Exploring The Impact of Human Capital, Education, and Health Expenditure on Inclusive Growth in Indonesia

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Abstract. This research analyzes physical capital, human capital, education, and health expenditure on inclusive economic growth, with data from 33 provinces in Indonesia from 2011-2023. Inclusive economic growth is measured using the Inclusive Economic Development Index. This research used the panel data regression with a fixed effect model to study Gross Fixed Capital Formation, educated labor, uneducated labor, education, and health sector expenditure on inclusive economic growth. This research found that Gross Fixed Capital Formation and educated labor significantly impact inclusive economic growth. Therefore, uneducated labor, education, and health sector expenditures do not significantly impact inclusive economic growth. This paper suggests increasing sustainable investment and equalizing investment. Second, the budget for education and health should be increased. Third, investment in the productive sector must be increased to improve the quality of labor.

Keywords: Education, Health Expenditure, Human Capital, Inclusive Growth.

1   Introduction

Economic growth is an indicator that shows the economic condition of a country. High economic growth is expected to create prosperity for its population. In macro analysis, economic growth can be seen from the Gross Domestic Product (GDP) rate at constant prices. Indonesia's economic growth in 2011-2021 tends to be high, with an average growth of above 5%. However, this high economic growth only guarantees some of the same benefits. [1]. Thus, equitable and sustainable economic growth is needed.

High and sustainable economic growth is a condition that must be achieved in economic development and increasing welfare. This is to the objectives of the Sustainable Development Goals (SDGs) in point 8: "increasing inclusive and sustainable economic growth." Therefore, international institutions such as the Asian Development Bank (ADB), World Economic Forum (WEF), and United Nations Development Program (UNDP) have formulated a series of variables for measuring economic growth,

which emphasize the aspect of equal distribution of the economy for all levels of society. Referred to as inclusive growth [2]. Inclusive economic growth is defined as growth that produces economic opportunities and guarantees fair access for all levels of society. [3]. Inclusive and sustainable economic growth is expected to be able to overcome the problems of poverty, income inequality, and unemployment. [4].

Indonesian national institutions, namely the National Development Agency (BAPPENAS) and the Central Statistics Agency (BPS), have formulated several indicators used to measure inclusive growth, which is called the Inclusive Economic Development Index (IPEI). IPEI was formed from three pillars: economic growth and development, income distribution and poverty reduction, and expanding access and opportunities. From 2011 to 2021, Indonesia's IPEI continued to increase yearly; even in 2021, Indonesia's IPEI value reached 6.00, the highest in the last 11 years. However, according to the "The Inclusive Development Index 2018" report by the World Economic Forum (WEF), Indonesia's inclusive growth is still ranked 36th out of 74 developing countries.
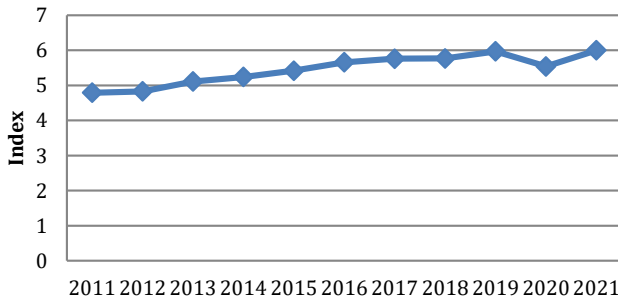

Figure 1. Indonesia's Inclusive Economic Development Index
Source: BAPPENAS, 2023

Human capital is one of the keys to realizing inclusive economic growth. [5]. This is due to the endogenous theory that Romer (1986) developed, which states that investment-driven human capital is essential to a country's economic growth. [6]. Human capital, referred to in this theory, results from technological progress and labor accumulation. The endogenous growth model emphasizes endogenous technological progress, where technology results from innovation, trade, competition, knowledge, and education. [7].

Research on inclusive economic growth in Indonesia still needs to be conducted, especially at the provincial level. Gross Fixed Capital Formation (GFCF) and human capital positively impact inclusive economic growth. [2], [3], [8]–[12]. This shows that human capital can encourage economic growth in an inclusive direction. However, other studies found that gross fixed capital formation negatively influences inclusive economic growth. [13] Also, labor has a negative influence on inclusive economic growth. [9], [13]. Therefore, research on the relationship between human capital and inclusive economic growth is still interesting.

2   Method

This research was conducted using a quantitative approach using secondary data issued by the Central Statistics Agency, the Ministry of Finance of the Republic of Indonesia, and the National Development Planning Agency of the Republic of Indonesia. The data used in the research is panel data covering 33 provinces in Indonesia from 2011-2023. Table 1 summarizes the variables, their descriptions, and the sources used in this study.

Table 1. Variable Description

No	Variable	Note	Source
1.	Inclusive Growth (IG)	Inclusive Economic Development Index (%)	Bappenas
2.	Gross Fixed Capital Formation (ln GFCF)	Provincial Gross Fixed Capital Formation per year. The data is in millions of rupiah.	BPS
3.	Educated Labor (ln EL)	The number of workers with the highest level of education completed from college.	BPS
4.	Uneducated Labor (ln UL)	The number of workers with the highest level of education completed from Senior High School (SMA) or below.	BPS
5.	Government Expenditure on Education (ln GE)	Realization of regional government spending for education functions. The data is in billions of rupiah.	BPS
6.	Government Expenditure on Health (ln GH)	Realization of local government spending for health functions. The data is in billions of rupiah.	BPS

In this research, we specifically use Gross Fixed Capital Formation (GFCF), educated labor, uneducated labor, education sector expenditure, and health sector expenditure as explanatory factors in investigating their influence on inclusive growth in 33 provinces in Indonesia. The empirical model used in this research is as follows:

$$INCI_{it} = \beta_0 + \beta_1 lnGFCF_{it} + \beta_2 lnEL_{it} + \beta_3 lnUL_{it} + \beta_4 lnGE_{it} + \beta_5 lnGH_{it} + \pi_i + \omega_t + \mu_{it} \quad (1)$$

where: ln is the natural logarithm, β is the elasticity coefficient of each variable, π_i is an unobservable country, ω_t is the time effect, μ_it is the error term, INCI is inclusive economic growth, GFCF is Gross Fixed Capital Formation, EL is Educated Labor, UL is Uneducated Labor, GE is education sector expenditure, and GH is health sector expenditure.

3   Result and Analysis

The statistical description in Table 2 shows several indicators that predict how much each variable contributes to inclusive economic growth. Physical capital is proxied using Gross Fixed Capital Formation (GFCF), and labor is divided into two: educated and uneducated labor. Meanwhile, government spending is proxied by spending in the education sector and spending in the health sector.

Inclusive economic growth proxied using the inclusive economic development index has an average value of 5.43 percent with a variability value of 0.79 percent. The inclusive economic development index reached a maximum of 7.93 percent and a minimum of 2.13 percent. The average value of the natural logarithm of gross fixed capital formation is 17.59 percent, with a variability value of 1.18 percent. The gross fixed capital formation growth rate was 20.43 percent, and the lowest was 15.25 percent.

Table 2. Summary of Descriptive Statistics

Variable	Unit	Obs	Mean	Std. dev.	Min	Max
INCI	Index	363	5.43	0.79	2.13	7.93
Ln GFCF	Millions Rupiah	363	17.59	1.18	15.25	20.43
Ln EL	Labor	363	12.46	0.99	10.52	15.47
Ln UL	Labor	363	14.44	1.00	12.68	16.88
Ln GE	Billions Rupiah	363	6.92	1.26	3.04	9.99
Ln GH	Billions Rupiah	363	6.06	0.99	3.58	9.28

Source: Data processed, 2024

The average value of the logarithm of educated labor is 14.46 percent, and the variability value is 0.99 percent, with growth ranging from 10.52 to 15.47 percent. The average natural logarithm value of uneducated labor is 14.44 percent, with a variability value of 1.00 percent. The highest growth rate for uneducated labor was 16.88 percent, and the lowest was 12.68 percent. Apart from that, government expenditure, as proxied by the natural logarithm of spending in the education sector, has an average value of 6.92 percent and a variability value of 1.26 percent, with a growth value between 3.04 percent and 9.99 percent. Meanwhile, the natural logarithm value of health sector expenditure has the highest value of 9.28 percent and the lowest value of 3.58 percent, with an average value of 6.06 percent. The value of variability in spending in the health sector is 0.99 percent.

In panel data regression analysis, there are several tests used to test the best model between the standard effect model (CEM), fixed effect model (FEM), and random effect model (REM). The tests carried out include the Chow test and the Hausman test.

Table 3. Chow Test and Hausman Test Results

Uji Chow		Uji Hausman	
Effect Test	**Prob**	*Effect Test*	**Prob**
F(30,365)	86.86	Chi2 (4)	85.18
Prob > F	0.0000	Prob > chi2	0.0000

Source: Data processed, 2024.

Table 3 shows the Chow and Hausman test results in this study. The results show that the probability f in the Chow test is 0.0000, where this value is less than the alpha level of 0.05, so the model chosen is FEM. Furthermore, in the Hausman test results, the prob value is 0.0000, which is also below the alpha level of 0.05, so the model chosen is FEM. Based on the Chow test and Hausman test, the model chosen is the FEM model, so the Lagrange multiplier test does not need to be carried out.

Table 4. Fixed Effect Model (Robust) Estimation Results

Variable	Coefficient		Std. Error	t-statistic	Prob.
C	-25.5319	***	4.8112	-5.31	0.000
Ln GFCF	1.0262	***	0.2996	3.43	0.002
Ln EL	0.5099	***	0.1659	3.07	0.004
Ln UL	0.3813		0.3781	1.01	0.321
Ln GE	0.0277		0.0182	1.52	0.138
Ln GH	0.1408		0.1025	1.37	0.179
Obs	363				
R^2	0.7936				
Adj R^2	0.7907				
F-Statistik	103.64				
Prob					0.000

Source: Data processed, 2024.

The estimation results of the fixed effect model in this study are shown in Table 4. The probability value of the F-statistic shows a value of 0.0000, where the value is less than the alpha level of 0.05, so it can be concluded that all independent variables can simultaneously influence inclusive economic growth. Apart from that, the adjusted R2 value in the model is 0.7936, which means that all independent variables in this study can explain the dependent variable in the form of the inclusive economic development index of 79.36 percent. In contrast, other factors outside those studied explain the remaining 20.64%.

The estimation results show that the gross fixed capital formation coefficient value is 1.0262 with a probability value of 0.0002, which means it significantly positively affects inclusive economic growth. An increase in gross fixed capital formation by 1 percent will increase inclusive economic growth by 1.03 percent. The results of this study follow previous research, which states that gross fixed capital formation has a positive effect on inclusive economic growth. [12], [15], [16]. [17] This shows that increasing investment can encourage inclusive growth in Nigeria, Morocco, Algeria, and Egypt.

Apart from that, educated labor significantly positively affects inclusive economic growth with a coefficient value of 0.5099 and a probability of 0.004. When educated labor increases by 1 percent, inclusive economic growth will increase by 0.51 percent. These results are consistent with research conducted by [18]. Meanwhile, uneducated

labor has no significant effect and has a positive direction with a coefficient value of 0.3813. When uneducated labor increases by 1 percent, inclusive economic growth will increase by 0.38 percent. This result has no effect because junior high school graduates and below still need to gain the skills and ability to work, causing many to work in the informal sector. In 2021, 81% of the workforce with junior high school graduates and below will work in the informal sector [19].

Meanwhile, education and health expenditures do not have a significant effect, but both have a positive direction in inclusive economic growth. The coefficient value for education expenditure is 0.0277, which means that when there is an increase in education expenditure by 1 percent, inclusive economic growth will increase by 0.03 percent. Health expenditure has a coefficient value of 0.1408, which means that a 1 percent increase in health expenditure will increase inclusive economic growth by 0.14 percent.

The results of this study are in line with research conducted by [4], [16], [20], [21]. This shows that government spending on health and education has little effect. The ineffectiveness of the education budget causes this to improve the quality of education. [22] Explained that the education budget is not yet widely accessible to people experiencing poverty, so there is a need for a periodic poverty validation process. The accuracy of the data must also be crosschecked because there are still many people who need to be better and receive assistance, which makes the data inaccurate. One of the programs carried out by the government in the health sector is employment social security, which is provided to workers in the formal sector. However, data published by [19] Shows that the informal sector dominates most of the workforce and is therefore not covered by employment social security.

This research has two contributions, namely policy recommendations and literature study. The first contribution is that policy recommendations are offered. First, the government must implement policies that can increase investment sustainably and equitably across all regions in Indonesia. To support equal distribution of investment, the government can carry out infrastructure development, especially in areas that are still remote and absorb little investment. Second, the government can increase the budget for education and health. Third, investment in productive sectors such as health and education should be increased to improve the workforce's quality. The second contribution is to add to the literature on inclusive economic growth in Indonesia. The contribution of this literature is that more research still needs to focus on inclusive growth using the inclusive economic development index. Improvements can be made for further study by using other indicator variables, different analysis tools, or other regional data sets.

4   Conclusion

This study assesses the factors that influence inclusive economic growth in 33 provinces in Indonesia from 2011 to 2021. This study uses a panel data regression method with a fixed effect model. The results of this research show that gross fixed

capital formation and educated labor have a significant positive impact on inclusive economic growth. Meanwhile, uneducated labor, education, and health spending have little effect or positive direction on inclusive economic growth. From this research, improving sustainable and equitable investment policies can support economic growth in an inclusive direction. The government can carry out infrastructure development in areas where investment still needs to be improved. Second, the budget for education and health should be increased. Third, increase investment in productive sectors.

5   References

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