

Monetary Transmission Through Rural Banks on Economic Development

Mangasa Augustinus Sipahutar^{1*}, Tarida Marlyn Surya² ¹Economist, Sekolah Tinggi Ilmu Ekonomi Kesatuan, Bogor – Indonesia ² Department of Management, Sekolah Tinggi Ilmu Ekonomi Kesatuan, Bogor – Indonesia e-mail : augustinusmangasa@gmail.com

Received: March 12, 2018; Accepted: July 16, 2018; Published: November 2, 2018 **Permalink/DOI:** http://dx.doi.org/10.17977/um002v10i22018p208

Abstract

This study aims to measure the role of BPRs in monetary transmission to MSMEs, especially in Municipality and District of Bogor that geographically bordering directly. Determination of these two areas is intended to understand the credit depth of BPRs in relation to regional economic growth, and the results are expected to avoid economic disparity in both regions. This study used VECM model to measure the causality between credit depth and economic growth, and OLS to measure the relationship between poverty to unemployment and credit depth. The VECM model showed uncertainty of Granger's causality between credit depth and economic growth. This explained that it takes higher credit depth of BPRs to promote economic growth. For Municipality of Bogor, changed of credit depth by 1 basis point, reduce poverty by 3.51 basis points, and changed in unemployment by 1 basis point, change poverty in the same direction by 0.09 basis points. Meanwhile, in District of Bogor, changed of credit depth by 1 basis point, reduce poverty by 6.95 basis points, and changed in unemployment by 1 basis point, change poverty in the same direction by 0.26 basis points.

Keywords: monetary transmission, MSMEs, rural banks, poverty **JEL Classification**: E50; G21; R58

INTRODUCTION

Municipality and District of Bogor are located in one region directly adjacent and have the same–based culture that is Sundanese ethnic. Both areas are also the satellite area of Jakarta which is the capital of the Republic of Indonesia. Although located in one region, there are differences according to the economic perspectives. On average based in the period of 2005–2015, Municipality of Bogor has a higher economic growth than District of Bogor, and higher than the economic growth of West Java Province (Table 1). Meanwhile, the average economic growth of District of Bogor is under the economic growth of West Java Province.

During the period of one decade, the economic growth of Municipality of Bogor is above 6 per cent per year–except in 2008 due to the global economic crisis started in the United States–while District of Bogor experienced fluctuating on economic growth in the range of 4 per cent to 6 per cent per year. Unlike the case with economic growth, economic productivity in Bogor region that is proxied by Regional Gross Domestic Product (RGDP) per capita, the economic productivity in Municipality and District of Bogor are relatively similar. The average real RGDP per capita in the period of 2005–2015 in Municipality of Bogor is Rp. 18.69 million, and Rp. 18.58 million in District of Bogor.

	RGDP re	eal growth (%)		RGDP real pe	er capita (mi	illions rupiah)
	West	Municipality	District	-	Municipality	y
Year	Java	of	of	West Java	of	District of
	Province	Bogor	Bogor	Province	Bogor	Bogor
2005^*	5.60	6.12	5.85	11.81	8.35	10.69
2006	6.02	6.03	5.95	12.89	9.62	11.73
2007	6.48	6.09	6.04	15.23	11.09	12.96
2008	6.21	5.98	5.58	16.29	12.79	14.23
2009	4.19	6.02	4.14	17.84	14.57	15.38
2010	6.20	6.14	5.09	20.97	19.60	19.30
2011**	6.50	6.22	5.86	23.25	21.26	21.13
2012	6.50	6.31	6.01	25.27	23.37	23.72
2013	6.33	6.04	6.14	27.77	25.75	16.12
2014	5.09	6.01	6.01	30.12	28.28	28.38
2015	5.03	6.13	6.09	32.65	30.88	30.79
Average	5.83	6.10	5.71	21.28	18.69	18.58

Table 1. The real economic growth of Municipality and District of Bogor in the period of 2005–2015

Source: Authors (2018)





Based on the economic sectors that are supported to RGDP, there are significant differences in both regions. During the period of 2005–2015, the dominant economic sector in Municipality of Bogor is traded sector with contribution to GDP of 22.35 per cent, followed by the industrial sector with contribution of 19.8 per cent. For District of Bogor, the industrial sector is the main



contributor to RGDP with an average contribution of 55.9 per cent, followed by the trade sector with a contribution of 12.9 per cent (Figure 1).

Differences in the dominance of economic sectors that occur in the Municipality and District of Bogor need to get serious attention both from the government and business agents in the real sectors. It is important to optimize the growth of dominant economic sectors to achieve the higher quality of economic growth, which is able to reduce unemployment and poverty. When there is a wrong process on development planning in this region, then it will create a negative impact on economic development due to the continuous migration of economic resources from one area to another. In this situation, higher growth areas will be disturbed by creating new area of poverty, crime, and congestion due to the massive migration of people from lower growth areas, and at the same time, areas with lower economic growth will lose their economic potential due to the leakages of economic resources (Acemoglu & Robinson, 2012; Todaro & Smith, 2012; Kraay & Raddatz, 2007).

As an economy driving force, banks have a huge role to promote economic growth through its transmission to the real sectors of economy (Burges & Pande, 2005; Beck & Levine, 2004; Bernanke & Mihov, 1998). In fact, Rioja & Valev (2004a; 2004b) stated that the role of the banking sector in the economy lies in its ability to generate capital accumulation in real sectors as a source of sustainable economic growth.

	P · · · · ·						
Year	Municipality of Bogor (bi		illions rupiah) District of Bogor (bi			illions rupiah)	
	Funds	Credits	Assets	Funds	Credits	Assets	
2010	38.64	100.98	133.95	63.65	179.52	253.39	
2011	49.20	134.04	183.64	88.33	229.39	323.31	
2012	82.81	140.60	183.48	174.39	289.64	379.91	
2013	111.41	175.94	226.40	236.61	340.86	457.81	
2014	140.81	223.09	280.61	294.87	439.24	574.26	
2015	175.90	267.54	341.79	352.02	500.54	684.32	
2016	218.32	303.04	404.25	377.90	539.78	733.14	
2017	108.18	154.91	203.88	214.21	290.20	391.07	

Table 2. The performance of Rural Banks portfolio in Municipality and District of Bogor in period of 2010–2017

Source: Financial Services Authority (OJK)

As an element of bank institution, Rural Banks (*Bank Perkreditan Rakyat*/BPR) hold a more specific role in economic growth by financing capital and working capital for Micro, Small and Medium Enterprises (MSMEs). The role of the BPRs as a vanguard that supports the development of MSMEs is inseparable from its ability to more fully understand the existence and behavior of MSMEs. For this reason, it is reasonable that economic growth at the level of MSMEs can be proxied by the performance of BPRs. Based on data from the Financial Services Authority (OJK), since 2010 to date, there are 8 BPRs operating in Municipality of Bogor and 22 BPRs in District of Bogor (Table 2).

In the period of 2010–2017, the average performance of BPRs in Municipality and District of Bogor are relatively similar. The average credit growth in Municipality of Bogor is 10.55 per cent while in District of Bogor is 10.88 per cent (Table 3). Given similarity on credit growth, it can be expected that the MSMEs sectors in this region grow with a convergence pattern.

Year -	Municipality of Bogor (%)			District of Bogor (%)		
	Funds	Credits	Assets	Funds	Credits	Assets
2011	27.34	32.74	37.10	38.79	27.78	27.59
2012	68.29	4.89	-0.09	97.42	26.27	17.51
2013	34.55	25.13	23.39	35.68	17.68	20.50
2014	26.38	26.80	23.94	24.62	28.86	25.44
2015	24.92	19.93	21.81	19.38	13.95	19.17
2016	24.12	13.27	18.27	7.35	7.84	7.13
2017	-50.45	-48.88	-49.57	-43.31	-46.24	-46.66

Table 3. The growth of Rural Banks portfolio in Municipality and District of Bogor in the period of 2010–2017

Source: Financial Service Authority (OJK)

As a transmission channel of monetary policy, banks play a very important role in economic growth (Fase & Abma, 2003; Levine, Loayza & Beck, 2000; Beck, Levine & Loayza, 2000; Bernanke & Gertler, 1995). Banks credit is a source of economic growth as well as growth accelerating factor. As a growth accelerating factor, banks credit acts as a multiplier by increased capital in the real sectors, increase output so as to expand employment. Banks credit also has an effect of reducing unemployment and poverty (Sipahutar, 2018; Sipahutar, Oktaviani, Siregar & Juanda, 2016; Beck, Colciago & Pfajfar, 2014; Rioja & Valev, 2014; Burges & Pande, 2005).

Sipahutar (2016) has mapped the Indonesian economy by economic growth rate, credit depth, and causality between banks credit and economic growth. Each province is mapped according to the three criteria mentioned above with the aim that the development policy of each province is inherent with the banking system as the transmission channel of monetary policy, and vice versa. On that map, West Java Province is at a very fast rate of economic growth, credit depth is low, and there is uncertainty in causality between banks credit and economic growth. As the aggregate criteria of all districts and municipalities in West Java Province, it is concluded that all districts and municipalities in West Java Province also have the same criteria as the province as mapped by Sipahutar (2016). Deviations occurring in certain municipality and district is important to be explored in order to determine the relevant economic policies and generate convergence of growth, especially in Municipality and District of Bogor.

Furthermore, as a monetary transmission channel where banks credit as growth accelerating factor, banks credit has a contribution of 6.5 per cent on economic growth (Sipahutar, 2016; Sipahutar, Oktaviani, Siregar & Juanda, 2016; Beck, Buyukkarabacak, Rioja & Valev, 2014). These contributions have multiplier effects in such a way that there is acceleration of economic growth through the acceleration of growth in the real sectors. Therefore, managing the Bogor banks–based economy plays an important role to stimulate all economic sectors so as to jointly generate sustain qualified economic growth by sustainable employment absorption, then reducing unemployment and poverty (Beck, Colciago & Pfajfar, 2014; Beck, Buyukkarabacak, Rioja & Valev, 2012; Beck, Dermiguc-Kunt, Laeven & Levine, 2008; Kraay & Raddatz, 2007; Burges & Pande, 2005; Christopoulos & Tsionas, 2004).

As an element of banking institution, the existence of BPRs is certainly similar as commercial bank is. In this case, according to the role of financial intermediaries, BPRs is also a growth accelerating factor for the economy,



especially on the scale of MSMEs economy in Municipality and District of Bogor. The performance of BPR in terms of funding and credit to finance capital and working capital in MSMEs is an indication of the sustainability of monetary transmission to the real sectors. Its performance is also inherent to monetary policy by BI, such as BI 7–day Reverse Repo Rate and Reserve Requirement – the reserves that must be allocated in relation to the third party's funding – and to follow macroprudential policy rules and bank performance indicators set up by OJK in term of banking supervision.

METHOD

Each of the proposed issues is measured to determine their impact on economic growth. We used time series data in the period of 2000–2016 from BPS about economic sectors, unemployment and poverty, and from OJK about BPRs portfolio performance. The method used refers to the model developed by Sipahutar (2016) and Sipahutar, Oktaviani, Siregar & Juanda (2016) through modified models proposed by Beck & Levine, (2004); Levine, Loayza & Beck (2000) and King & Levine (1993a,b) with a linear relationship model between credit depth (the ratio of bank credit to nominal GDP) and economic growth. In this study, the model proposed is:

- 1. VAR (Vector Autoregression) or VECM (Vector Error Correction Mechanism) model, to estimate bi-direction causality relationship between credit depth and economic growth per capita
- 2. OLS (Ordinary Least Square) model, to estimate the effect of credit depth to unemployment and poverty

VAR or VECM Model

The estimation of the proposed model is that there is a bi-direction causality between BPRs credit and the economic growth of Municipality and District of Bogor, which is formulated as :

where RGR_t is the real economic growth per capita in period *t* and *t*-*n* for $RGR_{(t-n)}$; RKE_t is ratio of total credit of BPRs to nominal RGDP in period *t* and *t*-*n* for $RKE_{(t-n)}$; β_1 , γ_1 are intercept; β_i , γ_i are the coefficient of dependent variable to independent variable, and ϵ_{it} is residual.

Using the data of real economic growth per capita (*RGR*) and total BPRs credit to nominal RGDP (*RKE*) in Municipality and District of Bogor, there is no stationary data was obtained. Therefore, the relationship between economic growth and credit depth is projected according to the Indonesian economic map (Sipahutar, 2016) which for West Java Province obtained VECM model estimation (Table 4). The impact of changes in the *RGR* and *RKE* variables in the system is dynamically represented by the Impulse Response Factor (IRF). The IRF on the VECM lag-1 model estimation is shown in Figure 2.

CointEq1	
1.000000	
-0.266944	
(0.01766)	
[-15.1133]	
ΔRGR	ΔRKE
-0.758694	0.788818
(0.39312)	(0.58445)
[-1.92993]	[1.34968]
0.198024	-0.232723
(0.34031)	(0.50594)
[0.58189]	[-0.45998]
-0.456359	0.930163
(0.29799)	(0.44301)
[-1.53148]	[2.09963]
0.300667	0.205238
0.145260	0.028624
10.09261	22.30710
1.058962	1.574346
1.934704	1.162072
-15.98865	-20.74725
3.164774	3.957875
3.286001	4.079102
0.122911	0.703527
1.145417	1.597374
	1.292130
	0.726823
	-32.14009
	6.690015
	7.013287
	$\begin{tabular}{ c c c c } \hline CointEq1 \\ \hline 1.000000 \\ \hline -0.266944 \\ (0.01766) \\ \hline [-15.1133] \\ \hline A RGR \\ \hline -0.758694 \\ (0.39312) \\ \hline [-1.92993] \\ \hline $0.198024 \\ (0.34031) \\ \hline $0.58189] \\ \hline -0.456359 \\ (0.29799) \\ \hline [-1.53148] \\ \hline $0.300667 \\ \hline $0.145260 \\ \hline $10.09261 \\ \hline $1.058962 \\ \hline $1.934704 \\ \hline $-15.98865 \\ \hline $3.164774 \\ \hline $3.286001 \\ \hline $0.122911 \\ \hline $1.145417 \\ \hline \end{tabular}$

Table 4. VECM lag-1 on the relationship between RGR and RKE at West Java Province Vector Error Correction Mechanism Estimates

Source: Sipahutar (2016)



Figure 2. Impulse Response Factor on the relation of RGR to RKE at West Java Province Source: Authors (2018)



Granger causality which is the cause-effect relationship between economic growth and credit depth in West Java Province stated (Table 5).

Table 5. Granger causality between *RGR* and *RKE* at West Java Province

Pairwise Granger Causality Tests			
Sample: 2001 2014			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
RKE does not Granger Cause RGR	13	0.00871	0.9275
RGR does not Granger Cause RKE		0.21010	0.6565
$\Omega_{\text{respective}} = \Omega_{\text{respective}}^{1} (2010)$			

Source: Sipahutar (2016)

The OLS Model

The influence of ratio between BPRs credits to nominal RGDP on unemployment and poverty in Municipality and District of Bogor of are formulated as :

where UNE_t is unemployed in period *t*; POV_t is poverty in period *t*; RKE_{t-1} is the ratio of total credit of BPRs to nominal RGDP in period *t*-1; β_1 , γ_1 are intercepted; β_i , γ_i are coefficient of independent variable and ϵ_t is residual. The OLS model estimate of the relationship between *UNE* and *RKE* and the relationship between *POV* and *RKE* in Municipality and District of Bogor are shown in Tables 6 and 7.

Table 6. The OLS model on the relationship between *POV*, *UNE*, and *RKE* at Municipality of Bogor

01 00501				
Dependent Variable – POV				
Method: Least Squares				
Sample: 2010 2015				
Included observations: 6				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	9.840123	0.835213	11.78157	0.0013
UNE	0.090652	0.026537	3.416014	0.0420
RKE	-3.506249	0.910317	-3.851679	0.0309
R-squared	0.947425	Mean dependent var		8.583333
Adjusted R-squared	0.912374	S.D. dependent var		0.634087
S.E. of regression	0.187700	Akaike info criterion		-0.201089
Sum squared resid	0.105694	Schwarz criterion		-0.305210
Log-likelihood	3.603268	Hannan-Quinn criterion.		-0.617891
F-statistic	27.03047	Durbin-Watson stat		2.460558
Prob(F-statistic)	0.012055			
Source: Authors (2018)				

Source: Authors (2018)

 Table 7. The OLS model on the relationship between POV, UNE, and RKE at District of Bogor

U				
Dependent Variable – POV				
Method: Least Squares				
Sample: 2010 2015				
Included observations: 6				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	8.372870	1.211494	6.911192	0.0062
UNE	0.263390	0.091447	2.880255	0.0635

RKE	-6.951683	2.359641	-2.946077	0.0602
R-squared	0.893551	Mean dependent var		9.190000
Adjusted R-squared	0.822585	S.D. dependent var		0.493518
S.E. of regression	0.207873	Akaike info criterion		0.003074
Sum squared resid	0.129634	Schwarz criterion		-0.101046
Log-likelihood	2.990778	Hannan-Quinn criter.		-0.413728
F-statistic	12.59126	Durbin-Watson stat		2.551757
Prob(F-statistic)	0.034731			

RESULTS AND DISCUSSION

The average economic growth in Municipality and District of Bogor during the last 10 years (2005-2015) is relatively similar to the economic growth rate of West Java Province (Table 1), and in accordance with the economic map of Indonesia, West Java Province has characteristics of economic growth very fast but low credit depth and there is no certainty of causal relationship between credit and economic growth (Sipahutar, 2016). Because there are similarities in the pattern of economic growth between West Java Province with Municipality and District of Bogor, it is logical to state that the economic characteristics in Municipality and District of Bogor are relatively similar to West Java Province which is very fast economic growth but low credit depth and there is no certainty a causal relationship between credit and economic growth.

The uncertainty of causal relationships obtained from the VECM model estimate is due to the relatively small credit magnitude that is unable to show the degree of certainty of causal relationships between credit and economic growth (Beck, Buyukkarabacak, Rioja & Valev, 2012; Beck & Levine, 2004; Levine, Loayza & Beck, 2000; King & Levine, 1993a,b). Therefore, bank credit, including BPRs in Municipality and District of Bogor need to be pushed more strongly to promote economic growth, especially in the MSMEs sector.

Based on the Impulse Response Factor (Figure 2), by giving shocks to banks credit by one standard deviation, economic growth increased sharply in the second period. This shows that with the increasing magnitude of higher banks credit especially for the dominant economic sectors in Municipality and District of Bogor, economic growth can be achieved directly at the second period. The interesting thing about BPRs credit is that there is a positive and significant relationship between poverty and unemployment rate, but has a negative and significant relationship with credit depth, both in Municipality and District of Bogor (Table 6 and 7).

For Municipality of Bogor, the addition of a BPRs credit depth by 1 basis point can reduce poverty by 3.51 basis points, and changes in unemployment rate by 1 basis point will result in poverty change in the same direction by 0.09 basis points. Meanwhile, in District of Bogor, the addition of BPRs credit by 1 basis point can reduce poverty by 6.95 basis points – higher than Municipality of Bogor – and changes in unemployment by 1 basis point will result in a change of poverty in the same direction by 0.26 basis points.

We obtained that 94.74 per cent of poverty variance in Municipality of Bogor and 89.36 per cent of poverty variance in District of Bogor can be explained by unemployment rate and BPRs credit depth. The role of BPRs in these two areas are very important and strategic considering the target market that becomes its customers is the real sectors on the scale of MSMEs are vulnerable to the economic downturn which resulted in deterioration of the quality of welfare to the poverty



line. Through the estimation of the relationship model in Tables 6 and 7, poverty reduction in Municipality and District of Bogor can be undertaken if the roles of BPRs in both areas can be improved.

There are 8 BPRs and 22 BPRs in Municipality and District of Bogor respectively. The average total credit disbursed in the period 2010–2017 amounted to Rp. 187.52 billion in Municipality of Bogor and Rp. 351.15 billion in District of Bogor (Table 8). There has been a decline in performance in funding, credits and assets in 2017 simultaneously in both regions suspected to be related to the delayed national economic growth since 2014. In this case, the role of local government in both regions needs to be emphasized in to make policies in favor of BPRs and MSMEs so that the performance of BPRs can be maintained in a stable condition.

Table 8. The average performance of BPRs in Municipality and District of Bogor in the period of 2010–2017

Year	Municipality of Bogor (billions			District of Bogor (billions rupiah)		
	Funds	Credits	Assets	Funds	Credits	Assets
2010	38.64	100.98	133.95	63.65	179.52	253.39
2011	49.20	134.04	183.64	88.33	229.39	323.31
2012	82.81	140.60	183.48	174.39	289.64	379.91
2013	111.41	175.94	226.40	236.61	340.86	457.81
2014	140.81	223.09	280.61	294.87	439.24	574.26
2015	175.90	267.54	341.79	352.02	500.54	684.32
2016	218.32	303.04	404.25	377.90	539.78	733.14
2017	108.18	154.91	203.88	214.21	290.20	391.07
Average	115.66	187.52	244.75	225.25	351.15	474.65

Source: Authors (2018)

In accordance with the monetary transmission of the central bank's policy to the real sectors that can only be implemented through the banking role, BPRs that has a business-base in the MSMEs sector has a strategic role to improve the quality of life of communities in Municipality and District of Bogor, especially to the society at low level of economic capability. Furthermore, since poverty and unemployment dominantly exist in a society with a low economic level, the thrusting of BPRs credit depth is one of the triggers for reducing poverty and unemployment both in Municipality and District of Bogor. The role of BPRs as a monetary transmission channel to the real sector at the level of MSMEs becomes crucial to keep poverty and unemployment unbearable in the coming period.

Based on the BPRs spatial operation in the geographically bordering region, the two local governments–Municipality and District of Bogor–are expected to have the same policy directions to encourage the operationalization of BPRs in both regions in order to generate a convergence of economic growth. Differences in government policies in both regions will have a direct impact on the direction and policies of rural banks on credit expansion. This difference will lead to regional economic disparities that will eventually result in negative externalities as a result of economic polarization in both regions (Acemoglu & Robinson, 2012; Todaro & Smith, 2012; Kraay & Raddatz, 2007).

In order to avoid economic polarization, the allocation of BPRs credit needs to be in line with sectoral economic activities which have become the advantages

in the region according to economic sectors contribution to RGDP both in Municipality and District of Bogor. Table 9 explained the direction of BPRs financing to the real sectors of MSMEs that has relevance to the sectoral economy. With the direction of the financing, the contribution of BPR in the economy of Municipality and District of Bogor will expect be stronger.

Negative externalities that may occur if there is polarization of economic growth in one area at Bogor region are, (1) sustainable population migration from the poor and unemployed region to a higher economic growth region, (2) increasing new slum points in the area at higher economic growth, (3) increasing criminalities in higher economic growth region, and (4) deteriorating social value in higher economic growth region. In such situations, since the unemployed and the poverty people are the human resources that can be employed in the MSMEs sector if the MSMEs sector is well developed, the BPR's business policy direction needs to get the attention of the local government, both in Municipality and District of Bogor. The synchronization of both local governments in terms of MSMEs and BPRs policies will be able to avoid the Bogor region from negative externalities on the one side and result in convergence of economic growth of Bogor region on the other side.

depth	-						
	Municipality	District	Future Credit		Stance of BPRs		
Economic Sectors	of Bogor (%)	of Bogor (%)	Municipa Bogo	Municipality of Bogor		f Bogor	
			Moderate	Strong	Moderate	Strong	
Agricultural	0.90	5.53				✓	
Mining	-	3.14			1		
Industrial	19.08	55.90		1		1	
Energy	5.60	0.16		1			
Water	0.10	0.10					
Construction	11.27	8.41		✓		1	
Trading	22.35	12.90		1		1	
Transportation	11.15	3.09		1	1		
Accommodation	4.42	2.47	✓		1		
Information	4.39	1.58	1		1		
Financial	6.72	0.48		1			
Real Estate	2.19	0.80	✓				
Services	2.03	0.18	1				
Government	3.05	1.71	1		1		
Education	2.59	1.54	✓		1		
Health	1.11	0.42	1				
Other Services	3.05	1.57	 ✓ 		 ✓ 		

Table 9. Average distribution of economic sectors to RGDP of Municipality and District of Bogor in the period of 2005–2015 (%) and future credit stance of BPR on credit depth

Source: Authors (2018)

CONCLUSION

Reducing poverty and unemployment in a geographically bordering region needs to get a very serious attention from local governments. In this case, the government of Municipality and District of Bogor need to intervene to MSMEs and



BPRs in Bogor region in order to obtain an increased scale of integrated MSMEs business sector that is free from negative externalities as a result of economic polarization in a certain region. As a source of development, people with low economic size can be improved their welfare through the expansion of BPRs to the real sectors, especially on the scale of MSMEs. Increasing the scale of MSMEs through increased by credit expansion from BPRs will encourage the absorption of labour from the community by low economic size, and ultimately will be able to reduce poverty.

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