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Education Sector Performance in the Frontier, Outermost and Least Developed (3T) and Non-3T Regions: The Role of the Specific Allocation Fund (DAK) in the Education Sector

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Abstract

The transfer of sector-specific funds is expected to have a maximum output impact due to competition between regions for such funding, thus encouraging the convergence of the quality and quantity of education in Indonesia. This study explores the relationship between the DAK grants for the education sector and the gross enrolment ratio (GER) in primary and junior high schools and the difference in the influence of such funds for education in 3T and non-3T regions in 2015-2017. The main findings show that DAK increases the GER at primary and junior high school levels, with its impact in 3T regions being more elastic than in non-3T regions. This trend is probably due to the former region's lack of facilities and infrastructure. Therefore, the transfer of DAK accelerates the additional availability of education facilities and infrastructure, thus increasing the GER. The results imply that the government continues to improve and expand the scheme to enhance educational performance through GER and improve governance DAK policies at the central and local government levels.

Keywords:
intergovernmental transfers; specific allocation fund; educational performance; underdeveloped areas, Indonesia

JEL Classification :
H52, H75, H77, I22

1. INTRODUCTION

According to Law No. 33/2004 concerning the financial balance between central and regional governments, the Specific Allocation Fund (*Dana Alokasi Khusus* or DAK) is one of the obligations of the central government to the regions in the context of implementing fiscal decentralization. DAK has one purpose compared to other balancing funds of national priority and function areas. The budgetary decentralization policy of DAK provides the local governments' authority to regulate and manage their affairs based on the principle of autonomy and to assist in accelerating the realization of public welfare through improved services, empowerment, and community participation. Data from the Information Transfer System to Regions and Village Funds (SIMTRADA) indicated that the central government had maximized the number of transfers; however, enormous questions remain concerning the achievement of the transferred funds, one of which is the DAK. DAK should be more target-specified and achieve specific goals, one of which is to obtain education outcomes, particularly the gross enrolment ratio (GER). The different types of transfer used in outcome analysis lead to different conclusions. From the impact point of view, we discovered a more specific (direct) output, the GER. The GER selection as an educational outcome in this study was due to the ease of obtaining data since the participation ratio is the most straightforward indicator for measuring the absorptive capacity of the school-age population at each level of education. Education is essential for the progress of a nation; this accords with the mandate embodied in the preamble to the 1945 Consitution; in the fourth paragraph, the government is obliged to strive to educate the nation's life. The government seeks to expand and equalize opportunities to obtain quality education for all Indonesians. It facilitates the development of the nation's children's potential from early childhood to the end of life to realize a learning society, especially in the 3T areas. Accordingly, the government of Indonesia must implement the 9-year compulsory education program, aligning with Government Regulation No.47/2008 concerning compulsory education. The basic education comprises six years of primary school and three years of junior high school. The quality of human resources recuperates through education, leading to a more skilled and reliable workforce, aligning with the demands of the nation's development.

Previous studies have focused on general transfer funds (see Litschig, 2011; Litschig & Morrison, 2013; de Carvalho Filho & Litschig, 2020); other studies investigated education-specific transfers (e.g., Lü, 2015; Huang *et al*., 2018). These studies suggested that the educational output measured is based chiefly on school participation rates, with intermittent use of other indicators of education outcome, such as the number of primary schools in each city, length of study, average literacy rate, and illiteracy rates, and primary school participation. These studies demonstrated inconclusive or debatable results due to the positive and negative outcomes. Research using indicators such as the number of primary schools in each city, length of time spent at school, average literacy, illiteracy rates, participation rates in primary education, and the gross enrolment ratio has shown positive impacts of the intergovernmental transfers.

Unlike the previous studies mentioned above, our research focused mainly on regional differences and responses among the frontier (*terdepan*), outermost (*terkebelakang*), and disadvantaged (*tertinggal*) (3T) areas and non-3T areas at primary school (SD) and junior high school (SMP) levels. We applied different levels of education because of the expanded basic education level from 6 to 9 years of schooling. Based on the Indonesian Ministry of Education data, the GER of SD and SMP in Indonesia is not evenly distributed. The data indicated that GER's achievements have not been maximized and have not met the strategic objectives as planned.

Regional differences are equally pivotal in this study because the DAK affirmation scheme is considered an aspect of regional backwardness due to its different characteristics. Regional differences, conditions, and the number of intergovernmental transfers will, in turn, result in different outcomes. The existing literature has not indicated 3T and non-3T effects. In addition,

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it has not contemplated marginal public utilities, i.e., the same amount of expenditures in different regions will generate other impacts. This study's regions contribute to different outcomes, especially in educational services.

The regencies/cities included in the 3T area category are based on Presidential Regulation No. 131/2015 concerning the determination of underdeveloped regions in 2015-2019. 120 3T districts are scattered all over Indonesia, and based on this proportion, 3T regions constitute 23% of the total. Moreover, regencies/cities classified as the 3T category are not concentrated in only one province but are spread across almost all provinces in Indonesia.

This study examined the impact of DAK funds concerning educational outcomes, namely the GER in the 3T and non-3T regions at primary and junior high school education levels. Of the 2015-2017 district/city level data, we applied the DAK education and GER as the significant dependent variable and the primary independent variable, respectively. The control variables used in this study embraced the general allocation fund (DAU), construction cost index (IKK), fiscal capacity index (FCI), school density, teacher/student ratio, student/class ratio, and the poor population size. We exploited these variables because they fulfilled our data analysis purposes. The panel data used in this study were estimated using the two-stage least squares (2SLS) method.

The key findings in this study are relevant to the differences in the elasticity of the impact of the GER on educational achievement in the 3T and non-3T regions and their different effects on the primary and junior high school education levels. This result showed that the existence of DAK funds for education helps accelerate the growth of education in the 3T regions faster and higher in the increased GER but lower in the non-3T regions. This influence is due to the adequate facilities and infrastructures available in the non-3T areas, meaning they are saturated in the context of fiscal capacity. Therefore, additional transfers from the central government to the regions cannot provide increased output as high as in the 3T regions, whose capability is limited. Transfers to 3T areas can stimulate the local government's upsurge in educational performance in their areas.

The implications of this study suggest that the government affords different treatment to non-3T areas by allocating DAK for education through assignment or affirmation schemes. However, DAK for the education itself has the potential for a simultaneous relationship with the GER. Therefore, we used the Panel-Instrumental Variable (IV) estimation method. We used the panel to absorb the unobserved from individual data and IV to overcome endogeneity.

This paper comprises five sections, including this first section on the introduction, which furnishes the background to the study, motivation, purpose, key findings, and implications. The second section presents the literature review on education funding for compulsory education. The third section discusses the research methods and data collected for this study. The fourth section describes results and data analysis, while the final section offers conclusions, limitations of the study, and future research suggestions

2. LITERATURE REVIEW

The studies of public spending on public services by Oates (1972) and Fisher (1996) found that local governments are more efficient than central governments in enhancing welfare by providing such services. This discovery suggested that local governments are more mindful of their regions' needs; consequently, they are better at doing appropriate planning through local government spending. Each region has different fiscal capacities, although they are not necessarily steady for all regions. This situation impacts the uneven supply of public goods and services, particularly in the educational field. Therefore, intergovernmental transfers (from the central government to the regions) are essential to reduce regional disparities in the supply of local public goods and services (Dixit & Londregan, 1998; Card & Payne, 2002; Stuti, 2007).

Empirical evidence about the effectiveness of intergovernmental transfers on the supply of

local public goods in education has been diverse. For example, several studies have shown that central government fiscal transfers can effectively increase local education provision (Litschig, 2011; Falch & Fischer, 2012; Litschig & Morrison, 2013; de Carvalho Filho & Litschig, 2020). Employing discontinuity regression designs in their studies, as mentioned earlier, these authors found that transfers from the Brazilian central government increased local government spending on education, school participation, length of time at school, and literacy rates, as well as reduced illiteracy and poverty rates. On the other hand, other research shows that transfers for local education do not improve and enhance educational performance. For example, Lü (2015) and Huang *et al.* (2018), using discontinuity and quantile regression, discovered that such transfers do not reduce the targeted illiteracy rate in the short and long terms. These authors stated that intergovernmental fiscal transfers have a substitution effect on expenditure on local education, with special transfers to education having the crowding-out effect in the educational investment from local financial resources.

Some earlier studies have deployed discontinuity regression as it provides a quasi-experimental setting for estimating the causal effects of treatment (Litschig, 2011; Litschig & Morrison, 2013; Lu, 2015; de Carvalho Filho & Litschig, 2020). Such regression analysis requires further observations, entailing assumptions about the relationship between the treatment of variable determination and its outcome. However, ordinary least squares (OLS) regression models can also be employed. The reason for this is that the use of samples that allow different slopes is critical. Per capita transfers tend to decrease when the population approaches the threshold from below and further decreases when it crosses the threshold. Furthermore, some research has employed the quantile regression approach, which compares fiscal transfers' effects on regional public education spending for various district expenditure levels and determines whether such transfers reduce disparities between regions in public education spending.

3. RESEARCH METHODS

We employed panel data, a combination of cross-section (514 districts/cities) and time series (2015-2017) data on DAK for education, the SD's and SMP's GERs in all districts/cities spread throughout Indonesia. The DAK funds for education embraced physical and non-physical allocation funds in the education sector. In addition, SD's and SMP's GERs were processed into GERs (combined) using a weighting factor to represent the DAK funds for primary education.

The dependent variable used in this study was the gross enrolment ratio (GER). This GER compares students at a particular level of education with the school-age population and is expressed as a percentage. The GER indicator shows the level of the general population's participation at an educational level. It is the most straightforward indicator to measure the absorption capacity of the school-age population at each level of education. The GER has also been used in several studies (e.g., Faguet & Sánchez, 2008; Doriza, Purwanto & Maulida, 2012; Litschig & Morrison, 2013).

DAK funds for education are the only chief explanatory variable in research. The DAK for education used in this study serves as the actual value of the funds. DAK contributes to special funding activities in specific regional affairs. It follows national priorities, specifically to finance the needs of essential public service facilities and infrastructure that have not yet reached specific standards or to encourage the acceleration of regional development. It is one of the fiscal decentralization instruments that support the implementation of regional development. Doriza *et al.* (2012) applied DAK as an instrument of fiscal decentralization in their research. These authors reported how fiscal decentralization impacted the disparity cutback in primary education access. Using the fixed-effect model, Doriza *et al.* (2012) observed that education and non-education DAKs, own local revenue (PAD), wealth and regional characteristics have significantly impacted the downturn in the education access disparity.

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Doriza *et al*. (2012) deployed not only DAK for education but also controls in the form of general allocation funds (DAU), the construction cost index (IKK), fiscal capacity index, school density, teacher/student ratio, student/class ratio, and the poor population size. Definitions of the research variables are postulated in Table 1.

Table 1. Definitions of Research Variables

Variables	Definitions
Dependent Variable	
Gross Enrolment Ratio (GER) SD	The comparison ratio between students at the primary school level and the school-age population (%).
Gross Enrollment Ratio (GER) Middle School	The comparison ratio between students at junior high school education level and the school-age population (%).
Main Variable	
DAK for Education	The total real value of the specific allocation fund (DAK) for education transfer to the district/city.
Control Variable	
General Allocation Fund (DAU)	The total value of DAU transfer to district/city.
IKK	Comparative index of construction price level for each district/city compared to the city of reference.
Fiscal Capacity Index	An index that illustrates the financial capacity of each region.
Primary School (SD) Density	The ratio of primary school availability per district/city (area of km2).
Junior High School (SMP) Density	The ratio of junior high school availability per district/city (area of km2).
Primary School (SD) Teacher/Student	The ratio of teachers at the primary level is divided by the number of students.
Junior High School (SMP) Teacher/Student Ratio	The ratio of the number of teachers in junior high schools is divided by the number of students.
Primary Student/Classroom Ratio	The ratio of students to the number of classrooms at the primary level.
SMP Student/Class Ratio	The ratio of students to the number of classrooms at the junior high school level.
Size of Poor Population	Percentage of the population in the poor category.

We used the Panel-IV method with a two-stage least squares (2SLS) analysis. The reason for using this method was because DAK for the education sector is suspected to be endogenous, which correlates with error and GER simultaneously, resulting in unobserved estimation. Therefore, the presence of endogenous variables in DAK for the education sector is overcome through instrumental variables (IV). Based on the literature, 2SLS analysis is closely related to endogenous variables. Endogeneity arises when the regressor correlates with error (Wooldridge, 2013). Another possibility is that one variable in the model is affected by external variables. One strategy for incapacitating the problem of endogeneity is to use the instrumental variable (IV) method (Sargan, 1958).

In our study, other variables outside the model influence the DAK for education variable. Therefore, the analytical method suitable for use is two-stage least squares (2SLS). In constructing the estimation model, we used the basic model of Faguet and Sánchez (2008), which generally considers the impact of fiscal decentralization on scholarly output. The general estimation model employed is as follows:

$$G\_mt = \beta\_(1)\ \alpha\_m + \beta\_2\ (\alpha\_m \times D\_t) + \beta\_3\ \delta\_t + \varepsilon\_mt \qquad (1)$$

G_mt shows public investment by sector (education, health) in each region; α_m, and δ_t are the regional and year vectors; D_t is the decentralized variable according to the region m and year t; and ε_mt is an error term. As this study uses 2SLS, the formulation of the model is modified into two phases, as follows:

In the first stage, the following regression in the model formulation applies:

Equation Instrumental Variable (IV):

$$DAK_{EducationSD_{mt}} = \beta_0 + \beta_1 IKK_{mt} + \beta_2\ Fiscal\ Capacity\ Index_{mt} +$$

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$$\beta_4\ Total\ Student\ Ratio/\ SD\ Class_{mt} + \varepsilon_{mt} \quad (2)$$

Equation InstrumentalVariable (IV):

$$DAK_{EducationSMP_{mt}} = \beta_0 + \beta_1 IKK_{mt} + \beta_2\ Fiscal\ Capacity\ Index_{mt} + \beta_4\ Total\ Student\ Ratio/SMP\ Class_{mt} + \varepsilon_{mt} \quad (3)$$

$DAK_{education_{mt}}$ is the number of DAK transfers for the education sector; m and t are regency/city and year vectors; IKK_{mt} is an index that illustrates the price of construction of each regency/city against the reference city; $The\ Fiscal\ Capacity\ Index_{mt}$is an index that represents the financial capacity of each region; $Total\ Student\ Ratio/Class_m$ate is the amount that reflects the ratio between the number of students and the number of classes at primary and junior high schools; ε_mt is an error term. After a regression in the first stage, the predicted $DAK_{education_{mt}}$ is $\widehat{DAK}_{education_{mt}}$ (DAK education in the second stage of the estimation model).

The second stage of the estimation model examines the impact of $\widehat{DAK}_{education}$ (DAK education in the second stage of the estimation model) on the GER as follows:

The main model equation:

$$GERSD_{mt} = \alpha_0 + \alpha_1\widehat{DAK}_{education_{mt}} + \alpha_2 DAU_{mt} + \alpha_3 density\ SD_{mt} + \alpha_4 Total\ Teacher\ /\ Student\ Ratio_{mt} + \alpha_5 Poor\ Population_{mt} + \varepsilon_{mt} \quad (4)$$

$$GERSMP_{mt} = \alpha_0 + \alpha_1\widehat{DAK}_{educationSMP_{mt}} + \alpha_2 DAU_{mt} + \alpha_3 Density\ SchoolSMP_{mt} + \alpha_4 Total\ Teacher\ /Student\ Ratio_{mt} + \alpha_5 Total\ Poor\ Population_{mt} + \varepsilon_{mt} \quad (5)$$

In the above model, $GERSD_{mt}$ is the GER at the primary level; $GERSMP_{mt}$ is the GER at the junior high school level; $\widehat{DAK}_{education_{mt}}$ is the result of the regression from the first stage of other variables that affect DAK in education; $School\ Density_{mt}$ is the total number of schools at a certain level divided by the land area of each regency/city; $Amount\ Ratio\ of\ Teacher/\ Student_{mt}$ is the ratio of the number of teachers to pupils in basic education, namely primary and junior high schools; and the number of poor people is the population percentage in the poor category.

We used the fixed-effect method to estimate the panel data model with instrumental variables (IV). We conducted four tests: an endogeneity test, over-identification test, weakness test of IV, and robustness test.

4. RESULTS AND ANALYSIS

Table 2 presents a summary of the statistics later explained through descriptive analysis. The study involved 1,518 observations for the GER variable at both primary and junior high schools. In addition, the number of different observations in each variable covered all districts/cities in Indonesia from 2015 to 2017. Table 2 shows the imbalance in the performance value of the education sector, which is reflected in GER in both primary and junior high schools in all districts/cities in Indonesia. The test results showed that the average SD's GER value is 106.17%, while the average GER for SMP is 100.42%. This finding implies that school participation at the primary level is higher than at the junior high level.

Regarding the government funds, the average amount of specific allocation funds (DAK) for the education sector is Rp. 109,000,000,000. The average DAK in the 3T education sector differed from that in the non-3T regions from 2015 to 2017. The non-3T regions received the DAK seven times greater than the 3T regions. The 3T regions should require more fund transfers, given that

they have limited public services in the educational field. Concerning the realization of the general allocation fund (DAU), the average amount provided is Rp. 507,000,000,000. Table 2 represents an imbalance of DAU transfers. As the table demonstrates, there is a considerable difference between the lowest and highest numbers, meaning there is an uneven distribution of transfers from one regency/city to another throughout Indonesia.

Table 2. Descriptive Statistics

Variables		Average	Std. Dev	Min	Max
Gross Participation Ratio (GER) SD	Percent	106.17	9.04	33.68	129.66
Gross Participation Ratio (GER) SMP	Percent	100.42	10.45	47.93	130.37
DAK for Education	Rp. 1000,000,000 -	109	101	0	723
DAU	Rp. 1000,000,000 -	507	286	306	2160
Fiscal Capacity Index	Index	0.94	1.23	0.04	18.16
Construction Index	Index Cost	108.64	43.33	76.5	469.96
Primary School (SD) Density	Unit / Km2	0.47	0.95	0.001	10.71
Junior High School (SMP) Density	Units / Km2	0.15	0.36	0.0003	4.36
SD Teacher/Class Ratio	Ratio	0.69	0.02	0.01	0.017
SMP Teacher/Class Ratio	Ratio	0.07	0, 02	0.03	0.18
SD Classroom/Student Ratio	Ratio	21.80	4.80	9	40
SMP Classroom/Student Ratio	Ratio	27.24	3.46	19	39
Poor Population Size	Percent	13.07	9.82	0, 91	202.29

Source: Authors' calculation

Concerning fiscal and geographical aspects, the average value of the budgetary capacity index in the test results is 0.94, while that of the construction cost index is 108.64. Meanwhile, the average percentage of the population living in poor districts/cities in Indonesia is 13%.

The ratio values of school density, teachers and students, and students per class vary. When comparing the school density, we divided this into primary and junior high schools. The average SD density ratio is 0.47 per km2. The density of primary schools in the 3T regions is higher than the one in primary schools in the non-3T regions. The minor tendency of the 3T areas affects this trend; therefore, based on the total number of schools in the area, its ratio is higher than the non-3T areas' ratio.

In contrast, the average SMP density ratio is 0.15 per km2. The ratio of SMP density in the 3T regions is lower than in the non-3T regions. This ratio shows that the distribution of SMP in the 3T regions is uneven due to the region's limited fiscal and human resource capacity to provide SMP facilities and infrastructure.

Meanwhile, the average ratio of teachers to primary students is 0.69, whereas the average ratio of teachers to junior high school students is 0.07. The final aspect of education is the ratio of students per class, where the average ratio at the primary level is 21 while at the junior high school level is 27. Ratio numbers reflect a comparison between certain subjects. The teacher-to-student ratios at primary and junior high schools confirm the standards of the Government of Indonesia's Regulation No. 74/2008 concerning teachers, article 17, regarding the minimum ratio of the students to teachers at primary and junior high schools should be 20:1. The average ratio of teachers per student at the primary level is imbalanced between 3T and non-3T regions, demonstrating a level of lameness. This ratio means there is an uneven distribution of teachers, especially in the 3T regions, due to geographical difficulties in reaching remote areas and a lack of human and teacher resources.

Regarding the student ratio per class, the average ratio of the primary students per class in the 3T and non-3T regions remained the same over three years despite the different characteristics of the 3T and non-3T areas. According to the Indonesian Minister of Education and Culture Regulation No. 17/2017 concerning the acceptance of new students into kindergarten, primary school, junior high school, senior high school, vocational high school or other forms of the equivalent listed in article 24 regarding a class size for a study group, the recommended minimum and maximum numbers of students per class range from 20 to 28 at

primary schools and 20 to 32 students at junior high schools.

3.1. Regression Results of the Influence of DAK for Education on the GER of Primary School (SD) Level

The regression results relate to the first stage conducted to determine the variables that affect DAK for the education sector. We divided the test into the 3T and non-3T regions. The regression results in Table 3 show that factors influencing DAK for education include the fiscal capacity index, construction cost index, and the ratio of students to classes at primary schools.

Table 3. Results of the Variable Regression Affecting DAK for Education at the Primary Schools in the 3T and non-3T regions (First Stage)

	3T	Non-3T
VARIABLES	DAK Education	DAK Education
Fiscal Capacity Index	-0.20382 ***	-0.02076 *
	(0.07572)	(0.01229)
Construction Cost Index	0.00593	-0.02536 ***
	(0.00548)	(0.00288)
Ratio of Classes to Students	0.02132	0.00792
	(0.03133)	(0.00677)
Observations	353	1,142
R-squared	0.03499	0.09873
Number of regions	118	382

Note : Standard errors in parentheses, *** p <0.01, ** p <0.05, * p <0.1,
Estimated with Panel-IV
Source: Study results

The fiscal capacity index variable in both regions has a negative effect. Its coefficient value in the 3T region is -0.20382, which means that every increase of 1 in the index will reduce DAK for education by 0.20382%. The coefficient value for the non-3T regions is -0.02076, meaning that for every increase of 1 in the fiscal capacity index, DAK for the education sector will decrease by 0.02076%. This trend indicates that this index does not affect the allocation of DAK education transfers in 3T or non-3T regions. The better an area is the higher the fiscal capacity index increases, resulting in reduced DAK education transfer.

The regression results show that IKK has a positive effect in the 3T regions but a negative effect in the non-3T regions. This swing shows geographical difficulties in the former regional category, so the higher the index, the higher the price level in that area. Conversely, in the non-3T areas, IKK has a negative effect. The coefficient value of IKK in the non-3T region is -0.02536, meaning that for every increase of 1 in IKK, the education DAK will decrease by 0.02536%. Consequently, in non-3T regions, the overarching goal is not education per se but increasing the DAK in other fields such as road construction, sanitation, and other public interests. In addition, the influence of the student-in-class ratio at the primary schools in both 3T and non-3T regions is positive for education DAK. Therefore, more education DAK is desirable for every additional student in a school because funding covers physical and non-physical education, which can increase the supply of schools and teachers.

Based on the regression results, Table 4 reveals that the role of DAK for education in the GER of 3T and non-3T regions is positive.

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Table 6. Results of DAK Educational Regression Against GER Variables at Junior High School Level in the 3T and Non-3T Regions

	3T	Non-3T
VARIABLES	GER_SMP	GER_SMP
Education DAK	0.24605	-0.08953
	(0.42558)	(0.25341)
DAU	-3.88238 ***	-1.29930 ***
	(0.62360)	(0.26444) Middle
School density	-0.79135 **	-0.140090
	(0.35660)	(0.38586)
Poverty rate	-0.02968	-0.10331
	(0.02082)	(0.06536)
Ratio of SMP teacher/class	40.48523	-1.03452
	(34.12309)	(27.23373)
Observations	351	of 1.125
R-squared	0.03974	0.20972
Number of regions	118	379

Note: Standard errors in parentheses, *** p <0.01, ** p <0.05, * p <0.1,
Estimated with Panel-IV
Source: Study results

The results indicated that education DAK stimulates educational performance, especially in the 3T regions. The difference in scholarly output in the two regional categories is because non-3T regions are saturated by local government transfers to improve education performance, meaning they are unlikely to increase the GER in junior high schools. If perceived from the size of the coefficient, the influence of education DAK on the GER of junior high schools is more elastic in the 3T than the non-3T regions. Furthermore, the basic education lasts for nine years, ranging from primary to junior high school.

In addition, the general allocation fund (DAU) control variable does not increase the junior high schools' GER in the either region because of the unintentional use of DAU for education financing purposes, particularly in junior high schools. Nonetheless, DAU usage for elementary education is a high priority. This use aligns with the report submitted by the Ministry of Finance in 2016 based on PMK Revision 48 / PMK.07 / 2016 postulated in the 2017 TA Budget Law, stating that ≥ 25% of DAU should be allocated for regional infrastructure expenditure directly related to the acceleration of the development of public and economical service facilities to increase employment opportunities, reduce poverty and disparity in the provision of public services between regions.

The variable density of junior high schools does not increase their GER in either region due to the uneven school distribution across all districts/cities in Indonesia due to geographical difficulties and limited fund allocation. Thus, the ratio of schools per km2 has not satisfied the planned target. Moreover, the poor population size variable in the 3T and non-3T regions does not increase the junior high schools' GER. This finding indicates that the variable does not influence the junior high schools' GER in the two regional classifications, where poverty predominantly exists in the community. As BOS allocation has not been used optimally, the variable tends to be more influential in SD than SMP. Because the 9-year compulsory education program has not been executed evenly and comprehensively, the increase in the GER of junior secondary schools is not as high as in primary schools. In addition, household budgets are low, so a portion of them being used for education funding is no longer a top priority.

In the regression test results, the ratio of junior high school teachers per student escalates

the GER in the 3T regions but not in the non-3T regions. This outcome implies that the distribution of teachers in the 3T regions is reasonably even, but this is not the case in the non-3T areas. As for the 3T regions, this is proven by a government program called Frontline Teachers. Unlike in the non-3T areas, a large number of teachers alone do not increase the participation rate as the teachers' quality must balance this. The different characteristics of the 3T and non-3T regions equally influence how students participate in junior high schools. Based on the robustness test results between 3T regions and non-3T regions' GER on Java Island, as a sample implies, DAK has a more significant impact in the 3T than non-3T regions. In addition, DAK increases educational outcomes through GER.

$$GERSD_{mt} = \alpha_0 + \alpha_1 \widehat{DAK}_{education_{mt}} + \alpha_2 DAU_{mt} + \alpha_3 SD\ Density_{mt} + \alpha_4 Total\ Teacher - Student\ Ratio_{mt} + \alpha_5 Poor\ Population_{mt} + \varepsilon_{mt} \quad (4)$$

$$GERSMP_{mt} = \alpha_0 + \alpha_1 \widehat{DAK}_{educationSMP_{mt}} + \alpha_2 DAU_{mt} + \alpha_3 SMP\ Density_{mt} + \alpha_4 Total\ Teacher\ /Student\ Ratio_{mt} + \alpha_5 Total\ Poor\ Population_{mt} + \varepsilon_{mt} \quad (5)$$

5. CONCLUSIONS

In this study, we aimed to investigate the impacts of education DAK on educational outcomes, namely the GER in 3T and non-3T regions at primary school (SD) and junior high school (SMP) levels. Our findings showed that DAK for education increases the primary school's GER in both regional groups. DAK education transfers effectively increase education output in the 3T and non-3T regions. Furthermore, education DAK raises the SMP's GER in the 3T regions but not in the non-3T regions. This influence means that the demand for infrastructure and supply of SMP in the non-3T areas is higher, while ow is still lacking due to the sizeable school-age population at the SMP level.

The two regions' data findings demonstrated a positive effect between education on DAK and GER, indicating that DAK for education enhances GER as one of the education indicators. Considering the elasticity of the education DAK to the GER in the 3T regions, which is greater than that of the non-3T regions, the education DAK policy in the affirmation program scheme escalates in terms of strengthening the increase in educational achievements through the GER. In the context of primary and junior high school education levels, the government needs to increase the effectiveness of comprehensive compulsory education programs and ensure a more equitable distribution of teachers at each level of education. Furthermore, to increase the effectiveness of DAK for education, human resources (HR) in the 3T regions need improvement concerning planning, budgeting, and monitoring. Additionally, we are cognizant of the limited variables in this study; therefore, future research should focus on more robust variables. Because the impact on education is usually long-term, a more extended study period is required.

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