

Scale Effect on The Size of Local Government in Indonesia

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ABSTRACT

Proliferation of local government increased substantially after the Law of Local Government No. 22 Year of 1999 and the Law Fiscal Balance No. 25 Year of 1999. The objective of proliferation is to provide public service closely to the community. Therefore, public welfare can be obtained faster. The number of local governments grew significantly due to the New Law allowed and relaxed to form new local government. Based on the recent data in 2016, the number of Regency are 416 and the number of City are 98. The objective of this paper is to identify the scale effect on the size of local government in Indonesia. The measurement of scale effect is based on the spending of budget on specific sector such as, health, education and infrastructure on the number of populations, area and population density. Econometric analysis will be used to identify whether there is an optimal size of local government among local governments in Indonesia. The result of this study shows that there is no optimal size local government to provide public services such as health, education and infrastructure. The result also shows that inefficiency exists in budget spending on specific sector. Therefore, quality spending should be improved by reorganized local government in providing public services.

Keywords—Scale Effect, Local Government, Public Services, Budget Spending

1. INTRODUCTION

The number of regional governments are huge due to proliferation in recent decade. The relaxation of regulation in the past affect huge proliferation wave, especially outside Java. This proliferation created many problems such as in efficiency in managing local government. Scale of economies might not be achieved to run local government.

The limited budget of Central Government from taxes and other sources due the slowdown of global economy made Central Government to limit proliferation. The emerging idea to relax the proliferation in recent years creates the increasing need of transfer fund to the local government.

The objective of local government proliferation, however, was expected to accelerate regional development due to many of regions were left behind in the past especially regions located in remote and outside Java. This condition drove these regions to have their own local government. The philosophy behind this aspiration is to provide public service close to the people. However, the emerging of many local governments does not guarantee that the people economic welfare and public service improves.

There are many factors drive the creation of new local government such as unequal development, fiscal spoil, bureaucrat and political rent seekers, Government's span of control, to make public service near to the users,

increase political representation and improve local democracy [1]; [2];[3].

Many researches used population as the size of government [4]. However, it is valid if population has positive relationship with output (service delivery performance).

Most of the current research especially in Indonesia measures the optimality local government on output or outcome on the impact of proliferation to the welfare [5]; [6]; [7]; [8]; [9].

In Indonesia, performance or output as dependent variable to measure economies of scale on service delivery suggested that some of variables showing sub-optimal level [5]. Most of all indicators as a proxy of local government size showed that service delivery is sub-optimal. Regarding to this phenomenon, local government proliferation should consider this negative effect amid limited budget of Central Government [5].

Generally, many researches provided different results. Some research showed that service delivery has optimality, however, others showed that service delivery does not have it [10]. Reference [10] described that local government size does not only depend on population but also on population density. Furthermore, [11] added that there was a trade-off of local government size on efficiency and effectivity. Reference [12] discussed on efficiency of local government.

Based on empirical study, sometime the results are different from the principle that average cost has U curve meaning big and small city have a higher cost. [13]. Reference [14] stated that the measurement of local

government containing three factors i.e. development capacity, provide service delivery in high quality and affordable and functioning local democracy. Reference [12] showed that the estimation technique on minimal cost of local government and provide the difference on size and scale effect.

2. METHOD AND DATA

Quadratic function is used to measure economies of scale of public spending such as education, health and infrastructure. Linear function is also used to measure whether some indicators do not relate to economies of scale.

Using that formula above, minimum cost can be calculated. Theoretically, POP will be positive significantly, and POP² will be negative significantly to reflect economies of scales. For other variables, the same way will be applied. These equation uses cross section data for regency data and city. Minimum spending against population can be calculated by deriving that equation to population and yields as follows:
 $\delta Y_n / \delta POP = \beta_3 + 2\beta_4 POP$ (2)
 The value of minimum spending can be calculated by calculating the first derivation equals to 0, therefore that equation yields as follows:

Research uses secondary data based on official published data. Econometric analysis will be used to measure optimality. The equation to measure optimality is as follows:

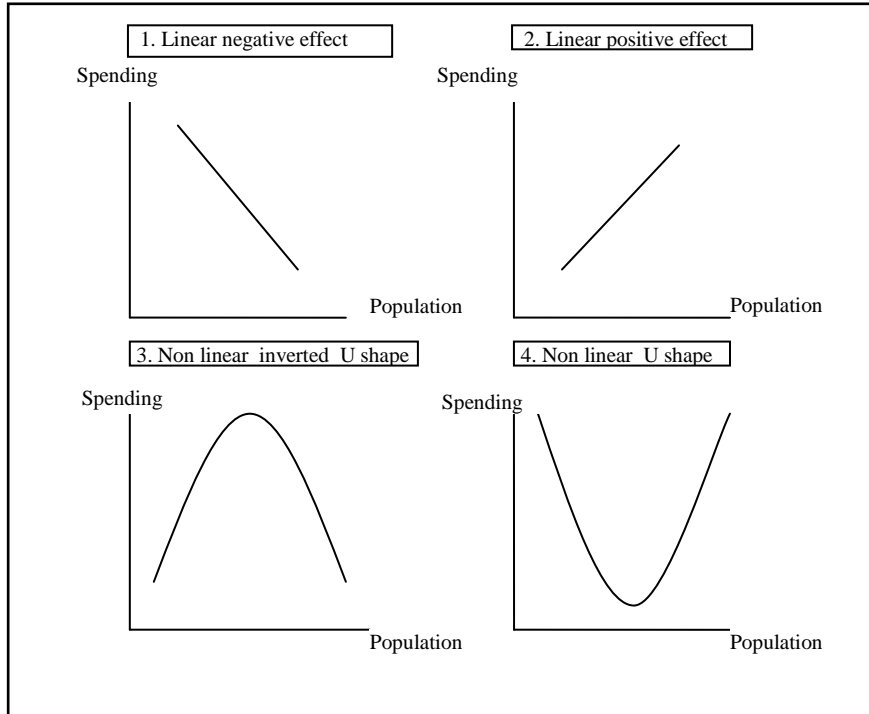
$$Y_n = \beta_0 + \beta_1 AREA + \beta_2 AREA^2 + \beta_3 POP + \beta_4 POP^2 + \beta_5 DENS + \beta_6 DENS^2 \dots \dots \dots (1)$$

Where: Y_n is local government spending on education (IDR), health, infrastructure and total government spending, AREA is total area of regency/city (km²), POP is Population of regency/city (people), DENS is population density of regency/city (people/km²), β₀ is Constanta, and β_i is coefficient (where i = 1, 2, ..., 6)

$$\beta_3 + 2\beta_4 POP = 0$$

$$POP^* = -\beta_3 / 2\beta_4 \dots \dots \dots (3)$$

If the second derivation $\delta^2 Y_n / \delta POP^2 = 2\beta_4$ less than 0, it means that the curve will be maximum or inverted U. For other variables, the same method is applied. Public spending covers education spending, health spending, infrastructure spending and total spending. Therefore, every spending can be known its minimum value or every spending has economies of scale. However, linear model will be applied if quadratic model is not satisfactory. Scale effect of local government size can be seen based on local government spending Fig. 1.



Source: Adopted from Andrews et. al. (2006)
 Fig. 1. Potential Effects of Local Government Size on Spending

3. RESULT AND DISCUSSION

The result shows that there is scale effect on population for education spending, health spending, infrastructure spending and total spending which are statistically significant at 1%. This indicates government size represented by its spending for all indicators. All spending is per capita.

Only population has scale effect. However, the existing condition is on suboptimal level. The mean of existing condition of population is approximately 486 thousand

people, but the optimal level of spending are 1.87 million people, 2,01 million people, 1,96 million people and 1,83 million people for Total Spending, Education Spending,

Health Spending, Infrastructure Spending, respectively. Therefore, the existing condition are on suboptimal level. This indicates that most of regencies and cities are inefficient for total spending, education spending, health spending and infrastructure. Reorganization of service delivery in education, health and infrastructure is needed to achieve optimal level. The detail of result is in the Table1 and Table2.

TABLE 1. THE RESULT OF ECONOMETRIC ESTIMATION

DEPENDENT VARIABLE	Government Spending	Education Spending	Health Spending	Infrastructure Spending
INDEPENDENT VARIABLE:				
C	7,447,799***	1,478,916***	1,003,752***	1,344,747***
AREA	387.07***	26.62**	25.10***	75.61***
AREA_2	-0.005373**	-0.000163	-0.00004	-0.001052
POP	-9.707284***	-1.179068***	-1.215094***	-1.92***
POP_2	2.59E-06***	2.93E-07***	3.10E-07***	5.23E-07***
DENS	174.72	7.21	76.21***	25.98
DENS_2	-0.008565	-0.000606	-0.004093**	-0.001395
Observasi (N)	504	504	504	504
R-squared	0.364773	0.331348	0.380912	0.264578
Adjusted R-squared	0.357104	0.323275	0.373438	0.2557
F-statistic	47.56622***	41.04769***	50.96554***	29.80043***

Note: *** = significant at alpha 1%, ** = significant at alpha 5%, dan * = significant at alpha 10%

TABLE 2. OPTIMUM SIZE OF SPENDING TO AREA, POPULATION AND POPULATION DENSITY

Scale Effect Measurement	OPTIMUM				Mean Regency and City
	Total Spending	Education Spending	Health Spending	Infrastructure Spending	
AREA	36,020	81,651	313,792	35,938	3,802.29
	Maximum	Maximum	Maximum	Maximum	
POP	1,873,993.05	2,012,061.43	1,959,829.03	1,832,678.78	486,326.71
	Minimum	Minimum	Minimum	Minimum	
DENS	10,199.92	5,949.59	9,309.77	9,312.33	962.62
	Maximum	Maximum	Maximum	Maximum	

4. CONCLUSION AND RECOMMENDATION

Result of this research shows that proliferation in the last two decades which produced approximately double of the number regency causing an increase inefficiency of government spending on education, health, and infrastructure. The existing condition also show that spending is sub-optimal level. Or in other word, the existing of average population of regency is only twenty percent of optimal level of population. Therefore, amalgamation or regrouping policy of some local government to improve efficiency is desirable. Moratorium of proliferation should be continued.

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