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The Effects of Government's Role On Convergence Acceleration in Indonesia

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Abstract: This study aims to determine the influence of government roles through expenditures in education, health, and development sectors on the acceleration of convergence in Indonesia. The data used is panel data covering 33 provinces from 2010 to 2022. The method employed in this research is panel data regression with a convergence model. The variables used include education expenditure, health expenditure, and development expenditure. The results of the study indicate that the variables of education expenditure, health expenditure, and development expenditure have no effect on accelerating convergence. In addition, the three variables have no effect on economic growth.

Keywords: Government Expenditures, Convergence, Economics Growth

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INTRODUCTION

The neo-classical by Solow-Swan believes that in economic growth models, low-income regions should grow faster than high-income regions, means convergence. Thus, this implies that accelerating economic growth should go hand in hand with improving regional inequality. However, the reality is sometimes different because accelerating convergence does not only depend on economic growth but also the role of government (Jamil et al., 2022; Santoso, 2021). This can happen in all countries including Indonesia. Since 2010, Indonesia's high rate of economic growth has not been followed by equitable distribution of income per capita between regions (Badan Pusat Statistik, 2024). This is evidenced by the value of the Williamson Index, which can represent the condition of regional inequality. Which can be said to be low when the value is close to 0 and can be said to be high when the value is close to 1 (Sjafrizal, 2008). Based on graph 1, the Williamson Index has decreased continuously although it has experienced an increase in 2018. However, it can be seen that for 10 years from 2013 until 2022 Indonesia's Williamson Index is close to 1, especially in 2022 it reached 0.90. This means, regional inequality in Indonesia is very high. For this reason, economic growth is needed that leads to equitable development between regions or referred to as convergence (Santoso, 2021, 2023).

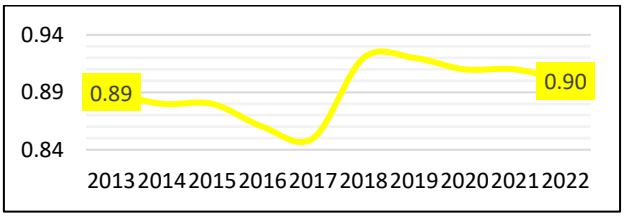

Figure 1: Indonesia's Regional Inequality 2013 – 2022
Source: Badan Pusat Statistik, 2024 (data processed by the author)

Therefore, intertemporal development with government policy intervention is expected to lead to equal distribution of income in each region (Sumarni, 2015). Government intervention is needed in terms of basic infrastructure and services. This can be shown through its role in government spending which will stimulate regional economic growth to improve inequality which is expected to encourage convergence. In other words, government spending as seen through education spending, health spending, and provincial development spending can increase the economic growth of provinces in Indonesia so that low-income provinces can catch up with high-income provinces. Thus, related to government spending according to the Directorate General of Fiscal Balance (2024), shows that the realization of provincial spending in Indonesia is quite large and diverse in its allocation. Where, the largest expenditure is allocated to development expenditure, education expenditure, and health expenditure, which is evident in the average allocation of provincial expenditure in Indonesia 2022 of approximately Rp. 6 trillion or 61,89% is spent on development, approximately Rp. 2 trillion or 26.12% is spent on education, approximately Rp. 1 trillion or 10.74% is spent on health, and Rp 139 billion or 1.24% is spent on other fields consisting of social sector expenditure. Based on the explanation above, it is known that the high rate of economic growth accompanied by the amount of expenditure realization of each province in Indonesia can accelerate convergence or not. Considering the existence of regional disparities known from Indonesia's William Index value is always high and has always increased over the past 5 years. So, this research needs to be done with the aim of seeing whether the role of government through spending in education, health, and development in Indonesia can accelerate convergence and affect economic growth.

LITERATURE REVIEW

Government Expenditures

Basically, in many countries the government tends to intervene in the economy (Mangkoesoebroto, 2002). According to Ridwan & Nawir, (2021) the role of government is classified

into three broad groups in the modern economy. First, the role of allocation where basically each country has resources to be used as private or public good. Private goods are those that can be accessed through the market system, i.e., transactions between sellers and buyers. However, the private sector cannot provide all the goods and services that society needs. Goods and services that cannot be provided by this market system will be provided by the government, which is called public goods. Allocations made by the government are expected to increase productivity in order to increase economic growth. Second, the role of distribution is basically carried out by the government through fiscal policy making in various ways, one of which is increasing government spending to create fiscal capacity between regions that are evenly distributed to improve areas that experience inequality. Third, the role of stability is carried out by the government as an economic stabilizer through various regulations to increase good growth.

Therefore, the government has a role in increasing economic growth either directly or indirectly. Where, economic growth will trigger convergence (Amalia et al., 2018). Convergence theory derived from the neo-classical economic growth model by Solow- Swan allows the role of government through government spending policies into conditional convergence (Malik, 2014). Government spending on education and health plays a role in the process of economic growth through human investment, while government spending on development plays a role through capital investment. Human investment is an important concept in economics, describing the economic value of skills, knowledge, health, and other attributes that individuals possess to increase their productivity (Kokuytseva & Ovchinnikova, 2020). However, differences in human investment also led to differences in the level of development between regions; regions with higher economic levels usually have higher levels of human investment (Windhani et al., 2023). As the theoretical basis for government spending on education and health, human investment emphasizes that investment in these two areas is key to improving the quality and capability of the workforce, which in turn supports economic growth and social welfare.

Research Framework

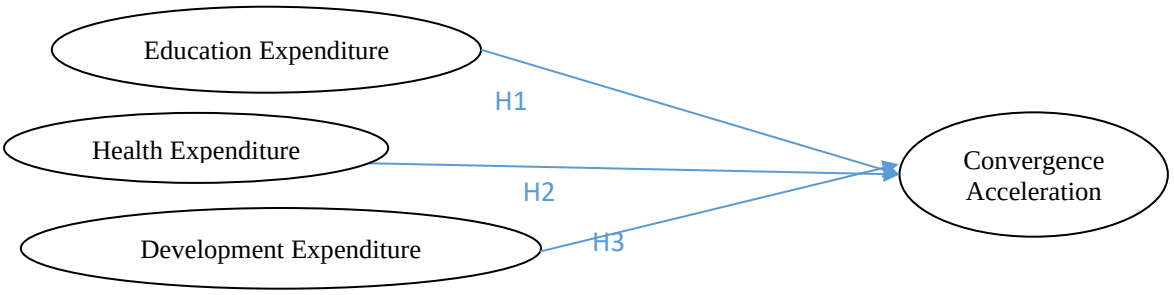

Figure 2. Research Framework
Source: Author (2024)

Hypothesis Development

Government expenditure on education is considered an investment in human investment because education provides the knowledge and skills needed to improve individual productivity (Nurhaedah et al., 2022). Through formal education and training, individuals can develop cognitive and technical abilities that enable them to adapt to new technologies, improve work efficiency, and create innovations. Thus, the human investment theory explains that the role of government through government expenditure on education is not only as consumption expenditure, but also as a strategic investment that generates returns in the form of increased productivity and quality of life so that when productivity increases, economic growth also increases and will encourage accelerated convergence.

H1: Education Expenditure on Convergence Acceleration.

Government expenditure on health is also part of investment in human investment. Good health allows individuals to work longer, more efficiently, and with a lower risk of absence. When people's health is improved through better access to health services, disease prevention, and health care facilities, this can directly increase economic productivity. Healthy individuals have a greater capacity to learn and work, which contributes to increased productivity and economic growth (Hutami & Riani, 2022; Pribadi & Setijaningrum, 2023). Thus, the human investment theory explains that the role of government through government expenditure on health is not only as consumption expenditure, but also as a strategic investment that generates returns in the form of increased productivity and quality of life so that when productivity increases, economic growth also increases and will encourage accelerated convergence.

H2: Health Spending on Convergence Acceleration.

Capital Investment is also an important concept in economic policy that describes economic development as a stimulus to economic activity because it is closely related to infrastructure (Fleisher et al., 2010). However, differences in capital investment also led to differences in the level of development between regions; regions with higher economic levels usually have higher levels of capital investment (Windhani et al., 2023). As the theoretical basis for government expenditure on development, Capital Investment emphasizes that investment in this area is key to improving the region's competitive advantage. When budgets are spent effectively to improve regional competitiveness in accordance with the advantages of each region, this can directly improve regional inequality and increase economic growth (Guerrero & Castañeda, 2022). Thus, the capital investment theory explains that the role of government through government expenditure in the field of development is not only as consumption expenditure, but also as a strategic investment that generates returns in the form of increased competitiveness advantages so that when competitiveness increases, economic growth also increases and will encourage accelerated convergence.

H3: Development Spending on Convergence Acceleration.

METHOD

In accordance with the problem and objectives taken in this study, this research uses a quantitative approach. This approach was chosen because this research uses numerical data (Amir et al., 2009). Furthermore, the results of empirical testing of the data obtained using several data analysis methods are then presented systematically and factually to answer the questions that have been formulated previously. This research consists of panel data, which means combined data between time series and cross section data types that provide more information that other types of data (Gujarati & Porter, 2009). This study uses data in the form of secondary data obtained from the website of the *Badan Pusat Statistik (BPS)* and *Direktorat Jenderal Perimbangan Keuangan (DJPK)* using 33 provinces in Indonesia within a 13-year period from 2010 until 2022. In this study, the convergence models used are Beta Absolute and Beta Conditional. The equation used to estimate absolute convergence is obtained from the equation model developed by Barro and Sala-i-Martin (1991). The equation model to test absolute convergence is as follows:

$$lnY_{it} = ln\left(\frac{PDRBP_{it}}{PDRBP_{i(t-1)}}\right) = \beta 0_1 + \beta 1_1 LnPDRBP_{it-1} + \mu_{it}$$

Furthermore, the analytical modelling is continued with the addition of several independent variables to estimate conditional convergence through government expenditure on education, health and development from the modified Solow Growth Model theory developed by Solow (1956. The equation to test conditional convergence is as follows:

$$lnY_{it} = ln\left(\frac{PDRBP_{it}}{PDRBP_{i(t-1)}}\right) = \beta 0_2 + \beta 1_2 LnPDRBP_{it-1} + \beta 2_2 LnBPn_{it} + \mu_{it} \quad \textbf{(education)}$$

$$lnY_{it} = ln\left(\frac{PDRBP_{it}}{PDRBP_{i(t-1)}}\right) = \beta 0_3 + \beta 1_3 lnPDRBP_{it-1} + \beta 2_3 LnBKs_{it} + \mu_{it} \quad \textbf{(health)}$$

$$lnY_{it} = ln\left(\frac{PDRBP_{it}}{PDRBP_{i(t-1)}}\right) = \beta 0_4 + \beta 1_4 lnPDRBP_{it-1} + \beta 2_4 LnBPm_{it} + \mu_{it}$$ **(development)**

In the equation above, it's explained that lnY_{it} represents the natural logarithm of per capita growth, $\beta 0_{1-4}$ represents constant, $\beta 1_{2,3,4}$ dan $\beta 2_{2,3,4,}$ represents coefficients, $lnPDRBP_{it-1}$ represents natural logarithm of Gross Domestic Product per capita at the beginning of the analysis year, BPn represents education expenditure, BKs represents health expenditure, BPm represents development expenditure, I represent provinces, t represents year, dan μ represents error term.

Since this research uses panel data, it is necessary to test the panel data. In general, there are three types of commonly used model approaches, namely Pooled Least Square or Common Effect Model, Fixed Effect Model, and Random Effect Model. However, this study does not use the Chow Test or the Lagrange Multiplier Test because in the form of the model both have real differences so that the test results become irrelevant, and most researchers do not conduct the Chow Test because it is believed that the fixed effect model is more significant than the common effect model (Wahyudi, 2020). In addition, CEM estimation can eliminate the uniqueness of the panel data itself by not paying attention to the individual and time dimensions (Gujarati & Porter, 2009). Furthermore, in the panel data regression analysis, there is a classic assumption test that is carried out as a requirement to produce BLUE parameters (Wahyudi, 2020). However, not all tests must be carried out on panel data regression such as the normality test does not need to be done because this study has more than 100 observations (Gujarati & Porter, 2009). As for the autocorrelation test, it is also not carried out because there is a possibility that it does not occur in panel data which has *cross section* data in it (Widarjono, 2005). So, the classical assumption test conducted in this study is a multicollinearity test to see if there is a correlation between an independent variable and other independent variables and a heteroscedasticity test to determine the condition of the residual variance between the estimators used in the equation.

RESULTS AND DISCUSSION

In the analysis of the results, panel data analysis will be carried out. Panel data analysis begins with determining the best model of absolute and conditional convergence. Based on the results of the Hausman test between the Fixed Effect Model and the Random Effect Model, it produces a probability chi2 of 0.0000 which is < a (0.05) which means that the Fixed Effect Model was chosen to be the best model in this study. After getting the best model for both, the next step is convergence regression. Then the convergence regression results are tested for classical assumptions. If the data has passed all the classical assumption tests, then the convergence regression results are BLUE and can be interpreted in the discussion.

Table 2. Estimation Results

Independent Variable	Dependent Variable: Per Capita Income Growth			
	Equation 1	**Equation 2**	**Equation 3**	**Equation 4**
Per capita Income	-0,0686 (0,006)	-0,0651 (0,028)	-0,0692 (0,018)	-0,0733 (0,010)
Education Expenditure	-	-0,0007 (0,721)	-	-
Health Expenditure	-	-	0,0002 (0,958)	-
Development Expenditure	-	-	-	0,003 (0,557)
Cons	0,7427 (0,004)	0,7258 (0,009)	0,7421 (0,004)	0,6924 (0,006)

R^2	0,0318	0,0326	0,0317	0,030
Number of Obs.	396	396	296	396

Note: numbers in parentheses are *p-value*

Source: Primary Data Processing (2024)

The table above shows the estimated impact of the role of government through government spending on convergence in economic development. The estimation results in equation 1 show that per capita income has a significant negative impact on per capita income growth in Indonesia. This indicates that economic development in Indonesia is converging, provided that all variables on economic growth are considered the same as in previous years. That is, in the year and observation areas that have low per capita income tend to have higher economic growth than high-income areas with other variables held constant. Furthermore, the estimation results in equations 2, 3, and 4 show the conditional convergence that allows one policy to change and the other to change remains the same as the observation year. In this study, the policies used are education spending, health spending, and development spending. The coefficient value shows that it is not much different from equation 1, which means that the role of government through spending in education, health, and development does not have an influence/effect on accelerating convergence in Indonesia. In addition, government spending in these three areas has no effect on economic growth in Indonesia as seen from the *p-value* of each insignificant. This result is in line with the research of Solihin et al. (2021), that government spending does not affect economic growth.

Absolute Convergence

This study shows that the initial conditions in Indonesia that assume income growth is only explained by the only previous period income variable that drives convergence in accordance with several previous studies (Amalia et al., 2018; Santoso, 2021, 2023). In this study, as evidenced by the growth of real GRDP per capita from 2010 to 2022, low-income provinces grew more, namely 51.7% compared to high-income provinces that grew more slowly, only 19.17%. The growth of low-income provinces is also greater than Indonesia, which has a growth of 42.91%. In addition, the real growth per capita from 2010 to 2018 of low-income regions was always greater than that of high-income regions and Indonesia. Although in 2019 to 2022 the graph is still fluctuating due to the COVID-19 pandemic and its recovery.

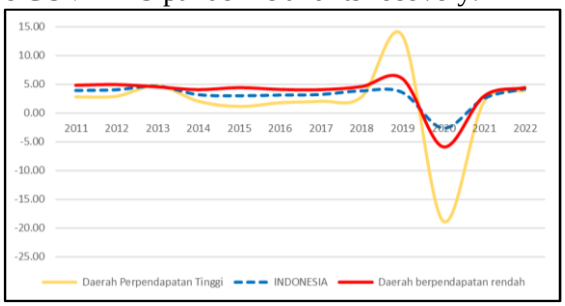

Figure 3: Real Per Capita Growth in 2010 – 2022
Source: *Badan Pusat Statistik*, 2024 (data processed by the author)

From 2010 to 2018, high-income regions included the provinces of East Kalimantan, DKI Jakarta, Riau Islands, West Papua, and Papua. However, in 2019, Papua Province became a low-income region and from 2020 to 2022, Central Sulawesi and Jambi provinces became high-income regions.

Education Expenditure on Accelerating Convergence

The estimation results of government spending on education using education expenditure variables are not in line with the research hypothesis. Convergence time when added the role of

government through expenditure policy in the field of education has a coefficient value is not much different when compared to the initial conditions so that the value of the coefficient is not much different when compared to the initial conditions tends to have no effect on the acceleration of convergence. This is quite reasonable considering that the estimation results in equation 2 show that there is no effect on the growth rate. This means that education spending does not improve productivity so that the level of convergence will also not change. Based on *Human Investment* theory, this result indicates that the effectiveness of the use of education spending is considered less than optimal. This can be caused by several factors, including the low quality and level of education, the lack of educational infrastructure, and the mismatch between education and labor market needs (Muthmainah et al., 2021). Although the allocation of education spending increases every year, the quality of education is still low. Assessing education based solely on the amount of funds spent may not adequately reflect the quality or relevance of education to labor market needs and economic growth (Nurhaedah et al., 2022). Therefore, even if education spending increases over time, without adequate quality improvement, its impact on economic growth will remain limited. Based on the picture below, an increase in education expenditure cannot resolve the inequality in education completion rates between provinces. This further reinforces that although education expenditure allocations have increased each year, educational outputs remain low.

In addition, research by Ramos et al. (2009) highlights the mismatch between education outcomes and labor market needs, which can lead to less than optimal and effective education *output* and the phenomenon of overeducation. That is, although the level of education increases, the skills produced do not match the market demand, thus not making a significant contribution to economic growth. This mismatch can occur because the education system is not responsive to changes in economic structure and industry needs. Many people only complete education up to the junior high school level, which suggests that the increase in education spending to boost human capital has not been sufficient to significantly drive economic growth due to an education system that has not been optimal in preparing individuals to enter the labor market (Suhendra et al., 2020). This reflects that investment in education may not be sufficient or well implemented. This condition may cause education spending not to have a significant impact on accelerating economic convergence between regions and economic growth in general.

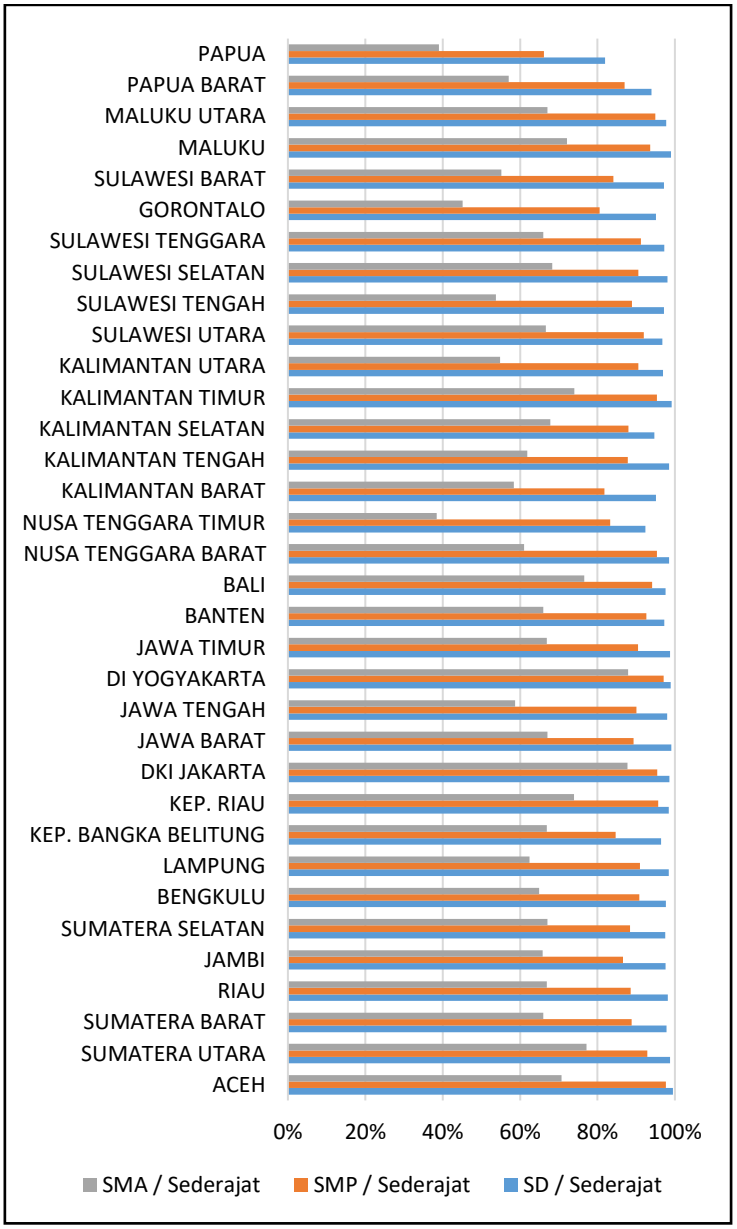

Figure 4: Education Completion Rate in 2022
Source: *Badan Pusat Statistik*, 2024 (data processed by the author)

Health Expenditure on Accelerating Convergence

The estimation results of government spending on health using health expenditure variables are not in line with the research hypothesis. The convergence time when the government role is added through expenditure policy in the health sector has a coefficient value that is not much different when compared to the initial conditions so that it tends not to have an effect on accelerating convergence. This is quite reasonable considering that the estimation results in equation 3 show that there is no effect on the growth rate. This means that health spending does not encourage productivity improvements so that the level of convergence will also not change. Based on the Human Investment theory, this result indicates that the effectiveness of health spending is considered less than optimal. This can be caused by two main factors, namely the low quality of health services and a greater focus on curative than preventive health spending (Hutami & Riani, 2022). Although the realization of health expenditure has increased, the quality of health services provided is still low (Jamil, 2017). Inadequate health facilities, shortages of qualified medical

personnel, and uneven distribution of health services in various regions can cause health spending to be ineffective in improving the quality of life and labor productivity. As a result, the impact of health spending on economic growth is limited. On the other hand, according to Pribadi & Setijaningrum (2023), if health spending focuses more on curative rather than preventive care, it may not contribute optimally in the long run to improving quality of life and productivity. Based on the 2022 state budget for health, most of the costs are allocated to curative efforts compared to preventive efforts. The lack of financing for promotive and preventive efforts is due to the lack of involvement of the non-government (private) sector in mobilizing health financing. This lack of prevention can lead to a high rate of chronic diseases that reduce labor productivity.

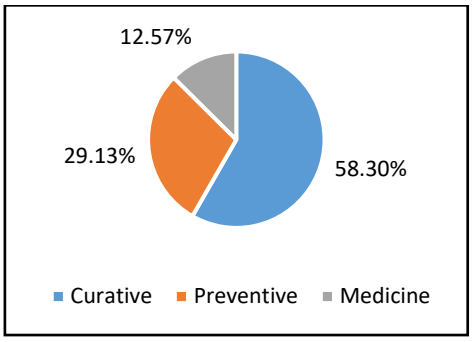

Figure 5: Proportion of Indonesia's Expenditure on Health in 2022
Source: *Badan Pusat Statistik*, 2024 (data processed by the author)

Development Expenditure on Accelerating Convergence

The estimation results of government expenditure in the field of development using development expenditure variables consisting of expenditure on the functions of order, peace, economy, environment, public services, housing, tourism and culture are not in line with the research hypothesis. The convergence time when the government role is added through expenditure in the development sector has a coefficient value that is not much different when compared to the initial conditions so that it tends not to have an effect on accelerating convergence. This is quite reasonable considering that the estimation results in equation 4 show that there is no effect on the growth rate. This means that development spending does not encourage changes in regional competitiveness advantages so that the level of convergence will also not change. Based on Capital Investment theory, this result indicates that the effectiveness of development expenditure is considered less effective. This can be caused by two factors, namely inefficiency in the allocation and use of the budget and a focus on development that is not well targeted. Despite the realization of a large amount of development spending, inefficiencies in the use of the budget can be the main reason why its impact on economic growth is not significant, thus not creating accelerated convergence (World Bank, 2020). Corruption, bureaucratic red tape, and lack of transparency in project management can lead to budget inefficiencies development is not optimally utilized for the public good. Poorly planned or delayed development projects often reduce the potential positive impact on the economy. The average realization of development expenditure in each Indonesian province in 2022, the largest percentage is 58% for the public service function and 29% for the economic function, both of which are earmarked for infrastructure in accordance with the provisions in Law No. 15/2017 on ABPN. Infrastructure development often focuses on large projects (national projects) in big cities or certain regions only, while remote and rural areas may not get the same attention (International Monetary Fund, 2022).

Figure 6: Distribution of National Strategic Projects in 2020
Source: *Nusantara Satu,* 2024

In general, the distribution of national projects is more concentrated in Java. This is not only the case at the national scale, but also at smaller scales. This inequality hinders the acceleration of convergence as low-income regions do not have sufficient accessibility to improve their competitive advantage. In addition, infrastructure development that does not match local needs can result in wasted resources. What should be considered is not only that, but easy accessibility in order to maximize the *output of* the development. According to Guerrero & Castañeda (2022), governments tend to increase development spending based on existing studies to address inequality. As a result, the government is more likely to encourage an increase in development spending figures rather than finding effective ways to address inequality in accordance with the competitive advantages of each region, such as meeting SDGs targets in accordance with existing government programs.

CONCLUSION AND SUGGESTIONS

Conclusion

The results showed that both absolute and conditional convergence occurred in Indonesia. However, conditional convergence that allows the role of government through spending policies in education, health, and development has a convergence time that is not significantly different from the initial conditions so that the role of government does not accelerate or slow down convergence. This is due to the low quality of education that is not in line with the initial conditions with the labor market, low quality of health services, and low accessibility in Indonesian provinces. In addition, these three variables have no direct effect on economic growth. Therefore, when they have no effect on economic growth, it will cause the level of productivity and regional competitiveness advantages not to change so that the level of convergence also does not change, which means that in Indonesia, the factor that drives growth is not the role of the government.

Suggestion

Based on the limitations of this study, further research is needed using variables other than role of government to strengthen the research that has been done before the research so that it can be refined to find out overall what factors affect the acceleration of convergence in Indonesia.

IMPLICATIONS

With this research, it is hoped that the government will increase its role by evaluating and improving the quality of government spending both in the fields of education and health for more effective and efficient programs to increase productivity, as well as in the field of development to increase accessibility and regional competitiveness advantages to accelerate convergence in Indonesia.

LIMITATIONS

The limitation of this study is that many other variables besides the role of government that are factors to be able to encourage growth to accelerate convergence are not discussed.

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