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### THE INFLUENCE OF LOCAL GOVERNMENT SPENDING AND VILLAGE FUNDS ON INCLUSIVE ECONOMIC DEVELOPMENT IN INDONESIA

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#### ABSTRACT

**Research originality** — This study is the first to analyze how government fiscal instruments, specifically the local government spending, have a different role in pillars of inclusive economic development. In addition, the study examines whether village funds, which are the lowest-level of fiscal instrument, play a strategic role in creating inclusivity in regional economic development. It provides a synthesis of knowledge on the role of government fiscal policy in promoting inclusive economic development.

**Research objectives** — This study provides an overview of the empirical findings on how local government spendings and village funds affect the realization of inclusive economic development.

**Research methods** — The study utilized data from the inclusive economic development index (inclusive index), regional spending based on economic, education, and health functions, and village funds at the provincial level from 2015 to 2021. The study used panel data with multivariate regression analysis.

**Empirical results** — The study found that expenditure for education and road strengthened the inclusive index. Economic and health expenditures showed a partial impact on inclusive economic development. Economic expenditure was found to strengthen the economic growth pillar, but it reduced the equity and poverty pillar. The finding underlines that economic expenditure seems to be pro-growth, but not pro-poor. Another finding is that the village funds supported the pillar of equity and poverty.

**Implications** — The implication of this study is the improvement of the quality of government spending, especially educational expenditure, which has been proven to have a significant impact on the inclusive index. Another implication is the possibility that the quality of economic expenditure is improved because it is not fully pro-poor.

**Keywords:** Government Spending, Village Funds, Inclusive Economic Development

**JEL Classification:** H53, H75, I24

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#### INTRODUCTION

Economic growth is deemed inclusive when growth creates economic opportunities that are accessible to all, including the poor (Ali & Son, 2007). The concept of inclusivity has emerged as a prominent development paradigm, especially its focus on the integration of the needs of extremely poor and vulnerable communities. The development paradigm that is originally pro-poor and pro-growth has shifted to the inclusive economic development (hereinafter referred to as PEI) paradigm (Adeleye et al., 2017). In the global context, economic development is aimed at achieving the Sustainable Development Goals (SDGs) which are oriented towards the creation of equal employment opportunities and income equality (United Nations Development Programme, 2017).

With many developing countries therein, besides the issue of growth, Asia is facing the issue of inequality that extends to the ASEAN region, where Indonesia exhibits the highest level of inequality among its fellow ASEAN countries (Ghosh, 2020). In addition, Indonesia is facing challenges as a country with a larger number of poor people than Singapore, Malaysia, Brunei Darussalam, Vietnam, and Thailand (United Nations Development Programme, 2022). Based on the 2023 ASEAN Outlook (ASEAN, 2023), Indonesia has

a higher level of income inequality than other countries. It is far above Singapore, Malaysia, Thailand, and Vietnam, which is aggravated by the highest rate of unemployment.

From 2016 to 2019, the economic growth was 5% per year (Vujanovic, 2015). However, Indonesia continues to face a serious poverty problem. Until the end of 2019, the poverty rate remained high (9.41%), with the concentration of poor people living in the Eastern Region of Indonesia (KTI) and rural areas (Statistics Indonesia, 2021).

After the COVID-19 pandemic, Indonesia faced tough challenges to improve the economic growth, to decrease unemployment rates, and to alleviate poverty and inequality (Sani et al., 2022). Referring to the findings from Dartanto (2013) and Rini and Tambunan (2021), the economic growth in Indonesia is less inclusive. The uneven distribution of the PEI index raises a question about the role of the government, especially local governments, in driving economic development in the regions.

Because of fiscal decentralization, local governments receive transfers from the central government to finance regional spending in addition to the domestic revenue from their regions. In terms of the amount, the total regional spending is substantial when compared to the central spending. This study utilized data from the Statistics Indonesia (BPS) from 2022 to 2023 to calculate the ratio of total regional spending (provinces, districts or cities, and villages) of 43% to central spending (Statistics Indonesia, 2024). With this ratio, the local governments are expected to further optimize regional spending to provide a stimulus for regional economic growth (Wahyudi, 2020; Lopez et al., 2007; Harris, 1956).

Several studies have been conducted to analyze the effectiveness of fiscal instruments, especially government spending, to foster inclusive economic development (Safitri et al., 2021; Traore, 2019; Zulfikar, 2018; Estrada et al., 2014). At the local level, previous research in Indonesia (Saputra et al., 2025; Sani et al., 2022; Ardina, 2022; Afriliana et al., 2022; Fitrianasari, 2021; Purwanti & Rahmawati, 2021; Sani et al., 2022) yields inconsistent results. Each of the fiscal instruments of regional governments influences PEI in different ways. The inconsistency of the findings has led to an allegation that the fiscal instruments of regional governments have a partial impact on the aspects of PEI.

Considering this research gap, this study aims to make an empirical contribution to the role of fiscal instruments (focusing on regional spending) towards PEI in two ways. **First**, this study expands the impact analysis to the aspects of PEI, known as the pillars of inclusive economic development index (hereinafter referred to as IPEI) compiled by the National Development Planning Agency (hereinafter referred to as BAPPENAS). This study enhances the analysis of the effectiveness of the government's fiscal policy by outlining IPEI into three pillars, namely the pillar of economic growth, the pillar of equity and poverty, and the pillar of access and opportunity. As the testing extends to the pillars of IPEI, the study proposes a hypothesis that each type of regional spending has a specific impact on a particular pillar of IPEI. This analytical approach distinguishes it from previous studies (Wibowo, 2019; Purwanti & Rahmawati, 2021; Safitri et al., 2021; Fitrianasari, 2021; Sani et al., 2022).

**Second**, this study adds a fiscal instrument at the local level, specifically in the form of village funds. The addition of village funds as a driving factor for development inclusivity refers to the purpose of the implementation of the village fund program, which is to accelerate development in rural areas and accelerate poverty reduction (Rimawan & Aryani, 2019). Empirically, previous research has focused more on the impact of village funds on poverty (Sari & Abdullah, 2017; Susilowati et al., 2017; Permana, 2020; Sigit & Kosasih, 2020; Bukhari, 2021). Data about the role of village funds in inclusive economic development are limited. Therefore, the addition of the village fund variable is important. The objective is to confirm whether village funds contribute to promoting greater inclusivity of economic development at the local level.

#### APPLICATION IN PRACTICE

- Education spending strengthens the pillar of income equity and poverty reduction and the pillar of expanding access and opportunities.
- Village funds strengthen the pillar of income equity and poverty reduction, indicating that they are effective in reducing poverty and income inequality.
- Regional economic spending strengthens the pillar of economic growth but weakens the pillar of income equality and poverty alleviation.
- Economic spending needs to be directed to better support the poor by redefining the recipients and types of funded initiatives.
- Health spending needs to be adjusted to have a greater impact on inclusive economic development, rather than just focusing on administrative aspects.

## LITERATURE REVIEW

### Inclusive Economic Development

The success of the economic development of a region is measured by inclusive economic development (PEI). Inclusive growth not only prioritizes output growth but also increases community welfare. Economic

development is called inclusive when it creates broad opportunities and access for all community members in a fair manner, reduces disparities between regions and groups, and improves welfare (United Nations Development Programme, 2017).

In the context of economic growth, the government allocates various available resources for the provision of goods and services. This allocation of resources is intended to achieve efficiency and equality (Hyman, 2010). Government spending is expected to affect efficiency and economic growth as well as the function of equitable distribution. Some literature supports the idea that government spending on health, education, economy or infrastructure, and social security can boost economic growth (Ambya, 2020), reduce inequality (Johansson, 2016; Balakrishnan et al., 2013), reduce poverty (Taruno, 2019; Danladi & Olarinde, 2015; Claus et al., 2012), and create more inclusive growth (Safitri et al., 2021).

Through fiscal policy, the government can optimize spending to achieve inclusive economic growth. At the regional level, regional fiscal capacity is expected to increase inclusive economic growth (Ardina, 2022). However, to date, regional spending has not been proven to contribute significantly to the achievement of inclusive economic growth (Wibowo, 2019). Therefore, the local government needs to increase the quantity and quality of regional spending by increasing fiscal capacity (PAD) and implementing efficient and corruption-free regional spending (Goshen & Levit, 2022).

Government spending policy is part of capital accumulation, which serves as the key driver in the development process. Referring to the neoclassical growth theory by Solow-Swan, economic growth is driven by production factors, including capital accumulation, quantity and quality of labor, and technological advances (Durlauf et al., 2001). This neoclassical theory posits that the development process is a harmonious and cumulative combination of production factors. The main factors in long-term growth are capital accumulation and technological advances used in the process (Meiriza et al., 2023).

According to Solow-Swan, capital accumulation includes investment in infrastructure, such as roads, transportation, communication and information, and human resources. In this theory, the technological advances are not only limited to the use of technology in development but also include research and development for new technologies and the discovery of methods to increase productivity.

### **Inclusive Economic Development Index (IPEI)**

IPEI is an index compiled by BAPPENAS to monitor the level of growth and development inclusivity, both at the national and local levels (provinces, districts/cities) in Indonesia. The inclusivity index is measured from three pillar groups: economic growth, income equity and poverty, and expansion of access and opportunity. BAPPENAS compiled the IPEI by utilizing secondary data from Statistics Indonesia (BPS), the National Labor Force Survey (Sakernas), the National Socio-Economic Survey (Susenas), and the loan/credit/savings data from the Financial Services Authority/Bank Indonesia.

The pillar of economic growth and development (pillar1) consists of economic growth, employment opportunities, and economic infrastructure. In this pillar, economic growth is the main sub-pillar because robust economic growth is essential for achieving inclusive economic development.

The second pillar (pillar2) is income equality and poverty reduction. This pillar is a key level indicator of whether economic development has been inclusive. This level of inclusivity is reflected in two sub-pillars: inequality and poverty.

The third pillar (pillar3) is expansion of access and opportunity. This pillar evaluates the extent to which the community has gained easy access to basic services (education and health) to improve human resource capabilities. The measurement of IPEI and IPEI pillars uses a scale of 1 to 9, categorized as follows: (1) a scale between 1 and 3 is deemed not satisfactory, (2) a scale of 4 to 7 is considered satisfactory, and (3) a scale from 8 to 10 is viewed as very satisfactory.

### **Classification of Regional Spending by Functions**

Regional spending is an expenditure from the regional general cash account which is intended to fund the implementation of government affairs under its authority (Simanjuntak, 2015). Regional spending is classified according to functions as stipulated in the Regulation of the Minister of Finance Number 102 of 2018 (PMK 108/PMK.02/2018), which includes: (1) expenditure on public service functions, (2) expenditure on economic functions, (3) expenditure on health functions, (4) expenditure on education functions, (5) expenditure on tourism functions, (6) expenditure on public order and security functions, (7) expenditure on environmental protection functions, (8) expenditure on protection or social security functions, and (9) expenditure on housing and public facilities.

This study focuses on spending or expenditure on economic functions, expenditure on education functions, and expenditure on health functions as basic services that are thought to be key for promoting inclusive economic development. Expenditure on economic functions is government spending that is used to create jobs, build public facilities and infrastructure, and enhance economic activities within the community. Expenditure on health functions is aimed at improving the quality of health and health services,

such as the procurement of drugs and health equipment, health facilities and infrastructure, family planning, and research and development in health services. Expenditure on education functions focuses on improving the quality of human resources through education. This expenditure is an investment to develop outstanding human resources, which are the key asset in economic development.

### Previous Research

Research on the role of government fiscal instruments to encourage inclusive economic growth in Indonesia have yielded inconsistent findings. In terms of the national analysis unit, Wibowo (2019) states that economic growth at the provincial level is not inclusive. Afriliana et al. (2022) confirm the role of mandatory spending, but Purwanti and Rahmawati, Primawan (2020), Ramadhan and Setiadi, and Wirfiana (2021) found no evidence that mandatory spending encourages inclusive economic development.

In the local analysis unit, some studies show different findings. Safitri et al. (2021) state that spending on education and health simultaneously increases inclusive economic growth in East Java in the long term and short term. This finding was also reported by Fitrianasari (2021) for the observations in East Kalimantan Province. On the other hand, the study by Arrfah and Syafri (2022) has been unable to demonstrate the role of the two types of spending in Central Sulawesi Province. Similarly, no evidence was detected in the studies conducted by Long and Pasaribu (2019) and Ardina (2022) in Central Java Province and East Java Province. For a partial role, economic spending (Safitri et al., 2021) and social protection spending (Primawan, 2020; Arrfah & Syafri, 2022; Wirfiana, 2021) have no effect on inclusive economic growth. In contrast, Ramadhan and Setiadi (2019) found that capital expenditure enhances development inclusivity in Indonesia.

The findings above suggest that government spending does not always encourage inclusive economic development. However, if the analysis is conducted partially, each type of spending may show a different impact. The inconsistency of these findings indicates a need to critically examine the issue by expanding the analysis of the impact of each spending on the pillars of inclusive economic development.

### Hypothesis Development

#### a) Spending on economic functions supports PEI

Government spending is an important factor that drives economic growth (Musgrave & Musgrave, 2008; Hyman, 2010). Spending on economic functions is directed towards supporting various government activities in economic development through the facilitation of trading activities, business development and MSMEs, employment, increased food and energy security, infrastructure development, industrial development, and technology and communication development. With the scope of complex economic affairs, expenditure on economic functions has a strategic role to encourage sustainable economic growth (Safitri et al., 2021).

Based on the above explanation, this study formulates the following hypotheses:

- H<sub>1</sub>: Regional spending on economic functions supports PEI.
- H<sub>1a</sub>: Spending on economic functions supports the pillar of economic growth and development.
- H<sub>1b</sub>: Spending on economic functions supports the pillar of income equity and poverty reduction.
- H<sub>1c</sub>: Spending on economic functions supports the pillar of expansion of access and opportunity.

#### b) Spending on education functions supports PEI

Education has an important role in the development of a country (Goshen & Levit, 2022). Education serves to produce a skilled workforce in terms of both quality and quantity, foster knowledge, and facilitate the integration of technology. Labor productivity increases along with the increase in education levels and will positively affect a country's competitiveness. The government's commitment to support the realization of inclusive economic development is reflected in the policy which governs the allocation of funds for education (Mangkoesoebroto, 2002).

Government's investment in education serves as a way for the community to access education and acquire knowledge and skills necessary for creating a competitive workforce. Therefore, increasing investment in education will increase job opportunities and higher wages (Marquez-Ramos & Mourelle, 2019; Wardhana et al., 2020).

Low levels of education reduce the potential for better income and reduce the ability to compete for jobs. Educational inequality is the main cause of inequality (Sumarto & De Silva, 2014). The government policy in the field of education, which is aimed at increasing the levels of education of poor families, will allow access to employment opportunities. Research also suggests that education expenditure plays an important role in fostering inclusive development (Ambya, 2020; Pratiwi & Ismal, 2017).

Based on this explanation, this study formulates the following hypotheses:

- H<sub>2</sub> : Spending on education functions supports PEI.
- H<sub>2a</sub> : Spending on education functions supports the pillar of economic growth and development.

- H<sub>2b</sub> : Spending on education functions supports the pillar of income equity and poverty reduction.  
 H<sub>2c</sub> : Spending on education functions supports the pillar of expansion of access and opportunity.

c) Spending on health functions has a positive effect on inclusive economic development

Several studies show that improving public health will affect economic growth (Primawan, 2020; Safitri et al., 2021). Meier and Rauch (2005) state that a country must boost investment in the health sector to encourage growth. Government spending on health functions plays a role in achieving more productive human resources. Therefore, this study formulates the following hypotheses:

- H<sub>3</sub> : Spending on health functions supports PEI.  
 H<sub>3a</sub> : Spending on health functions supports the pillar of economic growth and development.  
 H<sub>3b</sub> : Spending on health functions supports the pillar of income equity and poverty reduction.  
 H<sub>3c</sub> : Spending on health functions supports the pillar of expanding access and opportunity.

d) Village funds support the realization of inclusive economic development

The village fund program has been implemented since 2015 and remains ongoing. This program serves to complement the village fund allocation (ADD) which has been implemented since the beginning of 2000. Empirical evidence has documented the effectiveness of ADD in boosting economic growth (Rimawan & Aryani, 2019; Afriliana et al., 2017; Ashari, 2013).

The 2015 village fund program was intended to build Indonesia from the rural areas as well as to accelerate poverty and inequality reduction. The national poverty rate in Indonesia continued to decline from 2015 to 2022 (Statistics Indonesia, 2024). This data, which was provided by BPS, is supported by earlier findings from Bukhari (2021), Sigit and Kosasih (2020), Dewi and Irama (2018), Susilowati et al. (2017), Sari and Abdullah (2017), and Azwardi and Sukanto (2014).

Based on the explanation about village fund concept and the empirical evidence above, this study develops the following hypotheses:

- H<sub>4</sub>: Village funds support PEI.  
 H<sub>4a</sub>: Village funds support the pillar of economic growth and development.  
 H<sub>4b</sub>: Village funds support the pillar of income equity and poverty reduction.  
 H<sub>4c</sub>: Village funds support the pillar of expansion of access and opportunity.

## METHODS

This study applied a quantitative approach by utilizing data from BAPPENAS, Statistics Indonesia, and the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance. The data included inclusive economic development index (IPEI) and IPEI pillars at the provincial level, village funds, and data on the realization of government spending based on economic, education, and health functions. Village funds and the realization of spending on economic functions, education functions, and health functions included district/city and provincial government spending, which was accumulated at the provincial level. The observation period was from 2015 to 2021, taking into account the adjustments made to the implementation of the village fund program which began in 2015. The population of this study was the provincial government in Indonesia, excluding DKI Jakarta Province because this province did not receive village fund. Therefore, the number of samples was 33 provinces with seven years of observation.

### Research Model

This study developed a research model based on the work of Hur (2014) and Kolawole (2016). This model was developed based on empirical evidence which shows that the dependent variable (IPEI) is influenced by various expenditures, including economic, educational, and health spending, as well as village funds. The selection of predictor variables (fiscal instruments) was based on empirical evidence (Hur, 2014; Traore, 2019; Safitri et al., 2021; Sihombing & Purwanti, 2022).

This model also included the variables of roads (road) and productive age (age). The consideration to add these two variables stemmed from the concept of growth function from the Solow-Swan economic growth theory, which posits that economic growth is influenced by the accumulation of capitals (road infrastructure, facilities and infrastructure, and land), natural resources, and human capital. In addition, several findings corroborate the influence of roads (Ma'ruf, 2013; Prasetyo & Firdaus, 2009; Suriani & Keusuma, 2015) and productive labor (age) (Wardhana et al., 2020; Jati, 2015).

Besides the composition of variables in the research model, this study also considered the lag factor of the impact of village funds and government spending on inclusive economic development. The use of this one-period lag emphasizes the indirect impact of government spending on the period of the calculation of economic growth (Ramos et al., 2013). Therefore, the research model was arranged as follows:

$$IPEI_{it} = \alpha + \beta_1.Eco_{it-1} + \beta_2.Educ_{it-1} + \beta_3.Health_{it-1} + \beta_4.DD_{it-1} + \beta_5.Road_{it} + \beta_6.Age_{it} + \varepsilon \dots\dots\dots(1)$$

$$\text{Pillar1}_{it} = \alpha + \beta_1.\text{Eco}_{it-1} + \beta_2.\text{Educ}_{it-1} + \beta_3.\text{Health}_{it-1} + \beta_4.\text{DD}_{it-1} + \beta_5.\text{Road}_{it} + \beta_6.\text{Age}_{it} + \varepsilon \dots\dots\dots(2)$$

$$\text{Pillar2}_{it} = \alpha + \beta_1.\text{Eco}_{it-1} + \beta_2.\text{Educ}_{it-1} + \beta_3.\text{Health}_{it-1} + \beta_4.\text{DD}_{it-1} + \beta_5.\text{Road}_{it} + \beta_6.\text{Age}_{it} + \varepsilon \dots\dots\dots(3)$$

$$\text{Pillar3}_{it} = \alpha + \beta_1.\text{Eco}_{it-1} + \beta_2.\text{Educ}_{it-1} + \beta_3.\text{Health}_{it-1} + \beta_4.\text{DD}_{it-1} + \beta_5.\text{Road}_{it} + \beta_6.\text{Age}_{it} + \varepsilon \dots\dots\dots(4)$$

Model 1 was the main model, which was then developed into model 2, model 3, and model 4, by differentiating the dependent variables in each model. Model 1 used the IPEI dependent variable (total), and pillar1, pillar2, and pillar3 were for model 2, model 3, and model 4, respectively.

Notes:

IPEI <sub>it</sub>	:	IPEI created by BAPPENAS
Pillar1 <sub>it</sub>	:	Index of the pillar of growth and economic development
Pillar2 <sub>it</sub>	:	Index of the pillar of income equity and poverty reduction
Pillar3 <sub>it</sub>	:	Index of the pillar of expansion of access and opportunity
DD <sub>it-1</sub>	:	Village funds, using natural logarithms from the accumulation of village funds per province per year from the previous period (t-1)
Eco <sub>it-1</sub>	:	Spending on economic functions accumulated from provincial governments (encompassing totals from provinces, districts and cities)
Educ <sub>it-1</sub>	:	Spending on education functions accumulated from provincial governments (encompassing totals from provinces, districts and cities)
Health <sub>it-1</sub>	:	Spending on health functions accumulated from provincial governments (encompassing totals from provinces, districts and cities)
Road <sub>it</sub>	:	Total number of roads in the province, including state roads, provincial roads, and district roads
Age <sub>it</sub>	:	Productive age, measured by the natural logarithms of the number of people at productive age at the provincial level
A	:	Constant
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$	:	Regression coefficients

The data analysis used a panel data regression model. The first step of the analysis was the determination of the best model, using a common effect model (CEM), a fixed effect model (FEM), or a random effect (REM) model. The first selection stage involved the comparison of CEM and FEM using the Chow Test. The result of the Chow Test showed that FEM was better than CEM (Prob > F=0.000).

The next stage of the test assessed whether FEM was better than REM (Hausman Test). The result of the test revealed Prob>Chi2 = 0.000, indicating that FEM was better than REM. As FEM was selected over CEM and REM, the Lagrange Multiplier test was not required. Table 1 shows a summary of the model selection.

Table 1 Summary of Model Selection

Statistical Test	Indicator	Result	Selected Model
Chow Test	H0: Common Effect Model (CEM)	Sign (Prob>F) <0.05 = 0.000	FEM
	H1: Fixed Effect Model (FEM)	Sign (Prob>F) >0.05 =	
Hausman Test	H0: Random Effect Model (REM)	Sign (Prob>F) <0.05 = 0.000	FEM
	H1: Fixed Effect Model (FEM)	Sign (Prob>F)>0.05 =	
Lagrange Multiplier (LM) Test	H0: Common Effect Model (CEM)	Sign (Prob>F) <0.05 =	Not Done
	H1: Random Effect Model (REM)	Sign (Prob>F)>0.05 =	

Source: Processed by the Author

Once the FEM was selected, the analysis was performed to ensure that the research model met the criteria for the best linear unbiased estimation (BLUE). The results showed that this model did not suffer from heteroscedasticity, in which the Breusch-Pagan test produced a Prob>Chi2 = 0.5389, >0.05. In addition, the research model did not suffer from multicollinearity, as shown by the results of the multicollinearity test where VIF=1.42 was still far from 10 (Table 4). The test for correlation also showed that the model did not suffer from autocorrelation. As shown in Table 3, the results of the test showed a correlation indicator of below 0.80. The summary of the classical assumption test is presented in Table 2.

Table 2 Classical Assumption Analysis

Analysis	Test Tool	Indicator	Result	Conclusion
Normality	Skewness/Kurtosis	Prob>Chi2 > 0.05	0.000	Does not meet normality
Multicollinearity	Variance Inflation Factor (VIF)	VIF < 5 or 10	1.42	No multicollinearity
Homoscedasticity	Breusch-Pagan test	Prob Chi2 >0.05	0.5390	No heteroscedasticity
Autocorrelation	Degree of correlation	>0.80	<0.80	No correlation

Source: Processed by the Author

Table 3 Correlation Analysis

	Eco <sub>it-1</sub>	Educ <sub>it-1</sub>	Health <sub>it-1</sub>	DD <sub>it-1</sub>	Road <sub>it</sub>	Age <sub>it</sub>
Eco <sub>it-1</sub>	1.000					
Educ <sub>it-1</sub>	0.196	1.000				
Health <sub>it-1</sub>	0.253	0.554	1.000			
DD <sub>it-1</sub>	0.238	0.562	0.602	1.000		
Road <sub>it</sub>	0.103	-0.120	-0.056	0.045	1.000	
Age <sub>it</sub>	0.001	-0.104	-0.061	0.010	-0.006	1.000

Source: Processed by the Author

Table 4 Results of Multi-correlation Analysis

	VIF	1/VIF
Eco <sub>it-1</sub>	1.10	0.909828
Educ <sub>it-1</sub>	1.70	0.587637
Health <sub>it-1</sub>	1.80	0.557069
DD <sub>it-1</sub>	1.85	0.541989
Road <sub>it</sub>	1.05	0.949839
Age <sub>it</sub>	1.02	0.978566
Mean VIF	1.42	

Source: Processed by the Author

## RESULTS AND DISCUSSION

### Results

Table 5 shows the descriptive statistics of the data used in this study. The IPEI variables, Pillar1, Pillar2, and Pillar3 had a relatively wide data distribution. As shown in Table 5, Pillar2 showed the broadest range, where the maximum index was 9.37, and the minimum number was 2.47. Pillar3 and Pillar1 also had a shorter span than Pillar2. This indicates that the economic development in Indonesia is not evenly distributed, or there remains development inequality across provinces.

For the variable related to regional spending, the data on the spending on economic functions (Eco<sub>it-1</sub>) from Maluku Province in 2021 were not available. This resulted in a small number in the variable of spending on economic functions (Eco<sub>it-1</sub>) to 0. Similarly, for the Road<sub>it</sub> variable, the road data from several provinces were not available, or listed as "0" in the data of Statistics Indonesia.

Figure 1 shows a data visualization of the pillars of IPEI, particularly the trend of index change. As shown in the graph, IPEI and Pillar1 declined in 2020, while Pillar2 rose slightly during the same period. On the contrary, Pillar3 continued to show an upward trend from 2015 to 2021. Even during the COVID-19 pandemic in 2020, Pillar3 did not decrease and continued to increase.

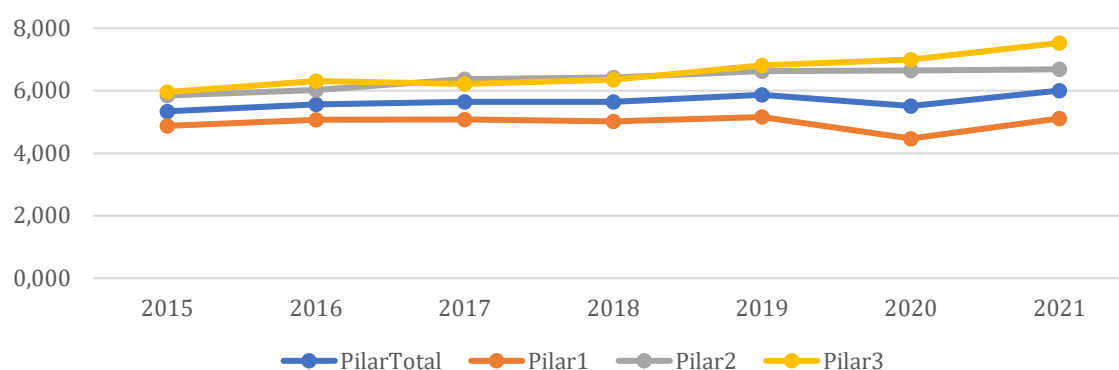
Nationally, the IPEI (total pillars) rose consistently, except in 2020 when the index decreased by 0.365 points. Of the three pillars forming the IPEI, Pillar1 (economic growth and development) had the lowest index, while Pillar3 (expansion of access and opportunity) exhibited the highest index. Contrary to the IPEI value, Pillar2 and Pillar3 showed a consistent increase even after 2020. Only Pillar1 experienced a decline,

Table 5 Descriptive Statistics

Variable	Observation	Average	Standard Deviation	Min	Max
IPEI <sub>it</sub>	231	5.6839	0.6722	3.03	6.82
Pillar1 <sub>it</sub>	231	5.0000	0.6915	2.44	6.39
Pillar2 <sub>it</sub>	231	6.3939	1.0817	2.47	8.34
Pillar3 <sub>it</sub>	231	6.6147	0.9525	3.92	9.37
DD <sub>it-1</sub>	230	20.9043	0.9709	18.06	22.88
Eco <sub>it-1</sub>	230	26.8130	1.9276	0	29.09
Educ <sub>it-1</sub>	230	27.9000	1.1267	24.93	30.49
Health <sub>it-1</sub>	230	26.9217	0.8831	25.14	29.23
Road <sub>it</sub>	231	8.1342	3.3910	0	10.67
Age <sub>it</sub>	231	69.7922	3.5201	61.64	79.68

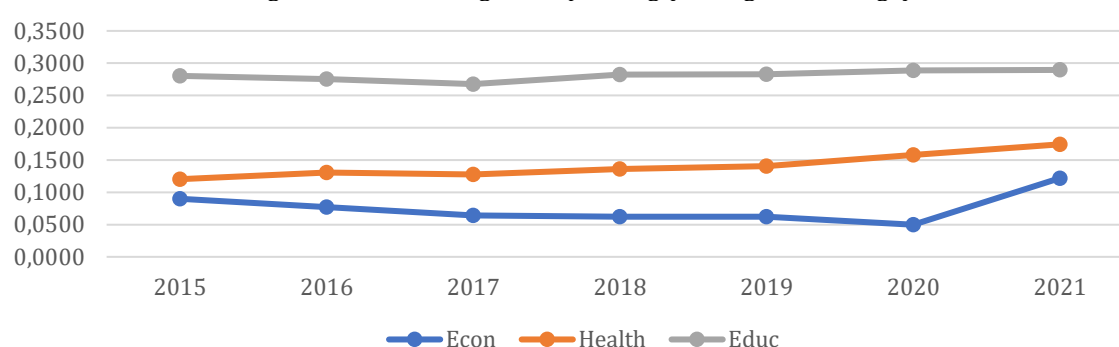
Source: Processed by the Author

Figure 1 Trend in Provincial IPEI



Source: processed by the author

Figure 2 Trend in Regional Spending (Average Percentage)



Source: processed by the author

which was in line with the economic contraction during the COVID-19 pandemic. As shown in Figure 1, the scales of IPEI and its pillars were in the range of 4 to 7, indicating that they were in satisfactory status.

Figure 2 also shows a comparison of the total spending on economic functions, spending on education functions, and spending on health functions. Meanwhile, Table 2 shows the average ratio of each spending function divided by the total regional spending. Among the three types of spending, spending on education functions constituted the largest share. On the other hand, of all the types of spending, economic spending had the smallest share of allocation. The three types of spending experienced an upward trend from 2015 to 2020. The spending on health functions increased from 2020 to 2021, while the spending on economic functions showed a significant increase only in 2021. These increases in spending might be related to the National Economic Recovery (PEN) policy to manage the crises during the COVID-19 pandemic from 2020 to 2021.

As shown in Figure 2, the allocation of funds for education and health functions were above 20% and 10% on average. This suggests that the allocation has complied with the provision of the minimum limit in budget allocation for both functions (see the discussion on the classification of spending by function).

## Discussion

The data analysis method used in this study was FEM. The results of the test are presented in Table 6. Simultaneous testing (F Test) of all models showed significant results ( $\text{Prob} > \text{Chi}^2 < 0.05$ ). Furthermore, the results of the partial test showed that the independent variables specifically affected certain pillars. Spending on education functions affected IPEI, Pillar2, and Pillar3. Therefore,  $H_2$ ,  $H_{2b}$ , and  $H_{2c}$  were accepted. Village funds strengthened Pillar2; therefore,  $H_{4b}$  was also accepted. Spending on economic functions strengthened Pillar1 ( $H_{1a}$  was accepted). Meanwhile, spending on health functions had no effect on all IPEI indicators ( $H_3$ ,  $H_{3a}$ ,  $H_{3b}$ , and  $H_{3c}$  were rejected). Partial testing of the control variable of road ( $\text{Road}_{it}$ ) affected IPEI, Pillar2, and Pillar3. By contrast, productive age ( $\text{Age}_{it}$ ) had no effect on IPEI or IPEI pillars other than Pillar3.

Spending on education functions and road infrastructure exhibited a positive impact on inclusive economic growth. From the data analysis of Model 1, village funds, spending on economic functions, and spending on health functions, as well as the number of productive-aged individuals did not support the realization of IPEI, but they had a partial effect on the pillars of IPEI. The correlation between education



Table 6 Regression Results

Variable	IPEI ( $P> t $ )	Pillar 1 ( $P> t $ )	Pillar2 ( $P> t $ )	Pillar 3 ( $P> t $ )
Spending on Economic Functions ( $Eco_{it-1}$ )	-0.0050 (0.720)	0.0474 (0.003)***	-0.0327 (0.042)**	-0.0145 (0.465)
Spending on Education Functions ( $Educ_{it-1}$ )	0.0654 (0.032)**	-0.0316 (0.360)	0.1213 (0.001)***	0.2525 (0.000)***
Spending on Health Functions ( $Health_{it-1}$ )	0.0841 (0.866)	0.0439 (0.431)	-0.0143 (0.807)	-0.0791 (0.265)
Village Funds ( $DDit-1$ )	-0.0763 (0.101)	-0.0271 (0.603)	0.1023 (0.061)*	-0.0112 (0.866)
Roads ( $Road_{it}$ )	0.4088 (0.000)***	-0.0055 (0.515)	0.8252 (0.000)***	0.074 (0.000)***
Productive Age ( $Age_{it}$ )	0.0022 (0.869)	-0.0204 (0.163)	-0.0014 (0.933)	-0.0949 (0.000)
C	5.1854 (0.003)	5.4670 (0.004)	1.5570 (0.456)	8.1562 (0.001)
R-square	0.1450	0.0471	0.3702	0.4533
Prob > Chi2	0.000	0.0493	0.000	0.000

significant at the level of 0.01; \*\*significant at the level of 0.05; \*significant at the level of 0.10

Source: Processed by the Author

spending and IPEI (Figure 1 and Figure 2) indicated that IPEI and spending on education functions showed a positive trend, except in 2020 where the IPEI declined. Statistically, the increase in IPEI closely correlates with government spending on education functions.

This study extended the analysis of the influence of independent variables on the pillars of PEI. The results showed variations in the impact of government fiscal instruments on the three pillars of PEI. In terms of the village fund program, this study found new evidence indicating that village funds strengthen the pillar of income equality and poverty reduction. As shown in Figure 1, Pillar2 showed an upward trend from 2015 to 2021, and this trend was coincided with the increase in village fund transfers that began in 2015. The statistical evidence showed that there was a strong correlation between village funds and Pillar2 (p-value = 0.061, below the significance level of 0.10). These findings support the goal of the village fund program to reduce inequality and poverty levels, especially in rural areas where most of the poor live (Statistics Indonesia, 2021). The ongoing fiscal transfers from the central government to villages are enhancing development efforts in villages. This helps provide basic facilities and infrastructure in rural areas.

This finding is also supported by earlier observations, which showed that the use of village funds is prioritized for the provision of basic infrastructure urgently needed by the community in rural areas. In addition, village fund spending is primarily focused on infrastructure development expenditure, at about 50% to 55%. Until 2022, the outcomes of development in villages comprised the creation of thousands of kilometers of roads, bridges, irrigation, and drainage, following eight years of the village fund program's implementation. This infrastructure development has a multiplier impact on the socio-economic life of the village community.

These findings support the work of previous researchers (Sigit & Kosasih, 2020; Permana, 2020; Arfiansyah, 2020; Putra, 2018; Susilowati et al., 2017). The scope of their research area varies, covering a large part of Indonesia, including regional analysis units in eastern Indonesia, as well as provinces and villages. In general, the poverty rate has continued to decline since 2015, which is the first year of the implementation of village funds.

This study found that village funds did not affect Pillar1 and Pillar3. These findings confirm that village funds have less impact on PEI. However, because these findings were based on provincial level data, the role of village funds in these two pillars was not significant. At the provincial level, local government spending on education and economic functions is more significant in supporting PEI, as evidenced by the fact that the spending of village funds is much smaller than provincial spending.

Another finding is that economic spending showed no significant effect on PEI. This is in line with the findings of studies conducted by Prabowo et al. (2022), Safitri et al. (2021), and Ramadhan and Setiadi (2019). As indicated by Safitri et al. (2021), economic spending in particular has an impact in the long term, but this impact has not been observed in the short term. As shown in Figure 1, IPEI tended to increase slightly from 2015 to 2021.

Although economic spending did not affect IPEI, it had a positive effect on Pillar1 but a negative effect on Pillar2. These findings strengthen the role of regional economic spending in achieving regional economic growth. Government spending or expenditure has a key role as a driving force of economic growth (Hyman, 2010). Economic spending plays a crucial role in reinforcing essential infrastructure to facilitate economic

activities. The provision of infrastructure can absorb labor and encourage economic activities as a result of the expansion of transportation and communication. Good economic infrastructure has an impact on the smooth distribution of the economy. Therefore, infrastructure is a prerequisite in the implementation of economic development (Torrise, 2009). However, the impact of infrastructure on inclusive economic growth can only be achieved in the long term (Safitri et al., 2021).

An important finding of this study is that education spending had a significant effect on strengthening PEI. Education spending also had a strong influence on Pillar2 and Pillar3. These findings confirm the important role of government spending on education functions in creating PEI. These findings are in line with those of previous studies (Prabowo et al., 2022; Safitri et al. 2021; Hausmann et al., 2017; Echekeba & Chinelo, 2017; Danladi & Olarinde, 2015; Benos & Zotou, 2014; Claus et al., 2012). Previous research indicates that education serves as the primary catalyst that enhances economic growth rates in every country (Fitrianasari, 2021). The quality of human resources has a direct impact on economic output, which subsequently increases economic growth and development. The higher the level of expertise and skills of individuals, the more stable the prosperity and the healthier the economic growth Coman (Nuță) et al., 2022).

This study found that health spending did not support PEI, and there was impartiality of health spending towards the three pillars of PEI. These findings raise a question of why health spending is not inclusive. Inclusive growth can be achieved through a good and proper government budget plan. Prioritizing government spending in the health and education sectors for the poor will significantly impact inclusive growth, since health and education are the primary resources possessed by the poor (Estrada et al., 2014). Government spending in the fields of education and health becomes the key element in realizing inclusive economic development (Fitrianasari, 2021).

Inefficiency in government spending has received special attention from the World Bank. This asserts that the impact of public spending on inequality and poverty depends on its size, composition, progressivity, and how it is realized (Goshen & Levit, 2022). The impact of redistributive government spending in developing countries tends to be lower than that in developed countries, indicating differences in development levels, amount of expenditure, and spending compositions. The management of public spending in developing countries encounters greater inefficiency, as indicated by the gap between actual spending and possible minimum spending that is theoretically sufficient to produce the same level of actual output (Coady & Geng, 2015). Among 24 developed and developing countries, the inefficiency in education and health spending is significant, reaching more than 4% of the gross domestic product (GDP). An IMF study estimates that, on average, countries lose about 30% of the value of their public investment due to inefficiency (International Monetary Fund, 2015).

Two control variables, road ( $Road_{it}$ ) and productive age ( $Age_{it}$ ), showed different results. Roads was proven to strengthen IPEI, Pillar2, and Pillar3. These findings support Solow-Swan's growth theory, in which road infrastructure has an important role in economic growth. These findings also support those of Fan et al. (2005), Ma'ruf (2013), Prasetyo and Firdaus (2009), and Suriani and Keusuma (2015). Furthermore, the variable of productive age (age) was not shown to influence IPEI or the three pillars of IPEI. This finding contradicts the results of research by Wardhana et al. (2020) and Jati (2015).

## CONCLUSION

To support the realization of PEI, the government uses fiscal instruments, such as village fund program and targeted allocations for economic, education, and health spending. This study found that spending on education and roads is the main determinant that supports inclusive economic development. In addition, education spending has been proven to strengthen Pillar 2 (income equality and poverty reduction) and Pillar 3 (expansion of access and opportunity). This study also found that village funds strengthened Pillar 2. Therefore, village funds have been proven to reduce poverty and income inequality. Spending on regional economic functions was found to strengthen Pillar 1 (economic growth and development) but weakened Pillar 2. Therefore, economic spending has not been successful in removing economic barriers to create a more inclusive, equitable, and fair development for all individuals. Based on these findings, economic spending tends to be pro-growth but not pro-poor. In contrast, spending on health functions was not observed to have an impact on PEI, and the number of productive age population has not contributed to PEI.

Although this study has shown some new findings that support previous studies, it has some limitations. First, the use of provincial-level analysis has limited the findings, resulting in a lack of more detailed insights. In addition, the aggregate of local government spending at the provincial level is disproportionately high compared to that of village funds. Second, the scope of the analysis of this study did not exclude the COVID-19 pandemic period. As shown in Figure 1, the IPEI declined significantly in 2020, which may adversely affect the analysis of the trends of IPEI data.

This study suggests that the government needs to improve the quality of regional spending and village funds to achieve a greater impact on PEI and to meet established goals. Economic spending lacks a pro-poor focus, thus requiring it to be evaluated for reidentification of recipients and the type of activities carried out. Activities derived from health spending should be better adjusted to improve the inclusivity of economic development, rather than focus solely on administrative activities.

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