Advances in Economics, Business and Management Research, volume 142
5th Sriwijaya Economics, Accounting, and Business Conference (SEABC 2019)

Can Increased Transfer Fund Efficiency Contribute to Poverty in South Sumatra, Indonesia?

1st Sukanto
Economic Development, Economic Faculty
Sriwijaya University
Palembang, Indonesia
soekanto0813@fe.unsri.ac.id

2nd Zulkarnain Ishak
Economic Development, Economic Faculty
Sriwijaya University
Palembang, Indonesia
zulishak@gmail.com

3rd Rosmiyati Chodijah Saleh
Economic Development, Economic Faculty
Sriwijaya University
Palembang, Indonesia
roossaleh@gmail.com

***Abstract*—The central Transfer Fund to the region has experienced a sharp increase in the last 5 years but the poverty rate is experiencing slow decline. There is a possibility that funds are given to the area has not been efficient so poverty reduction is not optimal. The research focuses on the efficiency of specific allocation funds and village funds as an input factor and the level of poverty as an ouput. The data used is secondary data and processed with the DEA model. Research findings with the CRS and VRS methods indicate that the average district/city has not been efficient in using specific allocation funds and village funds. Therefore, contributions of special allocation funds and village funds to poverty rates are relatively low.**

Keywords: DEA, efficiency scale, poverty, specific allocation funds, village funds

I. INTRODUCTION

Poverty is a major problem in many countries, especialy in developing countries. This is reflected by global poverty alleviation agenda in the Sustainability Development Goals (SDGs). The Indonesian Government also made poverty eradication a priority in measuring the success of development. Since the old order era until now, the rhythm of eradicate poverty is still preserved.

Policies and programs are launched to address poverty has been done much like the lagging village Inpres Program (IDT), family hope Program (PKH), Public health insurance (JAMKESMAS) and others. Moreover, the Government also provides ample space for the local government to be able to create in solving the problem of poverty. The government adds to the allocation of transfer funds to regions and villages such as specific allocation funds in an effort to encourage improved access to health and education through infrastructure improvements in various regions but the result is not optimal [1]. It is seen from still relatively many areas that still have a very high level of poverty.

The situation occurred in the province of South Sumatra, data shows the village funds allocated to the District/city in South Sumatera province in the 2015 average of Rp 55.36 billion and increased to Rp 164.96 billion or increased by 32.15%. In 2018 district with the largest village funds occupied by Lahat district amounting to Rp 265.99 billion, followed by the regency of Banyuasin Rp 254.67 billion.

Similarly, specific allocation funds (SAF) allocated to the area in the year 2016 has a considerable contribution with the average Regency/city of Rp 185.28 billion. The regency of Ogan Komering Ilir received the highest SAF of Rp 409.54 billion, Musi Rawas Regency amounting to Rp 375.03 billion while the district of OKU only got Rp 65.36 billion.

The increase of transfer funds to the region and village is not fully followed by a significant reduction in poverty. Judging from the city-village decotomy, in 2010 the level of poverty in urban areas is higher when compared to the poverty level in rural areas. Urban poverty amounted to 16.73% while in rural areas amounted to 14.67%. In the year 2013, poverty phenomenon in rural areas increased while in urban areas showed a decline so that the percentage of poverty in the countryside is higher than urban. Urban poverty Gap and rural areas are still visible until the year 2018. Ironically, the village funds and SAF funds experienced a fantastic upgrade.

Village funds are allocated to village development and economic development so it is expected to increase the level of welfare and reduce the level of poverty. As well as, SAF who is concerned for the development of infrastructure in the disadvantaged areas (through SAF affirmations) is believed to reduce the gap in rural areas and break the chain of poverty. North Musi Rawas Regency have highest percentage of poverty (19.12%), Musibanyuasin and Lahat counties respectively at 16.52% and 16.15%. This indicates that the allocated funds are not efficient yet, so that it is not optimal in lowering the poverty rate. In fact, the local government targeted the poverty level under one digit in 2023.

The regional government annually allocates the budget (inputs) but the measurement of budget usage efficiency is still relatively simple. Basic calculation of efficiency refers only to the comparison of outputs to inputs. The efficiency calculated by the DEA method can indicate the conditions of the CRS (constant return to scale) and the VRS (variable return to scale) and which areas can be used as a preference [2]. The use of the DEA method in Indonesia is mostly used to measure the level of efficiency in the industrial sector, but in this study is used to see the efficiency of government budgets. This makes it possible as expressed by [3] "making this possibility a reality would require further improvements in the measurement of the efficiency and effectiveness of public spending".

II. METHODS

Research conducted in 14 Regency/city of South Sumatera province. The selection of research locations is based on districts/cities earning village funds. The data used is secondary data sourced from the Central Statistics

Agency and Directorrate General of Fiscal Balance. This study uses three variables namely: specific allocation funds, village funds and poverty. The third selection of variables is based on: a) specific allocation funds and village funds are intended to overcome the inequality of regional development so as to improve the living standards of the community or reduce the poverty level in rural areas. The analytical technique used is the Data Envelopment Analysis (DEA) method with CRS and VRS approaches.

The DEA method has three benefits of a). As a benchmark for obtaining relatively useful efficiency to facilitate comparisons between the same economic units; b) measure various efficiency variations between economic units to identify the factors of the cause; c) determine the policy implications so as to increase the efficiency level. Although DEA is often used in relation to measuring production efficiency, this DEA technique can be applied in measuring the efficiency of public expenditure [4] & [5].

Measurement of efficiency using DEA refers to the model used by Vennesland [4] is as follows:

$$F_0 = \left(X^{k'}, Y^{k'} \middle| C, S\right) = \text{Max } \delta k \quad (1)$$

Constraint Function

$$\sum_{k=1}^{K} Z_k \, Y_{1,k} \geq \delta k' Y_{1,k'} \quad \text{(poverty)} \quad (2)$$

$$\sum_{k=1}^{K} Z_k \, X_{1,k} \leq X_{1,k'} \quad \text{(vilage fund)} \quad (3)$$

$$\sum_{k=1}^{K} Z_k \, X_{2,k} \leq X_{2,k'} \quad \text{(SAF)} \quad (4)$$

$$Z_k \geq 0 \ (\text{CRS}) \ k = 1 \ldots . K \quad (5)$$

where:

X = input factor i decission making unit (DMU) k; Y = output facor i DMU k; k' = representative of each regency and city; CRS = constant return to scale; K = number DMU.

In the model above can be seen that the input value data consist of specific allocation funds and village funds as an infut factor and the value of the output is poverty.

Thus, after getting the efficiency value with constant return to scale and variable return to scale, it will be obtained the scale value of efficiency, with the following formula [6] :

$$SEC_o^t(x^1, x^0, \bar{y}) \equiv \frac{OSE^t(x^1, \bar{y})}{OSE^t(x^0, \bar{y})} \quad (6)$$

which is homogeneous of degree 0 in $\bar{y}$, that is, depends on $\bar{y}/\|\bar{y}\|$ rather than $\bar{y}$. If this ratio is larger (smaller) than 1, then we must conclude that the input combination x^1 lies closer to (farther away from) the point of technically optimal scale than x^0 did, distances being measured in the $\bar{y}/\|\bar{y}\|$-direction. Notice that when the technology exhibits global CRS, then SEC_0^t (,) is identically equal to 1. Simply put, formulas scale efficiency can be written:

$$\text{Efficiency Scale} = \frac{\text{Technical efficiency CRS}}{\text{Technical efficiency VRS}} \quad (7)$$

When the scale of efficiency = 1, tthe District/city operates assuming the CRS while the opposite is the VRS assumption. The value of efficiency between 0 and 1 is defined as not yet efficient

Assuming the CRS states that the entire district operations at optimal conditions are not without any constraints while the VRS assumptions are based on not all districts operate optimally due to constraints. This study uses both models such as CRS and VRS because not all regions have the same capabilities. The parent area has a relatively better infrastructure, human resources and institutional than the region of the expansion.

III. Results and Discussion

Specific allocation funds are used for physical development such as agricultural roads, bridges, irrigation and non-physical development, such as to improve the quality of education [7] and health. Infrastructure development and human resource [8] enhancement will reduce the level of poverty . Meanwhile, the village funds is also prioritized for physical development and community empowerment so that it is expected to strengthen poverty in rural areas.

Specific allocation funds According to the distribution of the region showed that, the OKI district is the largest SAF-getting area of Rp 369.717 milion and Banyuasin Regency amounted to Rp 319.289 milion. The large number of SAF for both areas is one of which is used for infrastructure development for inter-district connectivity, mostly in the water area (Fig 1).

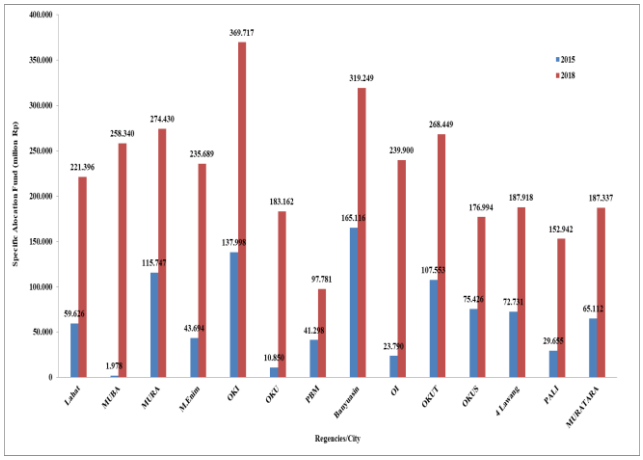

Fig. 1. Specific Alocation Fund Base on Regencies/City in South Sumatra

In general, the specific allocation funds (SAF) given to the district/city in the 2015-2018 period experienced an average increase of 54.38%. The district that has the largest SAF growth is the district Musi Banyuasin. In 2015 Muba district got the fewest SAF but in the following year the Diperole fund increased more than 200 fold. Another district that is experiencing the highest growth is OKI district. Meanwhile, the region with the smallest SAF is occupied by the district of Banyuasin is increasing on average of 17.92% (Table 1). The village fund that was

given by the government since 2015 was seen experiencing an average increase of 31.15%. When viewed according to the composition of the region, the PALI district showed an increase in the largest village funds of the average of 39.89%, then the increase in the smallest village funds in OKUT district (25.96%).

TABLE I. GROWTH OF SPECIFIC ALOCATION FUNDS, VILLAGE FUNDS AND POVERTY REDUCTION

Regencies/City	Growth 2015-2018		Poverty Reduction from 2015-2018 (%)
	SAF	*VF*	
Lahat	38,81	29,25	-1,95
Musi Banyuasin (MUBA)	238,07	33,22	-1,54
Musi Rawas	24,09	34,13	-1,44
Muara Enim	52,40	32,61	-2,50
Ogan Komering Ilir (OKI)	27,94	33,26	-1,76
Ogan Komering Ulu (OKU)	102,70	31,63	-0,18
Prabumulih	24,05	33,14	-0,50
Banyuasin	17,92	33,34	-1,36
Ogan Ilir	78,20	30,02	-1,34
East OKU	25,69	25,96	-0,76
South OKU	23,77	29,34	-1,74
Empat Lawang	26,78	28,28	-1,14
Penukal Abab Lematang Ilir (PALI)	50,70	39,89	-0,97
North MURA	30,24	36,08	0,19
Average	***54,38***	***32,15***	***-1,21***

a. Note: SAF : Specific Alocation Fund; VF: Vilage Fund

The village fund also shows the same trend with specific allocation funds. The amount of village funds received by the area depends heavily on several indicators in determining the amount of village funds, such as the number of villagers, poverty rate, area and geographical difficulty. Figure 1 shows that Lahat district received the largest village fund of Rp. 265,998 million with a village of 360 villages, meaning that the average per village gained Rp 736 million billion. Meanwhile, the smallest village fund in Prabumulih City is 16.503 million with a total of 15 villages, meaning the average per village of Rp 1.100 million.

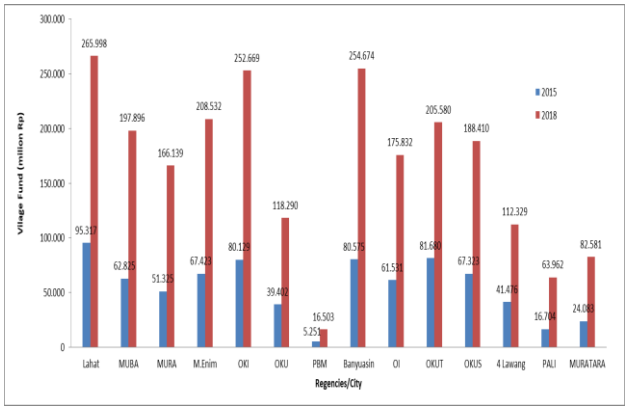

Fig. 2. Village Funds Base on Regencies/City in South Sumatra

b. Source: Minitry of Finance, Republic of Indonesia, 2019

Poverty in South Sumatera province shows a decrease of 1.21%. The biggest poverty reduction occurred in Muara Enim Regency, which amounted to 2.5% while the smallest decline was in Ogan Komering Ulu district which decreased by 0.18%. Saggaf found that construction of village road infrastructure funded by village funds has increased public access to economic sources. This has an impact on improving the productivity of the village community that is reflected in the increase in per capita expenditure in underprivileged households. Likewise, the construction of the latrines and drill wells are able to improve the quality of life. The condition encourages the decline in rural poverty.

A. Effieciency: Constant Return to Scale Method

The results of the research with the input-winged CRS method found that the average value of efficiency in 2015-2015 is worth smaller than 1 (< 1). The average efficiency of 14 districts is at intervals of 03.78 to 0.920. These conditions can be interpreted that there are areas that use special allocation funds and village funds are only able to achieve an output of 37.8. The use of input factors that have not been optimal is caused by several factors such as: a) the lack of knowledge of village apparatus on the management of village funds, b) lack of planning system, implementation and evaluation of village funds utilization; c) there are some activities that are poorly targeted, such as erroneous in the setting of locus activities.

The value of the < 1 efficiency indicates that the addition of input factors (specific allocation funds and village funds) will not give any additional impact to the output. However, the decomposition per year showed that the city of Prabumulih was inefficient only in 2016, the same is also experienced by East OKU District in the year 2017.

The efficiency value of Prabumulih city in 2016 by 0.680 means that the addition of input factors does not propotional increase the output. It can be interpreted that the use of inputs in the city of Prabumulih just reached 68.0% or has not reached the full point of efficiency. The smallest level of efficiency is in Musi Rawas District with an average efficiency rate of 0489 or 48.9%. Therefore it takes effort to increase efficiency, one effort is bureaucracy reform. In detail, the efficiency value of each Kabaupaten/city is seen in Table 2.

TABLE II. EFFICIENCY: CONSTANT RETURN TO SCALE METHOD

DMU	Efficiency Value (CRS Method)				Average
	2015	2016	2017	2018	
Lahat	0.379	1.000	0.587	0.187	0.538
MUBA	1.000	0.999	0.797	0.419	0.804
Musi Rawas	0.465	0.543	0.655	0.268	0.489
Muara Enim	0.658	0.906	0.711	0.297	0.638
OKI	0.735	1.000	0.821	0.389	0.737
OKU	0.631	0.845	0.762	0.304	0.637
Prabumulih	1.000	0.680	1.000	1.000	0.920
Banyuasin	0.527	0.726	0.709	0.298	0.578
Ogan Ilir	0.508	0.746	0.506	0.250	0.503
East OKU	0.414	0.598	0.574	0.271	0.464
South OKU	0.287	1.000	0.500	1.000	0.697
Empat Lawang	0.334	0.539	0.426	0.212	0.378
PALI	0.753	0.681	1.000	0.317	0.688
North MURA	0.582	0.768	0.881	0.377	0.652

b. Source: Authors calculation

B. Efficiency: Variable Return to Scale Method

The value of efficiency based on the VRS method shows slightly different results compared to the CRS method. Table 4 confirms that in some districts a number of input factors will increase the output as it occurs in the districts of Ogan Komering Ilir and Ogan Komering Ilir. When viewed by year of observation the results are more varied, the value of efficiency in the year 2015 is in Musi Banyuasin Regency, Ogan Komering Ilir, Prabumulih City, South OKU. Then, in 2016, the value of efficiency was achieved in Musi Banyuasin Regency, Ogan Komering Ilir, South OKU and Penukal Abab Lematang Ilir. Entering the year 2018, the composition of the area that has efficiencies in Musi Banyuasin, Ogan Komering Ilir, Prabumulih and South OKU.

TABLE III. EFFICIENCY: VARIABLE RETURN TO SCALE METHOD

DMU	Efficiency Value (VRS Method)				Average
	2015	2016	2017	2018	
Lahat	0.41	1.00	0.78	0.41	0.65
MUBA	1.00	1.00	1.00	1.00	**1.00**
Musi Rawas	0.56	0.56	0.75	0.56	0.61
Muara Enim	0.68	0.96	0.85	0.68	0.79
OKI	1.00	1.00	1.00	1.00	**1.00**
OKU	0.59	1.00	0.91	0.59	0.77
Prabumulih	1.00	0.68	1.00	1.00	0.92
Banyuasin	0.70	0.73	0.85	0.70	0.75
Ogan Ilir	0.52	0.85	0.59	0.52	0.62
East OKU	0.60	0.96	0.74	0.60	0.72
South OKU	1.00	1.00	0.58	1.00	0.90
Empat Lawang	0.32	0.89	0.45	0.32	0.50
PALI	0.42	1.00	1.00	0.42	0.71
North MURA	0.65	0.91	0.96	0.65	0.79

[c.] Source: Authors calculation

Configuring the value of efficiency based on the CRS and VRS methods reveals that a suitable district/city is a reference for an inefficient district is the regency of Musi Banyuasin and Ogan Komering Ilir (Figure 3). The regency of Ogan Komering Ilir is a farm and dominated by sub-sector plantations such as oil palm and rubber, while the regency of Musi Banyuasin is an oil and gas producing area. The largest regional revenue is traded by funds for oil and gas output. Both areas become referrals due to the efficient use of inputs.

Fig. 1. Areas of Reffrence

[d.] Source: Authors calculation

Table 4 indicates that there has been an excess of input factors, meaning that the funds actually have to be reduced for efficiency. Excess funds in the year 2015 on average amounted to Rp 14,439.71 thousand. The region should be reduced allocation funds and village funds namely Lahat, Musi Rawas, Muara Enim, East OKU and North MURA. The biggest reduction is in Musi Rawas regency. The same phenomenon also occurred in 2018, the separation from the number of city districts had an excess budget that should be reduced. Areas with excess input factors, namely Kabuoaten Lahat, Muara Enim Regency, Ogan Komering Ulu Regency, Ogan Ilir, East OKU, four Lawang da Penukal Abab Lematang Ilir. The average input factor reduction of Rp 3, 0235.02 thousand. This condition is caused by still not optimal planning and budgeting conducted by the local government.

TABLE IV. INPUT SLACKS

DMU	Input Slacks (thousand Rp)			
	2015	2016	2017	2018
Lahat	3,012.79	0.00	0.00	12,014.98
MUBA	0.00	0.00	0.00	0
Musi Rawas	39,008.15	0.00	0.00	0.00
Muara Enim	17,617.13	0.00	0.00	364.64
OKI	0.00	0.00	0.00	0
OKU	0.00	0.00	0.00	1,763.287
Prabumulih	0.00	0.00	0.00	0.00
Banyuasin	*******	0.00	0.00	0.00
Ogan Ilir	0.0000	0.00	0.00	5,697.75
East OKU	31,073.4	0.00	0.00	20,845.06
South OKU	0.00	0.00	0.00	00.00
Empat Lawang	0.00	0.00	0.00	3,940.25
PALI	0.00	0.00	0.00	664.326
North MURA	4,236.34	0.00	0.00	0,0000.00
Mean	**14.439,71**	**0.00**	**0.00**	**3,235.02**

[e.] Source: Authors calculation

C. Efficiency Scale

The study also found an area that has optimum scale efficiency with constant return to scale condition namely Prabumulih city. The city of Prabumulih is the only region with a village in South Sumatera province. Relatively small territory and relatively few population numbers become a driving force in the program optimization.

Village funds are given to relatively more villages compared to other regions so that village development is more rapidly resolved. Other findings suggest that other districts have an optimal or inefficient scale of efficiency. It is seen from the average value of efficiency that is < 1 (Table 5).

TABLE V. EFFICIENCY SCALE

DMU	Efficiency Scale				Average
	2015	2016	2017	2018	
Lahat	0.936	1.000	0.754	0.462	0.788
MUBA	1.000	0.999	0.797	0.419	0.804
Musi Rawas	0.836	0.966	0.870	0.482	0.789
Muara Enim	0.975	0.940	0.840	0.440	0.799
OKI	0.735	1.000	0.821	0.389	0.736
OKU	1.069	0.845	0.838	0.515	0.817
Prabumulih	1.000	1.000	1.000	1.000	**1.000**
Banyuasin	0.749	0.999	0.832	0.423	0.751
Ogan Ilir	0.973	0.881	0.862	0.479	0.799
East OKU	0.689	0.626	0.776	0.451	0.635
South OKU	0.287	1.000	0.861	1.000	0.787
Empat Lawang	1.031	0.606	0.957	0.654	0.812
PALI	1.789	0.681	1.000	0.753	**1.056**
North MURA	0.901	0.846	0.922	0.584	0.813

f. Source: Authors calculation

Table 6. discribe about scale information of district/city efficiency. In the year 2015, a total of 12 areas were in DRS, and 2 areas were a CRS scale, namely Prabumulih City and South OKU. Thus, im the year 2016, the efficiency scale of the district looks varied, 4 areas are in the CRS namely Lahat Regency, Ogan Komering Ilir, Banyuasin, and South OKU. In addition, the research also found reveal as few as 9 regions in the condition of ICR. However, the scale of efficiency in the last two years has been that the district/city is returning to the DRS and CRS. Therefore, local governments must optimize the use of special allocation fund budgets and village funds in order to decline the poverty rate faster. Budget optimization can be done by synergity among the institution (OPD) by doing a poverty thematic program.

TABLE VI. EFFICIENCY SCALE CONDITION

DMU	Efficiency Scale			
	2015	2016	2017	2018
Lahat	drs	crs	drs	drs
Musi Banyuasin	drs	drs	drs	drs
Musi Rawas	drs	irs	drs	drs
Muara Enim	drs	irs	drs	drs
OKI	drs	crs	drs	drs
OKU	drs	irs	drs	drs
Prabumulih	**crs**	irs	crs	crs
Banyuasin	drs	crs	drs	drs
Ogan Ilir	drs	irs	drs	drs
East OKU	drs	irs	drs	drs
South OKU	**crs**	crs	drs	crs
Empat Lawang	drs	irs	drs	drs
PALI	drs	irs	crs	crs
North MURA	drs	irs	drs	drs

g. Note: drs: decreasing return to scale; crs: constant return to scale; irs: increasing return to scale
Source: Authors calculation

In addition, budget optimization is done by encouraging local governments to do quality spending. Quality spending according to [9] reflected by (1) Priorities of regional spending, (2) accuracy such as spending, (3) timeliness, (4) accountability and transparency, (5) cost efficiency and effectiveness.

IV. CONCLUSION

Specific allocation funds and village funds experienced an average increase of above 30% per year, but poverty decreased an average of 1.12%. An input-oriented DEA model with a CRS method indicates that the average of all regencies/cities is inefficient. Meanwhile, the results of efficiency using the VRS method found that the Musi Banyuasin regency and Ogan Komering regency is relatively efficient, while the others are inefficient. In addition, the scale of efficiency shows Prabumulih city constant return to scale condition, on the other side Penukal Abab Lematang Ilir condition increasing return to scale, while other districts show decreasing return to scale. The study recommends that local governments do a budget optimization through: a) making priority spending; b) Pay attention to the accuracy of the spending allocation; 3) timeliness; 4) accountability and transparency; 5) cost efficiency and effectiveness.

V. ACKNOWLEDGMENT

We would like to thank Universitas Sriwijaya has providing financial support for this research.

REFERENCES

[1] Rofiq A, *Pertumbuhan Ekonomi dan Kemiskinan Kebijakan dan Tantangan Masa Depan*. Jakarta (ID): Republika Penerbit, 2014.

[2] L. M. Fajar, B. Surarso, and U. Diponegoro, "Implementasi Model CCR Data Envelopment Analysis (DEA) Pada Pengukuran Efisiensi Keuangan Daerah," vol. 01, pp. 76–83, 2016.

[3] U. Mandl, A. Dierx, and F. Ilzkovits, "The Effectiveness and Efficiency of Public Spending," Belgium, 2008.

[4] B. Vennesland, "Measuring rural economic development in Norway using data envelopment analysis," vol. 7, pp. 109–119, 2005.

[5] Y. Yoon, "Measuring Public Expenditure Efficiency," p. 1, 2016.

[6] B. M. Balk, "Scale Efficiency and Productivity Change," no. May 2001, 2014.

[7] K. C. T. Wang, "Determinants of Poverty Status in Taiwan : A Multilevel Approach," vol. 2013, 2014.

[8] K. Sylwester, "Income inequality, education expenditures, and growth," *J. Dev. Econ.*, vol. 63, no. 2, pp. 379–398, 2000.

[9] B. Juanda, Decentralization Fiscal Consolidation through Policy Reform of Local Quality Spending), pp. 15–28, 2016.