Provincial Capital Expenditure Analysis in Eastern Indonesia and Indonesian West Area with Dummy Variable

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Abstract—**This study aims, firstly, to measure the magnitude of the effect of Regional Original Revenue (PAD), General Allocation Fund (DAU), Gross Regional Domestic Product (GRDP), and the population of provincial Capital Expenditures in Indonesia; second, to find out whether or not there is a difference between provincial Capital Expenditures in Eastern Indonesia and provincial Capital Expenditures in the Western Region of Indonesia. The method used in this study is multiple regression by including a dummy variable. The results of this study indicate that Regional Original Revenue (PAD) and General Allocation Funds (DAU) have a significant positive effect on provincial capital expenditure in Indonesia. Meanwhile, the population actually has a significant negative effect on provincial capital expenditure in Indonesia. Gross Regional Domestic Product (GRDP) and dummy variable have no effect on provincial capital expenditure in Indonesia.**

Keywords—capital expenditure; eastern Indonesia; West Indonesia area; dummy variable

I. INTRODUCTION

Since the enactment of regional autonomy in Indonesia, the authority of regional governments (provinces and districts / cities) has become even greater. In the process of development in a country often found a variety of very complex problems. The overall economic development described in regional development will be threatened if the regional economic base is strongly influenced by macroeconomic fluctuations. However, it does not mean that every region must be truly self-reliant, but the most important thing is that development must be critical and sensitive in looking at a problem that can cause excessive risk [1]. Thus, not all the authority of the central government is delegated to regional governments. The fields of government that must be implemented by regional governments are public works, health, education, agriculture, transportation, trade and industry, investment, environment, lighting, and land.

The authority includes the implementation of all government functions, except in the fields of defense security, foreign policy, fiscal and monetary, judiciary, religion, and strategic government administration. The administration of government in the regions is carried out based on the principles of decentralization, deconcentrating and co-administration tasks. The drive for decentralization that occurs mainly in developing countries is influenced by several factors, including the background or experience of a country, its role in global globalization, setbacks in economic development, demands for changes in the level of community service, signs of disintegration, and response to failure experienced by many centralistic governments in providing effective services to the community [2].

Opinions that support decentralization say that the most efficient public services are carried out by regions that have minimum geographical supervision, with reasons, first, that the local government is deeply aware of the needs of its people. Second, local government decisions are very responsive to the needs of the community, thus encouraging local governments to make efficient use of funds from the community. Third, competition between regions in providing services to the community will encourage regional governments to increase innovation [2].

The increasing presence of regional government authority has caused government spending to be even greater. The discussion on regional expenditure can be carried out through the following 3 (three) approaches [3]. First, Wagner's Law states that in an economy, if per capita income increases, relative government spending will also increase. In this case Wagner explained that the increasing role of government was caused by the government which had to regulate the relationships that emerged in the community. Second, Peacock and Wiseman's theory is based on the view that the government is always trying to increase its expenditure, while the public is not happy to pay greater taxes, which are used to finance the increasingly large government expenditure. This theory is also based on the view that the community has a tax tolerance level, namely the level of willingness of the community to pay the taxes needed by the government to finance its expenses. This level of tolerance is an obstacle for the government to raise taxes arbitrarily, however, Peacock and Wiseman did not mention the level of tolerance. The theory of Peacock and Wiseman is stated as follows: economic development causes tax collection to increase, even though the tax rate does not change, and the increase in tax revenues causes government

spending to also increase. Third, the Rostow and Musgrave model that connects the development of government expenditure with the stages of economic development consisting of the initial, intermediate, and advanced stages. This model is not based on a particular theory, but is based on observing the development process experienced by many countries. In the initial stage, the percentage of government investment in total investment was large, because the government had to provide a variety of infrastructure. At the middle stage, private investment is getting bigger, however, government investment is still needed to increase economic growth in order to take off. In the later stages, government activities shifted from providing infrastructure to spending on social activities.

Research in Korea that uses a variable ratio between regional government expenditure and GDP (LE) as a dependent variable, and a measure of fiscal decentralization, which is shown by the ratio between regional government expenditure and total expenditure (DEC) as independent variables, and real per capita disposable income (INCOME) and population (POP) as control variables show results as in table 1 below [4].

TABLE I.   RESEARCH IN KOREA

	Intercept	DEC	INCOME	POP	*Adjusted* R^2
LE	-1.983	0.27	7.408E-07	1.550E-08	0.885
	(-2.129)	(0.430)	(1.207)	(0.603)	

Research in Indonesia uses 326 district / city data in 2005, with capital expenditure variables (BM) as the dependent variable, and DAU, DAK, PAD, and GRDP as independent variables. The results of this study indicate that DAU, DAK, and PAD have a positive effect on capital expenditure (BM), while GDP does not affect capital expenditure (BM) [5].

To finance the implementation of the functions of government which are its authority, the regional government needs funds obtained from regional financial sources that have been regulated in the Law, Government Regulations, Minister of Home Affairs Decrees and Minister of Home Affairs Regulation. The regional financial sources according to Law number 33 of 2004 concerning Financial Balance between Central and Regional Governments are Regional Revenues, which originate from Regional Original Revenues (PAD), Balancing Funds, and Other Income, and Financing, which are sourced from the remaining more regional budget calculations, regional loan receipts, regional reserve funds and regional wealth sales results that are separated [6].

According to Law number 33 of 2004 concerning Financial Balance between Central and Regional Governments, regional expenditure consists of personnel expenditure, goods and services expenditure, capital expenditure, interest expenditure, subsidy expenditure, grant expenditure, social assistance expenditure, provincial profit sharing expenditure / District / City and Village Government, Provincial / District / City financial assistance expenditure and Village Government, and shopping is unexpected [6]. One type of regional expenditure is capital expenditure, which is an expenditure on development programs that are oriented towards improving public service

facilities. The need for funds to finance the expenditure of regional development programs is certainly experienced by provincial governments throughout Indonesia, both those in Eastern Indonesia (KTI), which include provinces in Kalimantan, Sulawesi, Nusa Tenggara, Maluku, and Papua, as well as in the Regions West Indonesia (KBI), which covers provinces in Sumatra, Java, and Bali.

Noting the background above, the purpose of this study is:

- To measure the effect of Regional Original Income (PAD), General Allocation Fund (DAU), Gross Regional Domestic Product (GRDP), and the total population of provincial capital expenditure in Indonesia.

- To find out the difference between provincial capital expenditure in Eastern Indonesia and provincial capital expenditure in the Western Region of Indonesia.

II. LITERATURE REVIEW

The increasing authority of the regional government has caused government spending to be even greater. The discussion on regional expenditure can be done through the following 3 (three) approaches [3].

A. Wagner's Law

Wagner put forward a theory about the development of government spending based on observations in European countries, the United States, and Japan in the 19th century. In addition, Wagner's views are based on a theory called the organic theory of the state, and are not based on theories regarding the selection of public goods.

The Wagner law is stated as follows. In an economy, if per capita income increases, relative government spending will also increase. In this case Wagner explained that the increasing role of government was caused by the government which had to regulate the relationships that emerged in the community.

B. Peacock and Wiseman Theory

Peacock and Wiseman's theory is based on the view that the government is always trying to increase its expenditure, while the public is not happy to pay increasingly larger taxes, which are used to finance the increasingly large government expenditure. This theory is also based on the view that the community has a tax tolerance level, namely the level of willingness of the community to pay taxes that the government needs to finance its expenditure. This level of tolerance is an obstacle for the government to raise taxes arbitrarily, however, Peacock and Wiseman did not mention the level of tolerance.

The Peacock and Wiseman theories are stated as follows: economic development causes tax collection to increase, even though the tax rate does not change, and the increase in tax revenues causes government spending to also increase.

Rostow and Musgrave developed a Development Model on the Development of Government Expenditures that links the development of government spending with the stages of

economic development consisting of the initial, intermediate and advanced stages. This model is not based on a particular theory, but is based on observing the development process experienced by many countries.

In the initial stage, the percentage of government investment in total investment was large, because the government had to provide a variety of infrastructure. At the middle stage, private investment is getting bigger, however, government investment is still needed to increase economic growth in order to take off. In the later stages, government activities shifted from providing infrastructure to spending on social activities.

To finance the implementation of the functions of government which are their authority, the regional government needs funds obtained from regional financial sources that have been regulated in the Law, Government Regulations, Minister of Home Affairs Decrees and Minister of Home Affairs Regulation. The regional financial sources according to Law number 33 of 2004 concerning Financial Balance between Central and Regional Governments are as follows [6].

III. RESEARCH METHODOLOGY

The variables used in this study consisted of dependent variables and independent variables. As the dependent variable is capital expenditure (BM), while as an independent variable is Regional Original Income (PAD), General Allocation Fund (DAU), Gross Regional Domestic Product (GRDP), population (PEND), dummy variable (DM).

The data used in this study is cross section data, in 2014. This data is data from each province in Indonesia obtained from the Directorate General of Regional Finance of the Ministry of Home Affairs, Bank Indonesia and the Central Bureau of Statistics. The data used is in accordance with the variables used in this study.

Based on the theory and model, the model used in this research is

$$\ln BM = \alpha_0 + \alpha_1 \ln PAD + \alpha_2 \ln DAU + \alpha_3 \ln PDRB + \alpha_4 \ln PEND + \alpha_5 DM + u \qquad (2)$$

in which:
BM is capital expenditure (Rp);
PAD is Regional Original Income (Rp);
DAU is a General Allocation Fund (Rp);
GRDP is a Gross Regional Domestic Product (Rp);
PEND is the total population;
DM is a dummy variable, DM = 0 for provincial areas in Eastern Indonesia, and DM = 1 for provincial areas in the Western Region of Indonesia;
α_0 is a constant;
$\alpha_{1,2,3,4,5}$ is *independent variable coefficient*;
u is *error terms*.

IV. ANALYSIS AND DISCUSSION

A. Results of Regression and Interpretation

Regression is carried out on data from 33 provinces in Indonesia. The regression results with the dependent variable BM and the independent variables PAD, DAU, GRDP, PEND and DM are shown in the following table 2.

TABLE II. REGRESSION IS CARRIED OUT ON DATA FROM 33 PROVINCES IN INDONESIA

Dependent Variable: LNBM		Included observations: 33		
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-3.665836	5.457710	-0.671680	0.5075
LNPAD	0.921402	0.208495	4.419299	0.0001
LNDAU	0.274927	0.113417	2.424029	0.0223
LNPDRB	0.215064	0.290332	0.740752	0.4652
LNPEND	-0.776584	0.243297	-3.191915	0.0036
DM	-0.216518	0.254218	-0.851703	0.4019
R-squared	0.677510	Durbin-Watson stat		1.225913
Adjusted R-squared	0.617790	F-statistic		11.34471
S.E. of regression	0.588197	Prob(F-statistic)		0.000006

Source: Results of data processing with E-Views.

- The coefficient of determination (R^2): From the regression results obtained R^2 is 0.6775. This means that 67.75% of the variation in the dependent variable (BM) can be explained by the independent variables in the model, while the rest (32.25%) is explained by other independent variables outside the model.

- t Test: The regression results show that the t-statistic for the PAD variable, and DAU is significant with the positive sign (+) indicated by the probability number (prob.) Less than α ($\alpha = 0.05$), which is equal to 0,0001 and 0,0223, while the t-statistic for the PEND variable is significant with a negative sign (-) indicated by the probability number (prob.) less than α ($\alpha = 0.05$), which is equal to 0.0036. In addition, the t-statistics for GRDP and DM variables are not significant because probability numbers (prob.) Are more than α ($\alpha = 0.05$), which are equal to 0.4652 and 0.4019.

- F test: The regression results show that the F-statistic is significant because the probability number (prob.) Is less than α ($\alpha = 0.05$), which is equal to 0.000006. This means that the F test is said to be statistically significant for all variables simultaneously.

Based on the results of the regression in advance, it can be interpreted economically the influence of the independent variables on the dependent variable as follows

- Regional Original Income (PAD): Regional Original Income has a significant positive effect on Capital Expenditures. This is in accordance with the hypothesis proposed. LNPAD variable regression coefficient value of 0.921402 means that every increase in PAD of 1% will cause an increase in Capital Expenditures of 0.921402%. These results indicate that the increase in provincial original income will be followed by an

increase in provincial capital expenditure in Indonesia in the study period.

- General Allocation Fund (DAU): General Allocation Funds have a significant positive effect on Capital Expenditures. This is in accordance with the hypothesis proposed. LNDAU variable regression coefficient of 0.274927 means that each increase in DAU by 1% will cause an increase in Capital Expenditure of 0.274927%. This shows that the increase in DAU provision will increase provincial capital expenditure in Indonesia in the study period.

- Per Capita Gross Regional Domestic Product (PDRB): Gross Regional Domestic Products have no effect on provincial Capital Expenditures in Indonesia in the study period.

- Population (PEND): The population in each province has a significant negative effect on provincial capital expenditure in Indonesia. LNPEND variable regression coefficient of -0.776584 means that every increase in population by 1% will cause a decrease in Capital Expenditure of 0.776584%. This shows that the increase in population will actually reduce provincial capital expenditure in Indonesia in the study period.

- Dummy Variable (DM): Dummy Variable does not significantly affect provincial Capital Expenditures in Indonesia in the study period. These results indicate that the amount of Capital Expenditures is not influenced by the location of the province, both in Eastern Indonesia or in the Western Region of Indonesia. This means that provincial capital expenditure in Eastern Indonesia with provincial capital expenditure in the western region of Indonesia on average has no difference.

V. CONCLUSION AND RECOMMENDATIONS

A. *Conclusion*

- The increase in Regional Original Revenues (PAD) and General Allocation Funds (DAU) received by provinces in the study period led to an increase in provincial Capital Expenditures in Indonesia. Meanwhile the increase in population actually led to a decrease in the amount of provincial capital expenditure in Indonesia.

- The amount of Gross Regional Domestic Product (GRDP) in the study period did not affect the amount of provincial capital expenditure in Indonesia. Besides that, between provincial capital expenditure in Eastern Indonesia and provincial capital expenditure in the western region of Indonesia on average there is no difference.

B. *Recommendation*

The provincial government in Indonesia must always increase the Regional Original Income (PAD) used to finance Capital Expenditures. In addition, the provincial government also always requires a General Allocation Fund (DAU) as one of the sources of Regional Revenue used to finance Capital Expenditures.

Although the Gross Regional Domestic Product (GRDP) has no significant effect, the provincial government in Indonesia needs to always increase the GRDP especially through increasing sectors which are the leading sectors in each province.

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