

Financial efficiency performance of regional development bank (RDB) to support regional economy in Indonesia

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ABSTRACT

Regional development bank (RDB) in Indonesia is financial institution in purpose to strengthen regional economy through financial inclusion. It is mandated on Act 13/1962 about main rules of RDB in Indonesia. By the time, RDB get into competition with other banks on financial market yet strive for RDB to have financial efficiency. Therefore, it is needed to increase the competitiveness of RDB and also performing its role as the agent of regional development. This study is going to analyze financial efficiency of RDB in order to influence regional development in Indonesia. We employ panel data method using fixed-effect model for estimation using period of 2002 to 2012. Analysis will also take place on RDB's performance to meet the mandate of 'BPD Regional Champion' (BRC) in order to be agent of regional development in Indonesia.¹

Keywords: RDB, financial efficiency, financial inclusion, regional economy, panel data.

JEL Classification: O16, C33

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¹ RDB in Indonesia is popular to be known as *Bank Pembangunan Daerah* (BPD).

I. INTRODUCTION

Community welfare can considerably be measured by its economic performance as whole. A good economic performance is also a main indicator of community's productivity and the availability of goods and service (Mankiw 2012). Hence, many policies are addressed to increasing performance of an economy on which it is measured by national income. One of macroeconomic policy to increase the level of economy performance is monetary policy. The policy is focused on the development of financial sector and its system to support economic growth (Sarma 2010, Levine 1998, Levine 2005). Financial sector takes role on accumulating and increasing capital access to community, including production and consumption purposes. In addition, financial sector also takes responsibility on providing information needed by community about economy and business condition in such way that it has less transaction cost.

As one of financial institution in Indonesia, RDB (well known as *Bank Pembangunan Daerah/BPD*) take role as the agent of regional development as it is mandated on *BPD Regional Champion* (BRC).² This program also mandates the RDB to accommodate economy activity and financial transaction system in regional coverage (Pradiptyo et al. 2013). The main reason is respective to economy structure of Indonesia that generally is driven by informal sector (micro, small, and medium enterprises/MSME), agriculture and other activities on regional coverage (Kuswardani 2012; Afriska & Haryani 2011). The BRC program has three main pillars to encourage the RDB to be a leading bank in regional area and to support regional economy, which are as follows: a) a good corporate governance; b) ability to be agent of regional development; and c) meet a community's demand. To reach those pillars, BRC requires minimum standard on financial performance, networking development and service quality (Booklet of BRC 2010). Nevertheless, there are still many aspects to be concerned for BRC's indicators because of different condition of each RDB and province.

By now, financial efficiency of RDB in Indonesia has considerably not met the expectation even though the RDBs have been playing a key role in regional economic (Abidin & Endri 2009; Afriska & Haryani 2011, Kuswardani 2012). According to Bank Indonesia (2013), all RDBs in Indonesia only covered 8.6% of the total asset of banking industry in Indonesia in 2012. It is because there are three RDBs with a status of regional company that restrict those banks to only have maximum asset up to IDR500 billion.³ Another problem for RDB is lower share of loan and saving on the financial market in which it is one of indicator for bank to influence the economy. By 2012, share of loan was 12.81% whereas share of saving was 8.63% out of total on the

² BRC was released by Bank Indonesia (central bank in Indonesia) and *Asosiasi Bank Daerah* (ASBANDA) in 2010. The ASBANDA is an association of all RDBs in Indonesia. The RDB itself is located in 26 provinces of which each RDB has its own management that is not related each other.

³ The banks with a status of regional company at that time are BPD DIY, Bank Kalteng and Bank Sultra. But after 2012, BPD DIY have transformed into limited company, following other 23 RDBs in Indonesia. However, regional company status will restrict the innovation and development of RDB in order to satisfy the mandate of BRC.

banking industry in Indonesia (Bank Indonesia 2013). This relative small share of RDB (on loan and saving market) was helped by civil servant as customer of which it is a cooperation form between RDB and local government (Pradiptyo et al. 2013). It also has an impact on the lower level of non-performing loan of RDB because of a good monitoring system for civil servant as a part of the cooperation.

According to the problem mentioned above, we are trying to identify the role of RDB to influence the regional economy in Indonesia during the period of 2002 – 2012 at which it is the period of regional autonomy in Indonesia. Many similar researches have been done before, but this study will provide an improvement on the methodology where we classified regional economy firstly the by its economic level.⁴ The improvement will also cover the performance of networking development and innovation of RDB in accordance with its role as the agent of regional development by literature review. It is important because each RDB faces the uniqueness of each province and the difference of regional economy structure.

II. LITERATURE REVIEW

II.1. Role of Financial Sector on Economy

Analysis of national income through capital accumulation has been started since classical era providing that capital and labor are input factors to influence aggregate output (Mankiw 2012, Snyder & Nicholson 2008). According to classical theory, national output will increase national income and then creates an increasing demand. That interaction is defined on Say's Law which stated that increasing on production will drive the demand up of community. By the time, it will continue to happen in further and the expected economic growth does matter.

This theory was then redeveloped by Keynesian theory which explains that there is a role of financial institution as an intermediary for a new investment. In a similar fashion, Harrod-Domar (neo-classical era) also explains to which the new investment will bring a multiplier effect to output, also known as incremental capital-output ratio (ICOR) (Todaro and Smith 2006, Studart 2005).⁵ The development of Harrod-Domar concept took place on Solow (1956) by employing depreciation of capital accumulation in which it needs labor supply growth to increase the economic growth.

The theory of relationship between economic growth and financial sector continues to develop to the efficiency analysis of financial institution in order to have a good intermediary role (Fry

⁴ See Kuswardani (2012), Afriska & Haryani (2011) and Abidin & Endri (2009) for details.

⁵ Harrod-Domar model can be written as: $\frac{\Delta K}{\Delta Y} = \frac{I}{\Delta Y}$; where I is net investment, or also known as ΔK , and ΔY is economic growth. The economic growth equilibrium (aggregate demand = aggregate supply) is derived by people's behaviour on saving (marginal propensity to saving) that is written by: $Y_d = \frac{I}{MPS}$ and $Y_s = \frac{K}{ICOR}$, to create the economic growth by: $\frac{I}{MPS} = \frac{K}{ICOR}$ and $\frac{I}{K} = \frac{MPS}{ICOR}$; where K is capital accumulation, Y_d is aggregate demand and Y_s is aggregate supply (Lynn 2003)

1995, King & Levine 1993). The more efficient service provided by financial institution will create a wider coverage of economic activity, decreasing transaction cost and investment risk, increasing operational efficiency and provide a well information for stakeholders. At the end, this advantage is expected to be responded positively by supply and demand on the financial sector. Furthermore, intermediary role of financial institution can be well developed and become one of economic growth policy.

II.2. Role of RDB in Indonesia

One might be the purpose of financial institution is to wider coverage of business through financial inclusion concept. It becomes the reason for economic integration to be implemented, but oftentimes, policy for it will be complex and needs a longer time. The policy involves financial market liberalization and networking process to facilitate transfer process and providing investment access (Devlin & Castro 2002). Another important issue is optimizing network of the market to avoid internal competition among financial institution (Praditpyo et al. 2013). This issue needs to be addressed since financial institutions is trying to reach market share in accordance with financial inclusion concept.⁶

Challenge of financial inclusion considerably takes on two sides, supply and demand side. On the supply side, financial institution faces on how to maximizing financial resource (saving) from the customers. On the demand side, channelizing loan is the main concern of financial institution in order to reach financial efficiency. This conflict of interest among financial institutions should be the one of focus for policy-makers to provide a more efficient financial market and the competition built is created from well-developed financial system.

One of the salient of regional economy development is taking on the development of existing institution by encompassing social aspect (McKay, Armengol & Pineau 2004; Petrakos Arvanitidis & Pavleas 2007; Devlin & Castro 2002). It can drive onto economic integration, on the framework of national economic, if the national policy is about combining politics, economy and social, and also being consistent with the path of economic development (Kuswardani 2012). In general, economic integration on development is a harmonizing process of economy and social convergence between local and regional needs in order to increase inter-regional cooperation.

When the capital, as input factor, be a consideration on regional economic integration, it needs a complex policy and takes a longer time for it. The policy must involve financial market liberalization and its network to facilitate financial transfers and providing financial access for the people (Devlin & Castro 2002). Another important issue is how to optimize that network and openness of financial market to avoid imperfect competition that potentially vanishing the role of

⁶ Basically, financial inclusion concept is purposed to reach financial market share (loan and saving) by financial institutions, banks and non-banks. This concept thus becomes more specific to the activity of financial institutions in order to have a potential customers who is categorized as non-bankable person (Pradiptyo et al. 2013).

a financial institution (Pradiptyo et al. 2013). This issue is raising since all of financial institutions need to reach a wider coverage of its market share.

Griffith-Jones, Griffith-Jones and Hertova (2008) showed the reasons behind of the importance of financial intermediary function on the regional economy: i) concerning on the regional economy, especially on the informal sector; ii) can be more flexible on following norms, culture and informal rules; iii) its coordination with local government; iv) decrease the level of imperfect information on financial market; and v) considered to be more responsive toward local community's needs and economy. This concept underlies the concept of regional banks in many countries which is purposed to drive up the regional economy. The coverage sector of regional bank are mainly on MSMEs, agriculture, local trading and also development of infrastructure.

In Indonesia, regional bank's concept is implemented by RDB, which was built in 1962 according to Act 13/1962. There are four pillars as follows: (i) accelerating equality distribution; (ii) supporting local government's projects and activities; (iii) encouraging non-bank business and regional economy capacity; and (iv) supporting the implementation of planned economic concept. RDB is spread at twenty six provinces in Indonesia with each RDB takes a responsibility of the regional development where it is located. RDB is not only a financial institution, but also provides a service on managing local government's fund and most of them are stakeholder at RDB. Most of services provided are related to local government's needs, including facility for civil servant on saving and loan. It is considered to give RDB an advantage on the financial market as RDB has a direct access to make a coordination with local government. Moreover, RDB also get included on the regional development program in accordance with its role as the 'agent of regional development'.

At this reformation era, Bank Indonesia (central bank of Indonesia) support RDB function on the regional development through MSME's development.⁷ Bank Indonesia released two regulations in 2012, in accordance with development of MSME, for commercial bank to distribute at least 20% of the total outstanding loan to MSME.⁸ Another support for RDB is the BRC (*BPD Regional Champion*) that mandates RDB, through ASBANDA, to increase its level of competition on the financial market. But, there is a challenge among advantages for RDB as commercial banks with huge capital will enter the microfinance. RDB have to increase its competitiveness level to compete with those kind of banks and fulfill the mandates of BRC. First challenge for RDB focuses on the financial efficiency. It is related to the product and technology innovation in order to reach the scale of economies. Moreover, the financial efficiency is

⁷ Reformation era in Indonesia (since 1998) brings several changes for Indonesia economy and banking industry especially. Role of Bank Indonesia on monetary policy has been much more independent than previous (Act 23/1999 and Act 3/2004). Reformation also brings changes on politics that affects directly to RDB according to local autonomy (Act 22/1999 and Act 25/1999) of which local government have to optimizing its local potencies for regional development.

⁸ These regulations are about to be implemented by 2018 and it is expected for commercial banks to increase its outstanding loan proportion for productive sector instead.

regarded to be satisfied first if a company is about to expand their business and to compete on the market.

III. METHODOLOGY

III.1. Model Specification

This study employs panel data estimation regarding that the data used are generated from 26 RDBs in Indonesia for the period of 2002 – 2012. We will classify all those 26 RDBs into three classifications which are based on the economy level of the RDB is located in, regarding on the difference of economy and characteristic faced by RDB. This classification will take regional gross domestic product (RGDP) of each RDB's base according to numbers of province in Indonesia on the period of new order era.⁹ Rankit (Cleveland) quantile values method will be used to classify the economy level (RGDP) following normal distribution plot.

The panel unit root test is employed in order to identify stationary level of each variable. It will use Levin-Lin-Chu (LLC) test to identify stationary process of each variable on panel data analysis. This test modifies ADF test and making it into three-step procedure test (Levin, Lin & Chu 2002): i) perform separate ADF regression for each cross-section and generate orthogonalized residual; ii) estimate the ration of long-run to short-run standard deviations; iii) compute the panel test statistics by running the pooled regression for orthogonalized residual:

$$\tilde{e}_{it} = \rho \tilde{v}_{i,t-1} + \tilde{\varepsilon}_{it}$$

Where $\tilde{v}_{i,t-1}$ is one of orthogonalized residual from the ADF regression.¹⁰ Null hypothesis of the LLC test is following $H_0: \rho = 0$ that indicates a unit root process on variable tested. The *t*-statistic of ρ is computed by:

$$t_{\rho}^* = \frac{t_{\rho} - N\tilde{T}\hat{S}_N\hat{\sigma}_{\tilde{\varepsilon}}^{-2}\hat{\sigma}(\hat{\rho})\mu_{m\tilde{T}}^*}{\sigma_{m\tilde{T}}^*}$$

Where $t_{\rho} = \frac{\hat{\rho}}{\hat{\sigma}(\hat{\rho})}$; N is number of cross-section, \tilde{T} is average number of observations per individual in the panel data, \hat{S}_N is conditional average standard deviation of long-run ratio, $\hat{\sigma}_{\tilde{\varepsilon}}^2$ is conditional average variance of standardized orthogonal residuals, $\hat{\sigma}(\hat{\rho})$ is conditional average standard deviation of $\tilde{v}_{i,t-1}^2$, $\mu_{m\tilde{T}}^*$ and $\sigma_{m\tilde{T}}^*$ are the adjusted mean and standard deviation provided on LLC table.

Thus, we adapt the model from Hakenes, Schmidt and Xie (2009), Fadare (2010) and Crouzille, Nys and Sauviat (2012) in order to estimate the relationship between regional economy and the existence of BPD in Indonesia. The model is following:

⁹ Indonesia is divided into 27 provinces on the period of new order era (1967 – 1998). One of the provinces then parted company in 1999 to be a sovereign country, Timor Leste.

¹⁰ Residual $\tilde{v}_{i,t-1}$ is estimated from $y_{i,t-1} = \rho_i y_{i,t-1} + \sum_{L=1}^p \theta_{iL} \Delta y_{i,t-L} + \alpha_{mi} d_{mt} + \varepsilon_{it}$ where $m = 1, 2, 3$ and $L = 1, \dots, p$.

$$\ln RGDP_{it} = \alpha_{it} + \beta_{it} \ln Loan_{it} + \gamma_{it} OCOR_{it} + \delta_{it} CAR_{it} + \theta_{it} LDR_{it} + \vartheta_{it} NIM_{it} + \pi_{it} NPL_{it} + \rho_{it} ROA_{it} + \varphi_{it} ROE_{it} + \varepsilon_{it} \quad (4)$$

Where $\ln RGDP$ is natural logarithm of regional GDP; $\ln Loan$ is natural logarithm of RDB's total loan; and the rest variables are financial efficiency of RDB except the residual form (ε), individual characteristic (i) and time variable (t).¹¹ This paper applies model in equation (4) to general model estimation all regional classifications and trying to identify the different effect of each variable to each regional. However, the results may vary to the respective regression even the model has satisfied all requirements and assumptions of modelling panel data estimation. It is all because each regional has its own characteristic and economy structure.

We continue to determine the proper estimation of panel data method by performing fixed effect testing and Hausman test. Greene (2012) suggested that both tests are hierarchical step of which the fixed effect testing is firstly applied to determine of whether use pooled regression or fixed effect. Secondly, Hausman test is then used to determine the more proper model of either fixed effect model or random effect model. At last, homoscedasticity and non-autocorrelation are important issues to be satisfied on panel data analysis (Greene 2012).

III.2. Data

We use panel data of 26 RDBs in Indonesia for the period of 2002 to 2012 (annual data) which are generated from related institutions. Regional gross domestic product (RGDP) data is taken from national agency of statistics (*Badan Pusat Statistik/BPS*), whereas other variables on the equation (4) are provided by RDB. RGDP and RDB's loan are nominal data in Indonesia Rupiah, while others are in percentage number form. Hence, we transform both RGDP and RDB's loan into real data in natural logarithmic form by accounting it using consumer price index (CPI) data from BI.

This paper will also use descriptive data of RDB's network and operational activity in loan channeling. It consists of branch-office number and its coverage area, conventional and sharia unit information and APEX bank status.¹² Moreover, we are trying to provide qualitative analysis related to RD's network in loan channeling. All data will be taken from RDB's publication and other related studies on it.

¹¹ Financial efficiency indicators of RDB in this study are following: i) ratio of operational cost-operational revenue (*OCOR*); ii) loan deposit ratio (*LDR*); iii) net interest margin (*NIM*); iv) net non-performing loan (*NPL*); v) return on assets (*ROA*); vi) capital adequacy ratio (*CAR*); and vii) return on equity (*ROE*). All indicators are in percentage number.

¹² APEX bank is a model of supervisory bank to other bank in order to maintain their relationship and network. This model does not change the basic system of each bank anyway, but only increasing relationship status to have wider market share in financial market (Pradipto et al. 2013).

IV. ANALYSIS AND RESULTS

IV.1. Network and Loan Channeling of RDB

We have put all RDBs into three categories based on its RGDP to avoid bias analysis because of the difference characteristic among provinces. Economy capacity and structure may affect network and performance of bank as an established economy will reduce transaction cost and bank can allocate its resource on innovation and development (Zarazua & Copestake 2008, Giocoli 2011, Pradiptyo et al. 2013). Nevertheless, the most advanced economy is found to have shorter network because they do not need complex network to generate saving and loan.

Table 1. Number of RDB's Offices in 2014

	Location		Business Unit		Total	APEX Bank Status
	Inside Area	Outside Area	Conventional	Sharia		
Upper Group						
Bank DKI	144	26	157	13	170	Confirmed
Bank Jabar Banten	407	183	527	63	590	Confirmed
Bank Jateng	136	1	132	5	137	Confirmed
Bank Jatim	185	7	140	52	192	Confirmed
Bank Kaltim	97	10	105	2	107	Confirmed
Bank Riau Kepri	100	-	100	-	100	Confirmed
Bank Sulselbar	71	1	69	3	72	No
Bank Sumsel Babel	171	5	165	11	176	Confirmed
Bank Sumut	194	3	175	22	197	Confirmed
Middle Group						
Bank Aceh	103	-	90	13	103	No
BPD Bali	76	-	76	-	76	Confirmed
Bank Jambi	11	-	10	1	11	No
Bank Kalbar	119	1	113	7	120	Confirmed
Bank Kalsel	35	1	36	-	36	Confirmed
Bank Lampung	16	1	17	-	17	No
Bank Papua	163	8	171	-	171	Confirmed
Bank Nagari	90	12	102	-	102	Confirmed
Lower Group						
Bank Bengkulu	35	2	37	-	37	No
BPD DIY	106	-	102	4	106	Confirmed
Bank Kalteng	27	-	27	-	27	No
Bank Maluku	10	1	11	-	11	Confirmed
Bank NTB	20	-	20	-	20	No
BPD NTT	98	1	99	-	99	Confirmed
Bank Sulteng	30	-	30	-	30	Confirmed
Bank Sultra	51	-	51	-	51	No
Bank Sulut	59	5	64	-	64	Confirmed

Source: *Regional Development Bank in Indonesia*, 2014 (refined)

Table 1 above shows that the upper classification has more office network than other classifications. By average, it has 193 offices for each RDB in upper classification, whereas middle and lower classification have 79 and 49 offices respectively. Furthermore, the upper classification spread more offices outside of internal coverage area (by province) and wider business unit. Outside offices for upper classification is also the highest among others by 26 offices on average, while others are 2 and 1 offices respectively.¹³ On the other hand, business unit of the upper classification indicates a similar result as of previous result. RDBs at the highest economy group spread unit business on sharia banking more than other two groups by 19 offices for sharia unit, whereas middle and lower group are 2 and less than 1 offices respectively.

This network and channeling loan performance of RDB, however, are related closely to economy capacity and structure. It is shown on the positive correlation value between total office number – average RGDP and average outstanding loan – average RGDP (74.96% and 86.66% respectively).¹⁴ Status of APEX bank by RDB also provide a qualitative indicator for network and channeling loan performance. It shows the RDB's efforts in order to fulfill mandate of Bank Indonesia's regulation to increase its productive credit.¹⁵ According to Table 1, it is found that only one RDB, out of nine, is not an APEX bank yet, while middle group gets three RDBs (out of eight) and lower group gets four RDBs (out of nine) to not have an APEX bank status.

Study of Chibba (2009) and Griffith-Jones, Griffith-Jones and Hertova (2008) supported this argument since regional and rural bank could be intermediate institution in order to raise capital supply in regional and sub-regional areas. The main objective, in this case, is to increase economy activity and then reducing inequality between urban and rural area. Hence, it is often to be found that the higher performance and more complex structure of the regional economy, the longer financial network chain of RDB to be formed, even though there is a case of 'reversed U-shape curve' in Indonesia (Pradiptyo et al. 2013).¹⁶

IV.2. Regression Analysis

We use panel data estimation to identify the relationship between regional GDP, outstanding loan and financial efficiency of RDB. This paper provides three estimation according to the classification above using equation (4) as a regression model. However, unit root test using LLC test will be applied for all variables used. Table 2 below shows LLC test of all variables.

¹³ However, this result needs to be clarified further since Bank Jabar-Banten and Bank DKI shared highest portion of network on upper classification. Bank Jabar-Banten is no longer a member of ASBANDA since the end of 2012, while Bank DKI is considered to be supported by economic level and structure in capital city, Jakarta.

¹⁴ Both correlation tests are statistically significant at 1% of significant level.

¹⁵ This regulation is mandated on PBI No. 14/26/PBI/2012 that regulate banks to have a minimum 55% - 60% (according its main capital) of its total credit distributed to productive activities.

¹⁶ The 'reversed U-shape curve' is a case that the highest economy in Indonesia, which is at capital city (Jakarta), has a short financial network chain as previously explained.

Table 2. The LLC Test Result

Variable	t-statistic		
	Upper Class	Middle Class	Lower Class
OCOR	-6.675*	-3.836*	-6.146*
CAR	-5.913*	-7.853*	-11.948*
Log Loan	-3.732*	-2.187**	-4.179*
NIM	-10.127*	-4.105*	-4.941*
NPL	-5.351*	-8.119*	-4.809*
Log RGDP	-8.156*	-8.601*	-8.062*
LDR	-11.961*	-15.496*	-10.709*
ROA	-7.155*	-5.198*	-5.824*
ROE	-4.398*	-3.329*	-4.854*

Note: (*, **) shows significant level of 1% and 5% respectively

Table 2 above shows that all variable used in this paper are following stationary process. Hence, regression model from equation (4) can be applied directly using all those variable on $I(0)$. We have three-separated panel data analysis due to RGDP based classification. Baltagi (2005) suggested that the best model for panel structure of ($N > T$) should apply fixed effect. But, this paper will test all three possible panel data model (pooled least squares; fixed effect; and random effect) in a proper way to get the best model of panel data.

Table 3. Regression Result of Panel Data Analysis

Variable	Upper Classification		Middle Classification		Lower Classification	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Ln Loan	0.27149*	0.033756	0.02328	0.035953	0.214588*	0.027538
OCOR	0.01159**	0.005332	-0.00893**	0.00393	0.003979***	0.00223
CAR	0.003965	0.002954	-0.00096	0.001971	5.32E-05	0.001231
LDR	0.00268*	0.000948	0.004533*	0.001083	0.000892	0.000559
NIM	-0.01205	0.008001	-0.00244	0.007876	-0.01413*	0.004349
NPL	0.006569	0.015251	-0.10439*	0.01901	-0.02504*	0.005825
ROA	-0.00394	0.03295	-0.16038*	0.029216	0.017473	0.014933
ROE	0.005567*	0.001944	0.007398*	0.002274	0.001408	0.001596
Observations	81		72		81	
Adj. R2	0.982598		0.747397		0.98213	
SE of Regression	0.092712		0.090228		0.059429	
F-statistic	283.3212*		27.25914*		275.7925*	

Note: Dependent variable is regional constant GDP. A fixed effect is used in modelling for upper and lower classifications, while a random effect is used in modelling for middle classification. (*, **, ***) indicates the significant level of rejecting null hypothesis at 1%, 5% and 10% respectively.

A fixed effect model for panel data is used for estimation in upper and lower classifications, while a random effect is used for middle classification (see Table 4 for details). It is known that the estimation on the Table 3 provides various results for three classifications. For upper classification, variables to be statistically significant in affecting regional GDP are outstanding loan, operational cost-operational revenue ratio, loan-deposit ratio and return on equity. The positive effect of outstanding loan shows that RDB still plays role on developed economic through financial supply for both production and consumption process. However, network development and access may support this argument as previously explained. Financial efficiency effect provides an interesting result as the increasing operational cost-operational revenue ratio will also increase regional GDP. But somehow, RDB needs to raise their investment since they are mandated to be an agent of regional development in the competitive area of financial market.

Second classification on middle class economy shows different results than upper classification. In this area, financial efficiency tends to affect the economy than the financial supply, by loan, for economy activity. According to Pradipto et al. (2013), RDBs in this area have more complex network rather than other economy because of many forms of financial institution that need to be covered in financial inclusion purpose. It is indicated from significantly positive value of loan-deposit ratio and net interest margin. Nevertheless, return on asset's effect is quietly debatable since it has negative value in affecting regional GDP. Study of Baker, DeLong and Krugman (2005) argued that it may happen in simple standard closed-economy, and therefore, a company will generate its return from assets' investment at the higher economy. This result can explain why financial network chain of RDBs in this area is longer than other economy area.

Last classification results is not far different than upper classification of which outstanding loan and operational cost-operational revenue are positively significant to affect regional GDP. In addition, net interest margin and non-performing loan are negatively significant which indicate a financial efficiency yields positively on regional GDP. RDBs in this area are also found to be limited in making outside network, and hence, the strategy is still on the strengthening internal financial network chain. Another constraint is locally stated-owned company status of Bank Sultra, Bank Kalteng and BPD DIY that restrict them to have maximum IDR250 billion of capital (\pm US\$21 million). Also, all company's decision should be confirmed by municipal government and local house of representative as major stakeholders.

The regression results provide interesting conclusion as the effect of RDB's existence is different according to its location. In upper and lower economic area, BPD's loan is positively affecting regional GDP, whereas it does not matter in middle economic area. This result is different than Crouzille (2012) conclusion that rural banks' loan would be more affecting on regional GDP in less developed region. Irrespective of economic level, the effect of RDB's loan to regional GDP does matter on a shorter financial network chain of RDB instead.¹⁷ However, it is costly for RDB

¹⁷ Study of Pradipto et al. (2013) showed that length of financial network chain of RDB in Indonesia forms a 'reversed u-shape curve' relatives to economy level. Nevertheless, it does not indicate a similar behavior and role of RDB in both regions.

to be an agent of regional development through financial supply since positive effect of loan is followed by positive effect of operational cost-operational revenue ratio. Results from upper and lower economic region are quietly different than middle economy region. In this region, financial efficiency of RDB does matter on regional GDP, whereas its loan is found insignificant on the estimation.

IV.3. Goodness-of-Fit of Regression

Regression model on this paper employs panel data regression for analysis. We are running a test in order to find a proper estimation in panel data analysis. Greene (2012) suggested a hierarchical step for it through fixed effect testing and Hausman test. The tests are applied to three models for all classifications which can be seen on the Table 4 below.

Table 4. Fixed Effect Test and Hausman Test

	Fixed-Effect Test		Hausman Test	
	F-Stat.	d.f.	Chi-Sq. Stat.	d.f.
Upper Class.	142.014*	8, 64	1136.112*	8
Middle Class.	42.461*	7, 56	6.903	8
Lower Class.	333.512*	8, 64	2,668.10*	8

Note: (*) indicates significant level of rejecting null hypothesis at 1%

The null hypothesis of fixed effect testing is intercept is the same for all cross section identifiers, of which pooled least squares is appropriate for estimation. Meanwhile, null hypothesis of Hausman test is random error term, which is an unobservable variable, correlates to explanatory variable. Table 4 above shows that fixed effect is appropriate to estimate upper and lower classification model, while random effect is appropriate for middle classification. Modelling panel data for middle classification may be more complex rather than analyzed using random effect, such as instrumental variable. But, at this point, we are on the purpose of identifying the effect of RDB's loan and its financial efficiency toward regional GDP that is considerably proper enough.

Residual for all models are found to be normally distributed according to Jarque-Bera test. All Jarque-Bera statistic are under null hypothesis (0.389887, 2.561809 and 0.092819) for upper, middle and lower classification respectively.¹⁸ We also perform White-heteroscedasticity test and Bresuch-Godfrey test in order to identify the existence of heteroscedasticity and autocorrelation problem respectively. Acording Gujarati (2004), both test can be performed through creating a model from its residual and then compare it to Chi-Squares distribution. Table 5 below shows the results of White heteroscedasticity test and Breusch-Godfrey test.

¹⁸ All Jarque-Bera statistic are under null hypothesis using 10% significant level.

Table 5. White-Heteroscedasticity and Breusch-Godfrey Test

		r^2	$Obs.* r^2$	df	$\chi^2 Stat (1\%)$
White-Heteroscedasticity test	Upper Class.	0.571116	46.2604	35	57.29145
	Middle Class.	0.916992	66.02342	35	57.29145
	Lower Class.	0.607549	49.21147	35	57.29145
Breusch-Godfrey test	Upper Class.	0.918953	33.08231	5	15.0863
	Middle Class.	0.98479	31.51328	5	15.0863
	Lower Class.	0.721059	25.95812	5	15.0863

White-Heteroscedasticity test is a test of the null hypothesis of no heteroscedasticity problem arises on the residual model. On the other way, residual variance of the model is asymptotically constant and time invariant (homoscedastic). Also, Breusch-Godfrey test is following no serial correlation among residual of the model under its null hypothesis. It can be seen from Table 5 that heteroscedasticity problem arises on model for middle classification only (at 1% significant level). But, all models are having autocorrelation problem at 1% significant level. This may provide an inefficient regression model but it is still a consistent model. As we have mentioned previously, this analysis is quietly enough to identify the relationship of RDB's loan and financial efficiency to regional GDP.

V. CONCLUSION

As mandated on Act 13/1962, RDB has main objective to support government activities on regional development. By the time, RDB then become an agent of regional development after reformation era in 1998. Ministry Decree 62/1999 mandated RDB to build regional economy and development by its role as bank. Nevertheless, RDB face difficulties as they need to satisfy all requirements as bank under supervisory of Bank Indonesia. Thus far, ASBANDA as an association of all RDBs in Indonesia together with Bank Indonesia released *BPD Regional Champion* (BRC) in 2009. It asserts RDB to be an agent of regional development through financial access and strengthen its institutional status by financial efficiency.

This paper is trying to analyze the relationship between RDB's loan and financial efficiency indicators with regional GDP. For the sake of avoiding bias analysis, we separate all RDBs into three categories based on its regional GDP where RDB is located. We find various results from this analysis since there is difference on the effect of RDB's existence to regional GDP. In both upper and lower economic, RDB's loan is found to affect regional GDP instead of middle economy area. But, it has consequence of highly operational cost according to effect of operational cost-operational revenue coefficient.

The different result is provided on middle economy area since RDB's loan does not affect regional GDP. Regardless of this result, financial efficiency indicators are found to affect

regional GDP. But, there is a debatable result on negative coefficient of return on asset's effect. Baker, DeLong and Krugman (2005), however, supported this result as if ROA of a company actually does not have an impact on the economy. This argument is derived from the fact that a company would have not generated profit in simpler standard economy. Upon this fact, result of Pradipto et al. (2013) is confirmed that RDBs in middle economic area have a longer financial network chain.

We are also running a simple analysis for RDB's network according to each classification. This analysis provides a result that there are positive correlation between office number of RDB and regional GDP, and outstanding loan of RDB and regional GDP. Moreover, the more aggressive strategy of RDB in financial inclusion purpose, the higher regional GDP will be resulted on the process. This strategy is absolutely needed by RDB in order to be an agent of a regional development as mandated on the BRC.

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