

Study of fiscal decentralization, macroeconomic stability and regional growth in Indonesia

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Abstract

Indonesia has been implementing fiscal decentralization since 2001. In theory, fiscal decentralization affected macroeconomic stability and economic growth—this study using data panels at the provincial level from 2010 to 2013. In the relationship between fiscal decentralization and macroeconomic stability with control variable income, significant variables are income to GRDP, GRDP per capita, and population. If control variable expenditure, significant variables are expenditure to GRDP, GRDP per capita, and population. In the model that analyzes fiscal decentralization and economic growth with control variable income, significant variables are income to GRDP, consumption to GRDP, and population. Meanwhile, if control variable expenditure, significant variables are expenditure to GRDP, consumption to GRDP, and population. By using sensitivity analysis, the population variable is a high priority. Therefore stakeholders should treat population variables carefully.

Keywords: *Economic growth, Fiscal decentralization, Macroeconomic stability*

JEL Classification: E62, H77, O47

INTRODUCTION

Officially, Indonesia has been implementing regional autonomy and fiscal decentralization policies since 2001. Following the implementation of those policies, there have been very significant and fundamental changes in the government administration mechanisms in Indonesia, particularly about the distribution of authorities and financial matters (Supratinungrum 2015 and Haryanto & Astuti 2009).

The disharmonious relations among the central and regional governments are due to the incapability of the government officials in interpreting the substance of the previously applicable laws and regulations. It is leading to the escalated national disintegration in all aspects of government administration. This disharmonious problem particularly concerns the authorities, institutional, financial, human resources, and other aspects (Suryanto 2006). Crook & Sverrisson (2001) say that decentralization is regarding the distribution of power and resources at different levels and regional areas of a country and among the various interests in their relations to the elites in power. Whereas Manor (1997) argues that political decentralization is arranged as an instrument for enhancing democracy and opening up closed systems to provide a space

for movement for various groups of interest to organize, compete and open up themselves.

According to Arif (2002), the objective of regional autonomy and fiscal decentralization policies is to free the central government from non-productive expenditures to have the opportunity to learn, comprehend and respond to the global trends and benefit from them. Whereas at the same time, the government would be able to formulate strategic international macro policies. Meanwhile, Mardiasmo (2002) says that fiscal decentralization policy is an element of total reform by granting broad autonomy to regencies and cities. Fiscal decentralization is also expected to answer various problems arising in regions with poverty, unequal distribution of development, low quality of life, and human resources development.

A study by Woyanti (2013) concludes that the implementation of fiscal decentralization has significant positive effects in supporting economic growth in Central Java Province. Sasana's (2009) research also finds that fiscal decentralization positively and significantly promotes the economic growth of regencies and cities in Central Java Province and has reduced regional discrepancy and poverty rates. On the contrary, Yuana (2014) says that implementing fiscal decentralization in East Java Province will support its economic growth and reduce regional discrepancy if regional independence can be actualized. The positive effects of fiscal decentralization on regional economic growth and workforce absorption are also identified in the research results by Apriesa & Miyasto (2013) in Central Java Province and the research by Muryawan & Sukarsa (2014) in Bali Province.

Oates (1972) and Tiebout (1956) explained a definite relation between fiscal decentralization and economic growth in a broader spectrum. Nevertheless, there has not been any substantial empirical conclusion in the previous studies, so that there is still room for validation of the effects of fiscal decentralization (Rustan 2013). The results of a study by Usman et al. (2015) confirms that in the era of fiscal decentralization, regions have the potential for overcoming various economic problems due to the granting of broader authorities for planning, formulating, and implementing development policies and programs that can be adjusted to the local needs. However, everything depends on the regions concerned, which must be more responsive to the needs of their people. Without such responsiveness, the current policies will not differ from previous ones (Mc Cullock & Suharnoko 2003).

The definition of financial stability is divided by Anginer and Demirguc-Kunt (2014) into price stability and financial sector stability, including financial institutions and financial markets, which entirely support the operation of the financial system. Should one of the entire elements be disrupted, all other elements would be disrupted or not functioning optimally. Such financial stability is a crucial and vital matter because if a financial institution and financial market functioning as a mediator are in an uncertain condition, economic activities will surely be unable to develop (Nasution 2004).

Several countries have proved the importance of managing financial stability, particularly in the era of fiscal decentralization. According to Strauss et al. (2002), countries like India, China, Brazil, and Russia had previously experienced a complicated and prolonged financial stability problem due to mismanagement in the implementation of fiscal decentralization. Vazquez & MacNabb's (2006) study in Latin America proves that fiscal decentralization had created macroeconomic instability and disrupted economic growth in regions.

The analysis in this study is focused on the effects of fiscal decentralization on economic growth in provinces in Indonesia through the creation of financial stability in regions. As a scientific work, this study also includes several limitations of problems, among others: 1) it is focused only on provinces and does not cover analysis at

regency/city level; 2) the data used is only data series of 2011 up to 2013 due to limited amount of data obtained; 3) several indicators and variables are still using a proxy approach; 4) this study is based on a model that has been previously analyzed by other researchers (Haryanto & Astutie, 2009).

LITERATURE REVIEW

The concept of fiscal decentralization

This study is based on the main theory specified in Oates (1972). Oates explains that fiscal decentralization is a degree of independence in making decisions regarding the distribution of public services at various levels of government. Another work used as a reference is the theory of Bird and Vaillancourt, which classified fiscal decentralization based on its independence, namely deconcentration, delegation, and devolution.

The study by Tiebout (1956) also explains the definition of fiscal decentralization by stating that the main idea of fiscal decentralization is greatly affected by the thought of economic efficiency of regional governments in improving their services for their people as well as competition in the provision of public services among regional governments in order to adjust to the preferred needs of their people.

Meanwhile, according to Mardiasmo (2004) in Sasana (2015), the development of the implementation of regional autonomy, especially at the regency/city level, must be conducted by keeping in mind the implementation of the principles of democracy, public participation, and other aspects including the potentials and diversity of regions. In 2011, Adirinekso explained several forms of implementation of fiscal decentralization. There is fiscal decentralization with self-financing or cost recovery by using taxes. There is also fiscal decentralization with financing or production arrangements among users in providing the infrastructure through a contribution of workforce and money and the expansion of local revenues through taxes on ownership and sales and indirect charges. A model of fund transfer from the central government to regional governments is also recognized, accompanied by the delegation of authorities to regions for managing regional loans.

Fiscal decentralization and inflation

World Bank stated (in its report of 1997) that the implementation of fiscal decentralization may lead to increasing macroeconomic instability in regions (in context inflation). The causes of such instability include the absence of adequate institutional support for the implementation of the policy. Rakanita & Sasana (2012) reconfirmed that a political, economical approach used in the implementation of fiscal decentralization assumes that the habitual practices of public agents and political institutions often cause trade-offs in coordination among different levels of governmental systems in public authority as well as preference in regional responses.

On the contrary, at the domestic level, the results of a study by Aji (2009) conclude that an increasing level of fiscal decentralization will result in increasingly inflating impacts. This is proved by the increase in *aggregate demand* in East Java Province, which caused an increase in the prices of goods and weakened economic growth in regions. The Committee for Regional Autonomy Implementation Supervision (KPPOD) in 2004 also conducted research. It resulted in argumentation that the finance of regional government tends to be focused on the region's goals in the use of its resources. For example, to increase regional revenues (PAD), a region tends to intensify regional charges and taxes, which causes increasing economic instability in the region.

Research conducted by Feltenstein & Shigeru in 2005 concluded that the transfer of fiscal activities from the central government to the regional government in China would lead to increasing inflation in regions. It is possible to occur due to the transfer of a large amount of money from the central government to regions causing a large increase in the amount circulating in regions. The shift in the relation between the central government and regional governments in the era of fiscal decentralization also became the object of attention of Tanzi (1995), stating that such shift has resulted in non-cooperative relations. Also, Tanzi (1995) also said that policies on the budget deficit and loans had been deemed as the main causes of the increasing inflation in regions.

Fiscal decentralization and economic growth

Many empirical kinds of research have been conducted to prove the relationship between fiscal decentralization policy and economic growth in regions. Quoting research by Suprantiningrum (2015), several studies have been conducted, including Akai & Sakata (2002), proving that the implementation of fiscal decentralization policy supports high economic growth through the total expenditures allocated. The research was conducted by taking locus in 50 states. The existence of authority for independent expenditure has been the main factor behind the success of such relation.

Another research concluding positive support of fiscal decentralization for economic growth was conducted by Jin & Zou (2005) using the data panel method in 30 provinces in China. They explained that the implementation of fiscal decentralization had been proven to accelerate economic growth in provinces in China. A study taking place in the provinces in China was also conducted by Felstenstein & Iwata (2005), which was also positive. The difference was that study was conducted by using time series data from 1952 to 1996.

Despite the various studies by several researchers, negative conclusions have also been made by several other researchers. Quoting a study by Rustan (2015), research by Davoodi & Zou (1998) using data panel from 46 countries during a time frame of 1970-1989 concluded a negative correlation between the implementation of fiscal policy decentralization and economic growth, especially in developing countries. It was assumed to be caused by the fact that the constellation of the financial system in developing countries was not yet stable, so they were prone to crisis. Pose & Kroijer (2009) conclude that expenditures and transfers to regional governments negatively relate to economic growth in 16 Central and East European countries implementing fiscal decentralization practices.

METHODS

In general, this study is based on previous research in Haryanto & Astuti (2009). The approach applied in this study is using an econometric model of the quantitative method. Whereas the data used is mostly secondary data obtained from various official government agencies such as data of regional inflation obtained from the National Statistics Agency, data of regional finance obtained from the Ministry of Finance, and various data related to regional economic growth.

This study applied the data panel method with provinces as the locus of research and a timeframe from 2010 to 2013. Research variables used include fiscal decentralization, macroeconomic stability, and economic growth. The analysis is further developed into two models: 1) estimate the relationship between fiscal decentralization and macroeconomic stability and 2) the relationship between fiscal decentralization, macroeconomic stability, and economic growth.

Fiscal decentralization and macroeconomic stability

The specification of a model used in describing the relationship between fiscal decentralization and macroeconomic stability in regions is as follows:

$$P_{it} = \beta_1 D_{it} + \beta_2 M_{it} + \beta_3 y_{it} + \delta Z_{it} + u_{it} \dots\dots\dots (1)$$

Where P is changed in a consumer price index, D is the measurement of fiscal decentralization, M is the ratio of the amount of money circulating to GDP, y is GDP per capita, and Z is controlled variables such as the ratio of investment to GDP and population. Due to the lack of data on this research, we abolish the M as a variable.

Fiscal decentralization, macroeconomic stability, and economic growth

Whereas the specification of the model describing the relationship between fiscal decentralization, macroeconomic stability in regions against economic growth is as follows:

$$y_{it} = \beta_1 D_{it} + \beta_2 K_{it} + \beta_3 H_{it} + \beta_4 G_{it} + \beta_5 P_{it} \delta Z_{it} + u_{it} \dots\dots\dots (2)$$

Where K is private capital manifested by gross domestic private fixed investment, G is public capital manifested by gross domestic public investment, H is the variable of human capital represented by infant mortality.

RESULTS AND DISCUSSION

Fiscal decentralization model and macroeconomic stability

The impacts of fiscal decentralization on macroeconomic stability in regions may be analyzed by comparing the control variables of regional revenues and regional expenditures indicators. As presented in Table 1, several variables proved to be significantly affecting macroeconomic stability with regional revenues as the control variable are as follows:

- a) The ratio of regional revenues to GRDP has a positive relation. Such phenomena can be explained by using regional independence analysis. It further confirms the justification of the necessity for the government to enhance the aspect of independence in each region by strengthening the sources of Local Own Resources (PAD) either from taxes or other sources.
- b) GRDP per capita has been proved to be significant in a positive relation. It is also in line with the idea of regional independence aspect as mentioned in the previous variable.
- c) The population has been proved to be significant in a positive relation to macroeconomic stability. Unlike the previous variables, finding a positive relationship between the size of the population and macroeconomic stability in the region is the most appealing finding for further study. Because, theoretically, the size of the population is dangerous to the macroeconomic stability of a region if the region concerned is unable to manage it properly. Researchers assume that the implementation of fiscal decentralization for more than ten years has placed regions in a condition where they are at the level of quality population management. The size of the population would be a driver for macroeconomic stability in regions.

Using analysis of the level of sensitivity, of all variables to be significant, the variable of the population has the highest level of sensitivity (1.4) followed by GRDP (0.2) and the ratio of regional revenues to GRDP (0.08). Based on this finding, the population variable must be given high priority by all regional governments to create macroeconomic stability in the region. Whereas the variable of GRDP should have moderate priority and the ratio of revenues to GRDP may have less priority.

Table 1. Model of fiscal decentralization and macroeconomic stability with the indicator of revenues

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8,116,364	1,357,634	-5,978,314	0.0000
LN_INCOME?	0.087701	0.021599	4,060,450	0.0001
LN_GRDP?	0.242628	0.028113	8,630,595	0.0000
LN_POPULATION?	1,446,584	0.172094	8,405,771	0.0000
LN_INVESTMENT?	-0.000759	0.002828	-0.268384	0.7890
LN_OPENESS?	-0.005288	0.003775	-1,400,796	0.1646
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.955458	Mean dependent var		4,894,807
Adjusted R-squared	0.937926	S.D. dependent var		0.071296
S.E. of regression	0.017763	Akaike info criterion		-4,987,126
Sum squared resid	0.029660	Schwarz criterion		-4,157,228
Log-likelihood	3,671,503	Hannan-Quinn criter.		-4,649,893
F-statistic	5,449,657	Durbin-Watson stat		1,557,340
Prob(F-statistic)	0.000000			
Fixed Effects (Cross)				
_NAD—C	-0.255474	_KALTENG—C		0.809792
_SUMUT—C	-1,699,673	_KALSEL—C		0.181188
_SUMBAR—C	-0.244715	_KALTIM—C		-0.128325
_RIAU—C	-0.735840	_SULUT—C		0.801825
_KEPRI—C	1,056,319	_GORONTALO—C		2,058,287
_JAMBI—C	0.361653	_SULTENG—C		0.641827
_SUMSEL—C	-0.926207	_SULSEL—C		-0.973465
_BABEL—C	1,707,028	_SULBAR—C		1,903,623
_BENGKULU—C	1,312,319	_SULTRA—C		0.903586
_LAMPUNG—C	-0.780358	_BALI—C		0.040998
_JAKARTA—C	-1,549,586	_NTB—C		0.033425
_JABAR—C	-3,429,281	_NTT—C		-0.010881
_BANTEN—C	-1,331,763	_MALUKU—C		1,545,153
_JATENG—C	-2,932,530	_MALUT—C		2,105,142
_DIY—C	0.277295	_PAPUA—C		0.317344
_JATIM—C	-3,214,102	_PABAR—C		2,189,076
_KALBAR—C	-0.033680			

Using fixed effect analysis in each region, regions with the lowest probability of regional macroeconomic stability turmoil include West Java (JABAR), East Java (JATIM), Central Java (JATENG), North Sumatra (SUMUT), and Jakarta (JAKARTA). In contrast, regions with the highest probability of fluctuating regional macroeconomic stability are West Papua (PABAR), Gorontalo (GORONTALO), North Maluku (MALUT), West Sulawesi (SULBAR), and Bangka Belitung (BABEL). Macroeconomic stability in regions reflected from the inflation rate has been greatly affected by the availability of complete facilities and infrastructure. Regions having good macroeconomic stability are mostly located in Java and Sumatra Islands which openness has been fully developed.

The next model is fiscal decentralization and regional macroeconomic stability by using control indicators of regional expenditures. It is presented comprehensively in Table 2. As presented in Table 2, the findings are not different from the results indicated in the model using the indicator of regional revenues. Further explanation of significant variables relation is as follows:

- a) The ratio of regional expenditures to GRDP has a significant and positive relationship. If the basis of consideration in the analysis of revenues is independence, this model should use the spending approach. A region with increasing expenditures will have a positive contribution in driving economic

growth in the region. Enhancing economic growth in regions will trigger the growth of economic centers at all levels, and in the end, it will improve economic stability.

- b) GRDP per capita has been proved to be significant in a positive relation. An increase in the GRDP per capita of a region would support people's spending power in the region. This conclusion is closely related to and supports the previous variable.

The population has been proved to be significant in a positive relation with macroeconomic stability. The increasing size of the population would become a market and at the same time become agents of economy driving economic activities in the region and support the creation of consistent macroeconomic stability.

Table 2. Model of fiscal decentralization and macroeconomic stability with the indicator of expenditures

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7,275,855	1,372,906	-5,299,602	0.0000
LN_EXPENDITURES?	0.090587	0.021340	4,244,940	0.0001
LN_GRDP?	0.256696	0.028508	9,004,343	0.0000
LN_POPULATION?	1,339,780	0.175095	7,651,740	0.0000
LN_INVESTMENT?	0.000336	0.002760	0.121600	0.9035
LN_OPENESS?	-0.005046	0.003754	-1,344,154	0.1821
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.956067	Mean dependent var		4,894,807
Adjusted R-squared	0.938775	S.D. dependent var		0.071296
S.E. of regression	0.017641	Akaike info criterion		-5,000,899
Sum squared resid	0.029254	Schwarz criterion		-4,171,001
Log-likelihood	3,680,593	Hannan-Quinn criter.		-4,663,666
F-statistic	5,528,757	Durbin-Watson stat		1,548,996
Prob(F-statistic)	0.000000			
Fixed Effects (Cross)				
_NAD—C	-0.244435	_KALTENG—C		0.744654
_SUMUT—C	-1,577,763	_KALSEL—C		0.172780
_SUMBAR—C	-0.225657	_KALTIM—C		-0.158963
_RIAU—C	-0.711872	_SULUT—C		0.740818
_KEPRI—C	0.952526	_GORONTALO--C		1,921,814
_JAMBI—C	0.334445	_SULTENG—C		0.595842
_SUMSEL—C	-0.862016	_SULSEL—C		-0.899118
_BABEL—C	1,575,075	_SULBAR—C		1,779,053
_BENGKULU—C	1,227,733	_SULTRA—C		0.845997
_LAMPUNG—C	-0.710059	_BALI—C		0.037699
_JAKARTA—C	-1,472,550	_NTB—C		0.050006
_JABAR—C	-3,174,563	_NTT—C		0.020594
_BANTEN—C	-1,223,182	_MALUKU—C		1,456,157
_JATENG—C	-2,705,228	_MALUT—C		1,970,066
_DIY—C	0.267922	_PAPUA—C		0.272570
_JATIM—C	-2,978,535	_PABAR—C		2,001,605
_KALBAR—C	-0.023415			

It is quite interesting to conduct further analysis of why the ratio of investment to GRDP and regional openness is insignificant for a region's macroeconomic stability. Theoretically, economic growth may be driven by consumption and investment. Similar to economic growth at the national level, which is still supported by consumption, economic growth that supports macroeconomic stability in regions is also still driven only by consumption apparently. In the future, this must become a shared concern for the government at the central and regional levels to create sustainable sources of economic growth.

Another interesting matter is the negative relation between the variable of openness and macroeconomic stability in regions either by using regional revenues or regional expenditures as the indicator. In contrast, increasing investments would certainly open up the market in a region. Therefore, it seems that the legislative, executive, and judicial bodies need to cooperate harmoniously to maintain such stability.

By using the analysis of sensitivity, the variable of the population has been proved to have the highest score (1.3) compared to the variable of GRDP per capita (0.2) and the variable of the ratio of expenditures to GRDP (0.09). The government should pay serious attention to the treatment of the population variable because it has been proved to be the most sensitive in affecting macroeconomic stability in both expenditures and revenues models.

Model of fiscal decentralization and regional economic growth

The relationship between fiscal decentralization and economic growth in regions can be analyzed with the following model presented in Table 3.

Table 3. Model of fiscal decentralization and economic growth with the indicator of revenues

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3,754,210	1,098,184	3,418,563	0.0009
LN_REVENUES?	-0.359909	0.177369	-2,029,154	0.0453
LN_POPULATION?	-0.166168	0.094720	-1,754,319	0.0827
LN_INVESTMENT?	-0.004732	0.044053	-0.107427	0.9147
LN_OPENESS?	-0.052542	0.039418	-1,332,945	0.1858
LN_CONSUMPTION?	0.361608	0.181555	1,991,723	0.0493
Effects Specification			S.D.	Rho
Cross-section random			0.299530	0.4964
Idiosyncratic random			0.301712	0.5036
Weighted Statistics				
R-squared	0.067997	Mean dependent var		0.889676
Adjusted R-squared	0.017890	S.D. dependent var		0.299373
S.E. of regression	0.296683	Sum squared resid		8,185,946
F-statistic	1,357,025	Durbin-Watson stat		1,401,923
Prob(F-statistic)	0.247721			
Unweighted Statistics				
R-squared	0.137973	Mean dependent var		1,769,707
Sum squared resid	1,551,979	Durbin-Watson stat		0.739447
Random Effects (Cross)				
_NAD—C	-0.285183	_KALTENG—C		0.154773
_SUMUT—C	0.126404	_KALSEL—C		0.091770
_SUMBAR—C	0.048997	_KALTIM—C		0.015269
_RIAU—C	-0.245224	_SULUT—C		0.038423
_KEPRI—C	0.090857	_GORONTALO—C		0.106886
_JAMBI—C	0.146890	_SULTENG—C		0.267926
_SUMSEL—C	0.121236	_SULSEL—C		0.255760
_BABEL—C	-0.158781	_SULBAR—C		0.162015
_BENGKULU—C	0.022094	_SULTRA—C		0.401424
_LAMPUNG—C	0.023240	_BALI—C		0.013355
_JAKARTA—C	-0.028164	_NTB—C		-0.957010
_JABAR—C	0.008109	_NTT—C		-0.161194
_BANTEN—C	0.015432	_MALUKU—C		-0.005791
_JATENG—C	0.038666	_MALUT—C		0.170017
_DIY—C	-0.222339	_PAPUA—C		-0.391911
_JATIM—C	0.214484	_PABAR—C		-0.053424
_KALBAR—C	-0.025009			

Based on the analysis in Table 3, several variables that proved to be significantly affecting economic growth in regions are as follows:

- a) The revenues to GRDP ratio has a negative relation. This finding is certainly contradictory to the applicable theory, especially about creating independence aspects in regions. The initial hypothesis conveyed in response to this finding is the high level of the region's independence on financial support from the central government, resulting in negative relations.
- b) The consumption to GRDP ratio has been proved to have a positive relation. In such a position, the mechanism of economic growth created is greatly affected only by consumption.
- c) The population has a negative relation to economic growth in regions. This phenomenon is in line with the applicable theory that the low quality of population will certainly disrupt economic growth in regions.

The consumption becomes a *high priority* with a score of 0.36, followed by the revenues ratio (0.35) and the population variable (0.16). If the consumption variable indeed drives the construction of regional economic growth, such an explanation is suitable for the analysis. The regions with the highest level of growth include Southeast Sulawesi (SULTRA), Central Sulawesi (SULTENG), South Sulawesi (SULUT), East Java (JATIM), and West Sulawesi (SULBAR). In contrast, the regions with the lowest economic growth include the Special Region of Yogyakarta (DIY), the Special Region of Aceh (NAD), Riau (RIAU), Papua (PAPUA), and West Nusa Tenggara (NTB).

Variables that proved to be significant based on Table 4 are as follows:

- a) The expenditures to GRDP ratio have a negative relation. The hypothesis conveyed as a response to this phenomenon is achieving a level of economic growth that has been saturated with consumption and is no longer creating any growth effect.
- b) The consumption to GRDP ratio has been proved to be significant in a positive relation.

The population has significant in a negative relation to the economic growth of a region. This phenomenon aligns with the applicable theory that the low population quality will certainly disrupt economic growth in regions.

By using the analysis of sensitivity, the expenditures to GRDP ratio has the highest score (0.46), followed by the variable of consumption to GRDP ratio (0.44) and the size of population (0.20). Unlike the previous model, the control variable dominates fiscal decentralization and regional economic growth. Seen from the spread of impacts in each region, the construction of the list is similar to the model constructed with regional revenues as the control variable.

Table 4. Model of fiscal decentralization and regional economic growth with expenditures as an indicator

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4,253,384	1,077,674	3,946,819	0.0002
LN_EXPENDITURES?	-0.461823	0.174776	-2,642,366	0.0097
LN_POPULATION?	-0.205041	0.093758	-2,186,905	0.0313
LN_INVESTMENT?	-0.004031	0.043834	-0.091955	0.9269
LN_OPENESS?	-0.058356	0.039378	-1,481,942	0.1417
LN_CONSUMPTION?	0.442718	0.181748	2,435,888	0.0168
Effects Specification			S.D.	Rho
Cross-section random			0.300237	0.5023
Idiosyncratic random			0.298843	0.4977
Weighted Statistics				
R-squared	0.096617	Mean dependent var	0.881768	
Adjusted R-squared	0.048048	S.D. dependent var	0.298431	
S.E. of regression	0.291173	Sum squared resid	7,884,716	
F-statistic	1,989,283	Durbin-Watson stat	1,400,894	
Prob(F-statistic)	0.087401			
Unweighted Statistics				
R-squared	0.155598	Mean dependent var	1,769,707	
Sum squared resid	1,520,248	Durbin-Watson stat	0.726569	

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In the model of fiscal decentralization and the creation of macroeconomic stability in regions and revenues as the control variable, several variables have been proved to be significant, namely revenues to GRDP ratio, GRDP per capita, and population. Regional revenues to GRDP ratio has a positive relation, and it is also the case with the variables of GRDP per capita and population. Further analysis using the sensitivity level indicates that the population variable has the highest level of sensitivity, followed by GRDP and the variable of regional revenues to GRDP ratio. Macroeconomic stability in regions reflected by the inflation rate has been greatly affected by the completeness of facilities and infrastructure. Regions having good economic stability are mostly located in Java and Sumatra, the openness has been developed.

By using regional expenditures as the control variable, the investment to GRDP ratio and regional openness ratio does not significantly affect regions' macroeconomic stability. The regional expenditures to GRDP ratio have a positive relation, similar to the variable of GRDP per capita and population. By using the sensitivity analysis, the population variable has the highest score compared to the GRDP per capita and the expenditures to GRDP ratio. It seems that the government must pay serious attention to the treatment of the variable of the population because it has been the most sensitive in affecting macroeconomic stability both in the models of expenditures and revenues.

The next model is fiscal decentralization and economic growth by using regional revenues and regional expenditures as the control variables. By using regional revenues as the control variable, the variables proved to significantly affect economic growth in regions are the revenues to GRDP ratio, consumption to GRDP ratio, and population size. Regional revenues to GRDP ratio and population have a negative relation, while consumption to GRDP ratio has been proved to be significant in a positive relation.

The consumption variable is a high priority, followed by the revenues ratio and the population variable. If it is true that consumption drives the construction of regional economic growth, such an explanation is correct about the analysis. The list of regions with the highest rate of economic growth is Southeast Sulawesi, Central Sulawesi, South Sulawesi, East Java, and West Sulawesi. In contrast, the regions with the lowest economic growth rate are the Special Region of Yogyakarta, the Special Region of Aceh, Riau, Papua, and West Nusa Tenggara.

If the control variable is regional expenditures, the variables proved to be significant are expenditures to GRDP ratio and consumption to GRDP ratio. In contrast, the investment to GRDP ratio and openness ratio variable has not significantly affected economic growth. The expenditures to GRDP ratio have a negative relation, while the consumption to GRDP ratio has significant in a positive relation. Moreover, the population has a significant negative relation to regions' economic growth. Using sensitivity analysis, the variable of expenditures to GRDP ratio has the highest score, followed by the variable of consumption to GRDP ratio and the size of the population. Unlike the previous model, control variables seem very dominating in the fiscal decentralization and regional growth model. Based on the spread of effects in each region, the construction of the list is similar to that of the model constructed with regional revenues as the control variable.

Recommendations

Based on the research result, the population variable is very crucial. Therefore, all parties, especially regional governments and the central government, must consider

policies related to managing population affairs. It is necessary to devise policies that can improve population quality to positively impact the creation of macroeconomic stability in regions or drive and accelerate economic growth. The maintenance of facilities and infrastructure must also be taken into considerations. Macroeconomic stability reflected from inflation is proved to be very vulnerable to being affected by infrastructure conditions. Every year, the allocation of the significantly increasing expenditure for infrastructure in the State Budget must be jointly evaluated.

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