969***
Depvar: lng				
Variables	**All regions**	**Less developed regions**	**Intermediate regions**	**Developed regions**
rbloan	8.085443***	11.8158**	-3.498181	13.33224***
open	0.0026471	0.0165174	-0.0430742	-0.0064233
cloan	1.16e-06	-0.5189306	0.3335551	-0.0162048
cons	-0.0552082	0.001876*	0.0006433*	0.0002332
dec	0.3168554**	0.4792141*	0.6319007***	-0.362429
lab	0.0041125	0.0012411	0.000075	-0.0008411
drdb	0	0	0	0
constant	9.600926	8.412026***	10.91299***	12.87576***
Depvar: pov				
Variables	**All regions**	**Less developed regions**	**Intermediate regions**	**Developed regions**
rbloan	-98.92426***	-57.27837***	107.8615	-155.6791***
open	0.1982721	0.3063718**	0.1458047	-0.0217707
cloan	0.000015*	-0.4719657	-10.88399*	0.1230001**
inf	0.0568422	0.1011714**	0.1372821	1.838755
dec	-3.688136*	-5.283701***	0.3549463	0.014646
drdb	0	0	0	0
constant	22.15758***	22.1288***	21.20497***	13.17714***

Openness and labour have no significant effect on regional samples for all samples. The estimated coefficients of finished construction value are positive and statistically significant for for less developed regions and intermediate regions. Decentralisation helps to improve regional growth, except for developed regions. Jutting et al. (2004) pointed out that decentralisation could worsen poverty if policy makers do not focus on reducing poverty. The constans for all samples are positive and statistically significant.

Rural bank loans contribute to the reduction of poverty, except for intermediate regions. Openness increases poverty in less developed regions. Commercial bank loans reduce poverty in intermediate regions, but increase poverty in all regions and developed regions. Poverty goes up when inflation goes up in less developed regions. Decentralisation substracts the percentage of poor people in all regions and less developed regions**.** The constans for all samples are positive and statistically significant.

We use dummy variable *drdb* to control the existence of regional development bank in the model. The dummy variable has no significant effect on regional growth and

regional poverty. This suggests that the statement that regional development bank is still merely being a cashier for the regional development is true.

5.4 Sensitivity Analysis

The sensitivity analysis is carried out by replacing the measurement of regional output and regional poverty. We use regional gross domestic product per capita as the measurement of regional output. Poverty gap index and poverty severity index are used to measure regional poverty, replacing the percentage of poor people in the region. Poverty gap index measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line. Higher value of the index shows that the gap between average expenditure of the poor and the poverty line is wider. Poverty severity index describes inequality among the poor. Higher value of the index shows that inequality among the poor is higher.

Results of sensitivity analysis are similar to those of original regressions. For all region samples, rural bank increases RGDP growth and RGDP per capita, reduces poverty rate, poverty gap index and poverty severity index. Regression estimation of less developed regions shows that rural bank has significant and positive effect on RGDP per capita, the same result we get when we use RGDP growth as a dependent variable. For less developed regions, rural bank loan reduces regional poverty rate and poverty gap index, but does not affect poverty severity index.

For developed regions, rural bank loan increases RGDP growth and RGDP per capita. The loan also reduces poverty, poverty gap index, and poverty severity index. For intermediate regions, rural bank loan does not significantly affect RGDP growth and RGDP per capita. The loan also does not significantly affect regional poverty rate, but reduces poverty gap and poverty severity.

5.5 Discussion

Certain caveats and design limitations should be noted before discussing the implication of the results of this study. First, there is the possibility of omitted variables in the equations. This is common for studies on public policies (Feiock, 1991). Vidyattama (2010) argued that transportation infrastructure (the length of the road), trade openness, and human capital (the average year of schooling) were the important region growth determinants in Indonesia. However, Mahi et al. (2002) pointed out that decentralisation is the important factor affecting regional growth. The important determinants of regional growth in Indonesia are still inconclusive. Second, the findings may be limited to the studied time period. Over the period, there were changes in the number of provinces in Indonesia. This expansion may have significant effect on rural bank development, regional growth, and regional poverty. Yet, the effects might not be captured in the model of this study.

In view of those design limitations, the results of this study suggests that neither local regulations nor national regulations affect the supply of rural bank loan. Local and national regulations affect rural bank loans when we use sample of less developed regions. For this sample, local regulations on the development of SMEs and the development of rural bank are positive and statistically significant. Meanwhile, national regulation on the disbursement of SME loan reduces rural bank loan. One local regulation is positive and statistically significant when we use sample of developed regions, that is local regulation on the establishment of provincial credit guarantee

institution. It can be concluded that the local and national regulations aimed to support the development of SMEs are still not effective.

Meslier-Crouzille et al. (2012) found that rural bank presence was positive and significant for all regions except the wealthiest region, less-developed regions, and intermediate-developed regions in the Philippines. Contrary to the results, the findings in this study indicate that rural bank loan improves regional economic growth when the sample of all regions and developed regions are being used. The reason might be because West Java and East Java, which are two of the regions in developed groups, have the most rural banks in Indonesia. This impact of rural bank on regional growth is also stronger than the effect of rural bank on growth of all region samples.

Rural bank presence reduces poverty in all samples, except intermediate regions. The impact of rural bank loan on poverty rate reduction is stronger for developed regions, compared to the other two samples. This might indicate that a threshold exists. That a minimum level of regional wealth is required for the influence of rural bank on economic activity to be more effective.

V. SUMMARY

This paper provides evidence of the contribution of rural bank on regional economic growth and regional poverty. From the research that has been carried out using two stage least squares (2SLS) methodology, it is possible to conclude that rural bank loans promote regional economic growth and reduce regional poverty. The findings also suggest that local regulations intended to support the development of rural banks and SMEs still does not work as expected.

The paper also shows that, in Indonesia, rural banks should be supported in order to support regional economic growth and poverty reduction. Compared to commercial banks, rural banks have an expertise to finance small and medium enterprises which has become the backbone of Indonesian economic activity.

References

Abdullah, S. N., Sanusi, N. A., Kamil, N. F. N. M., & Hasan, F. A. (2008). Strategies for sustainable economic growth: The role of financial depth. *The Business Review, Cambridge, 10*(1), 275.

Abdurohman. (2003). The role of financial development in promoting economic growth: Empirical evidence of Indonesian economy. *Jurnal Keuangan dan Moneter, 6*(2).

Aghion, & Bolton, P. (1997). A theory of trickle-down growth and development. *The Review of Economic Studies, 64*(2), 151-172.

Agung, J., & Ford, J. (1998). Financial Development, liberalisation and economic development in Indonesia, 1966-1996: Cointegration and causality. *University of Birmingham, Department of Economics Discussion Paper*.

Akhter, S., & Daly, K. J. (2009). Finance and poverty: Evidence from fixed effect vector decomposition. *Emerging Markets Review, 10*(3), 191-206. doi:10.1016/j.ememar.2009.02.005

Akimov, A., Wijeweera, A., & Dollery, B. (2009). Financial development and economic growth: Evidence from transition economies. *Applied financial economics, 19*(10/12), 999-1008. doi:10.1080/09603100701857880

Akita, T. (1988). Regional development and income disparities in Indonesia. *Asian economic journal, 2*(2), 165-191. doi:10.1111/j.1467-8381.1988.tb00131.x

Arestis, P., & Demetriades, P. (1997). Financial development and economic growth: Assessing the evidence. *The Economic Journal, 107*(442), 783-799. doi:10.1111/j.1468-0297.1997.tb00043.x

Asian Development Bank. (2010). *Indonesia: Critical development constraints*: Asian Development Bank.

Bank Indonesia. (2012). *Peningkatan daya saing melalui penguatan kelembagaan BPR*. Paper presented at Rakernas Perbarindo, Batam, Indonesia

Bank Indonesia. (2015). *Indonesian Banking Statistics*. Retrieved October 8, 2015, from http://www.bi.go.id/en/statistik/perbankan/indonesia/Default.aspx

Beck, R., Georgiadis, G., & Straub, R. (2014). The finance and growth nexus revisited. *Economics Letters, 124*(3), 382-385. doi:10.1016/j.econlet.2014.06.024

Bittencourt, M. (2012). Financial development and economic growth in Latin America: Is Schumpeter right? *Journal of policy modeling, 34*(3), 341-355. doi:10.1016/j.jpolmod.2012.01.012

Boukhatem, J. (2015). Assessing the direct effect of financial development on poverty reduction in a panel of low-and middle-income countries. *Research in International Business and Finance*.

BPS. (2015). *Statistics Indonesia*. Retrieved October 8, 2015, from http://www.bps.go.id/

BPS Jawa Tengah. (2013). *Jawa Tengah in Figures*. Semarang, Indonesia: BPS.

Burgess, R., & Pande, R. (2005). Do rural banks matter? Evidence from the Indian social banking experiment. *The American Economic Review, 95*(3), 780-780. doi:10.1257/0002828054201242

Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics, 72*(1), 321-334. doi:10.1016/s0304-3878(03)00079-8

Carbó Valverde, S., & Rodriguez Fernández, F. (2004). The finance-growth nexus: A regional perspective. *European urban and regional studies, 11*(4), 339-354. doi:10.1177/0969776404046265

Cardoso, E. (1992). Inflation and poverty. *National Bureau of Economic Research, w4006*.

Christopoulos, D. K., & Tsionas, E. G. (2004). Financial development and economic growth: Evidence from panel unit root and cointegration tests. *Journal of Development Economics, 73*(1), 55-74. doi:10.1016/j.jdeveco.2003.03.002

Collender, R. N., & Shaffer, S. (2003). Local bank office ownership, deposit control, market structure, and economic growth. *Journal of Banking & Finance, 27*, 27-57. doi:10.1016/S0378-4266(01)00207-2

Cournède, B., & Denk, O. *Finance and economic growth in OECD and G20 countries*: OECD Publishing. Retrieved from /content/workingpaper/5js04v8z0m38-en

Dawson, P. J. (2003). Financial development and growth in economies in transition. *Applied Economics Letters, 10*(13), 833-836. doi:10.1080/1350485032000154243

Dawson, P. J. (2010). Financial development and economic growth: A panel approach. *Applied Economics Letters, 17*(8), 741-745. doi:10.1080/13504850802314411

De Gregorio, J., & Guidotti, P. E. (1995). Financial development and economic growth. *World Development, 23*(3), 433-448. doi:10.1016/0305-750x(94)00132-i

Deng, H., & Su, J. (2011). Influence of financial development on the income distribution in China. *Social Science Letters, 1*(1), 73.

Feiock, R. C. (1991). The effects of economic development policy on local economic growth. *American Journal of Political Science*, 643-655.

Fry, M. J. (1997). In favour of financial liberalisation. *The Economic Journal, 107*(442), 754-770. doi:10.1111/j.1468-0297.1997.tb00041.x

Gemech, F., & Struthers, J. (2003). The Mckinnon-Shaw hypothesis: Thirty years on: A review of recent developments in financial liberalization theory Retrieved from www.esocialsciences.org/Download/repecDownload.aspx?...

Hamori, S., & Inoue, T. (2012). How has financial deepening affected poverty reduction in India?: Empirical analysis using state-level panel data. *Applied financial economics, 22*(4/6), 395-408. doi:10.1080/09603107.2011.613764

Hampir 54 Persen Penduduk Indonesia Tinggal di Kota. (2012, August 23). *Kompas*. Retrieved from http://nasional.kompas.com/read/2012/08/23/21232065/%20Hampir.54.Persen.Penduduk.Indonesia.Tinggal.di.Kota

Hasiholan, R. M., & Adiningsih, S. (2003). Analisis kausalitas antara perkembangan sektor keuangan dengan pertumbuhan ekonomi di Indonesia. *Sosiohumanika (Vol. 16/A), 16*(2003).

Hidayati, S. (2009). *Analisis hubungan kinerja sistem keuangan (perbankan dan pasar modal) terhadap pertumbuhan ekonomi Indonesia periode 1999-2008* (Master's thesis, Universitas Indonesia, Jakarta, Indonesia).

Hill, H. (1998). The challenge of regional development in Indonesia. *Australian Journal of International Affairs, 52*(1), 19-34. doi:10.1080/10357719808445235

Honohan, P. (2004). Financial development, growth, and poverty: How close are the links? In C. A. E. Goodhart (Ed.), *Financial development and economic growth: Explaining the links*. Houndmills, Basingstike, Hampshire: Palgrave Macmillan.

Inggrid. (2006). Sektor keuangan dan pertumbuhan ekonomi di Indonesia: Pendekatan kausalitas dalam multivariate vector error correction model (VECM). *Jurnal Manajemen dan Kewirausahaan, 8*(1).

Inoue, T., & Hamori, S. (2011). Financial permeation as a role of microfinance: Has microfinance actually been helpful to the poor? *IDE Discussion Paper, 299*.

Jalilian, H., & Kirkpatrick, C. (2005). Does financial development contribute to poverty reduction? *Journal of Development Studies, 41*(4), 636-656.

Jeanneney, S. G., & Kpodar, K. (2008). Financial development and poverty reduction: Can there be a benefit without a cost? *IMF Working Papers, 8062*(200), 1-36.

Jütting, J. P., Kauffmann, C., McDonnell, I., Osterrieder, H., Pinaud, N., & Wegner, L. (2004). Decentralization and poverty in developing countries: Exploring the impact. *OECD Development Centre Working Paper, 236*. doi:http://dx.doi.org/10.2139/ssrn.583762

Kappel, V. (2010). The effects of financial development on income inequality and poverty. *CER-ETH-Center of Economic Research at ETH Zurich, Working Paper*(10/127).

Kendall, J. (2009). Local financial development and growth. *Policy Research Working Paper*(4838).

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics, 108*(3), 717-737. doi:10.2307/2118406

Kirkpatrick, C., Sirageldin, I., & Aftab, K. (2000). Financial Development, Economic Growth, and Poverty Reduction [with Comments]. *The Pakistan development review, 39*(4), 363-388. doi:10.2307/41261114

Koetter, M., & Wedow, M. (2010). Finance and growth in a bank-based economy: Is it quantity or quality that matters? *Journal of international money and finance, 29*(8), 1529-1545. doi:10.1016/j.jimonfin.2010.05.015

Levine, R. (2004). Finance and growth: Theory and evidence. *NBER Working Paper, 10766*.

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics, 46*(1), 31-77.

LPS. (2015). *Tingkat Bunga Penjaminan*. Retrieved October 8, 2015, from www.lps.go.id/

Mahi, B. R., Resosudarmo, B. P., & Adirinekso, G. P. (2002). A preliminary investigation into the factors of regional development in Indonesia. In B. P. Resosudarmo, A. S. Alisjahbana, & B. P. S. Brodjonegoro (Eds.), *Indonesia's sustainable development in a decentralisation era*. Jakarta, Indonesia: IRSA.

Meslier-Crouzille, C., Nys, E., & Sauviat, A. (2012). Contribution of rural banks to regional economic development: Evidence from the Philippines. *Regional Studies, 46*(6), 775-791.

Ministry of Cooperatives and SMEs of Indonesia. (2014). *Data UKM 2014*. Retrieved from www.depkop.go.id/

Mukhopadhyay, B., & Pradhan, R. P. (2011). Structural breaks in finance growth nexus: The study of Indonesia. *Journal of economics and behavioral studies, 2*(1), 1-6.

Nasrudin, R. a., & Soesilo, N. I. (2004). Perkembangan perbankan Indonesia: Analisis dampak terhadap pertumbuhan ekonomi regional Indonesia dan penyebab-penyebabnya dengan data panel 1983-1999. *Jurnal Pembangunan Ekonomi Indonesia, 4*(1).

Odhiambo, N. M. (2009). Finance-growth-poverty nexus in South Africa: A dynamic causality linkage. *The journal of socio-economics, 38*(2), 320-325. doi:10.1016/j.socec.2008.12.006

OJK. (2014). Peraturan Otoritas Jasa Keuangan Nomor 20/POJK.03/2014 tentang Bank Perkreditan Rakyat. Retrieved from http://www.ojk.go.id/Files/201411/BUKUPAKET5POJKKelembagaanBPRFINALCETAKTK_1416405618.pdf

Oluitan, R. O. (2012). Financial development and economic growth in Africa: Lessons and prospects. *Business and Economic Research, 2*(2), 54-67. doi:10.5296/ber.v2i2.2205

Perez-Moreno, S. (2011). Financial development and poverty in developing countries: A causal analysis. *Empirical Economics, 41*(1), 57-80. doi:10.1007/s00181-010-0392-5

Pradhan, R. P. (2013). Economic growth and financial development: Evidence from panel cointegration in India and Pakistan. *South Asian journal of management, 20*(4), 96-119.

Ram, R. (1999). Financial development and economic growth: Additional evidence. *The Journal of Development Studies, 35*(4), 164-174. doi:10.1080/00220389908422585

Rehman, I. U., & Shahbaz, M. (2014). Multivariate-based Granger causality between financial deepening and poverty: The case of Pakistan. *Quality & Quantity, 48*(6), 3221-3241. doi:10.1007/s11135-013-9952-z

Rosenzweig, M. R. (2003). *Openness and poverty reduction in the long and short run*. presented at the meeting of the The Future of Globalization, Yale University. Retrieved from http://www.ycsg.yale.edu/activities/files/Rosenzweig%20Paper.pdf

Rousseau, P. L., & Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth? *Economic Inquiry, 49*(1), 276-288.

Samolyk, K. A. (1994). Bank performance and regional economic growth: Evidence of a regional credit channel. *Federal Reserve Bank of Cleveland Working Paper*(9204).

Schumpeter, J. A., & Elliott, J. E. (2012). *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle* (Reprint

ed.). New Jersey: Transaction Publishers. Retrieved from https://books.google.co.nz/books?id=7p9fwYiDR20C

Seetanah, B., Ramessur, S. T., & Rojid, S. (2009). Financial development and economic growth. *Journal of Economic Studies, 36*(2), 124-134. doi:10.1108/01443580910955033

Setiawati, D. N. (2008). *Analisis kausalitas sektor keuangan dan pertumbuhan ekonomi Indonesia* (Master's thesis, Universitas Gadjah Mada, Yogyakarta, Indonesia). Retrieved from http://etd.repository.ugm.ac.id/index.php?mod=penelitian_detail&sub=PenelitianDetail&act=view&typ=html&buku_id=38941

Shahbaz, M., & Islam, F. (2011). Financial development and income inequality in Pakistan: an application of ARDL approach.

Shan, J. Z., Morris, A. G., & Sun, F. (2001). Financial development and economic growth: An egg-and -chicken problem? *Review of international economics, 9*(3), 443-454. doi:10.1111/1467-9396.00291

Spiezia, V., & Weiler, S. (2007). Understanding regional growth. *The Review of regional studies, 37*(3), 344-366.

Stiglitz, J. E. (1993). The role of the state in financial markets. *The World Bank Economic Review, 7*(suppl 1), 19-52.

Tiwari, A. K., Shahbaz, M., & Islam, F. (2013). Does financial development increase rural-urban income inequality?: Cointegration analysis in the case of Indian economy. *International Journal of Social Economics, 40*(2), 151. doi:10.1108/03068291311283616

Todaro, M. P., & Smith, S. C. (2012). *Economic development*. Boston, Mass: Addison-Wesley.

United Nations. (2014). *Country classification*. Retrieved January 26, 2016, from http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf

Vidyattama, Y. (2010). A search for Indonesia's regional growth determinants. *ASEAN Economic Bulletin, 27*(3), 281-294.

Wooldridge, J. M. (2009). *Introductory econometrics: A modern approach*. Mason, OH: South Western, Cengage Learning.

World Bank. (2015). *Data: Financial Inclusion*. Retrieved October 8, 2015, from http://data.worldbank.org/topic/financial-sector#boxes-box-topic_cust_sec

Zhuang, J., Gunatilake, H. M., Niimi, Y., Khan, M. E., Jiang, Y., Hasan, R., . . . Huang, B. (2009). Financial sector development, economic growth, and poverty reduction: a literature review. *Asian Development Bank Economics Working Paper Series*(173).

Zulverdi, D., Syarifuddin, F., & Prastowo, N. J. (2005). Pengaruh kinerja dan struktur sistem keuangan terhadap pertumbuhan ekonomi di Indonesia *Bank Indonesia Working Paper, 05*(September 2005).