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Harmony of Education and Health: The Key to Interconnection in Sustainable Economic Growth in Indonesia

Abstract

This study will analyze and examine the link between human capital investment and economic growth in Indonesia. Data is sourced from the World Bank with a measurable range of 2000-2020. The variables we use are health investment, level of education and economic growth which are analyzed using Vector Autoregressive (VAR). We discovered a significant relationship between educational attainment and recent economic expansion. The dynamics of continued economic growth might be significantly impacted by rising education levels. Investment in the health sector in the past has a direct relationship with current levels of education. In this context, past investments in health have implications for the development of education, demonstrating the complex interconnections between these sectors in shaping the direction of economic growth.

Keyword: Education, health, human capital, economic growth, indonesia.

JEL Classification : C22, I15, I25.

Background

One of the key metrics used to gauge a nation's welfare is economic growth. An rise in the value of the products and services produced by a nation during a specific time period is referred to as economic growth. Economic growth is influenced by various factors, both internal and external, which interact with each other and have an impact on economic performance (Alim, 2022).

One of the internal factors considered important in determining economic growth is human capital. Human capital is capital owned by human resources, such as knowledge, skills, health, and productivity. Human capital can be increased through investments in education and health, which are expected to increase the capacity and quality of the workforce (Mahmood, Wang, & Hassan, 2019).

Indonesia is a developing country with the fourth largest population in the world. Indonesia has great potential to achieve high and sustainable economic growth, if it is able to optimally utilize its human capital. However, Indonesia also faces various challenges and problems in human capital development, such as inequality in access to and quality of education and health, mismatch between demand and supply of labor, low innovation and productivity, and the impact of the Covid-19 pandemic. The concept of human capital was first introduced by Adam Smith, Smith stated that the human ability to work is one of the sources of a country's wealth. Smith also stated that education can improve these human abilities (Prasetyo & Kistanti, 2020). The concept of human capital was further developed by neoclassical economists, such as Gary Becker and Theodore Schultz. Becker explained that investment in education and health is one way to increase human capital. Schultz stated that human capital is an important production factor besides land, capital, and labor. Schultz also emphasized the importance of investment in education and health for economic development (Bashir, Thamrin, Farhan, Mukhlis, & Atiyatna, 2019).

The development of Paul Romer's endogenous growth theory was then based on the idea of human capital. Romer stated that human capital is the main factor that determines a country's long-term growth rate. Romer also stated that human capital can create new knowledge through a process of technological innovation and diffusion (Jabari, Roll, Bufe, & Chun, 2021).

Numerous empirical research have been carried out to investigate the impact of human capital on economic growth. These investigations are based on the idea and theory of human capital. Robert Barro's empirical study is one of the most well-known ones. Barro discovered that

economic development per capita is positively correlated with population education levels on average. Barro discovered that education quality, as determined by results on international tests, had a stronger impact than education quantity (Pelinescu, 2015).

Empirical research on the relationship between human capital and economic growth in Indonesia has also been carried out quite a lot by researchers, both local and international. One of the latest empirical studies is that conducted by Mutmainah et al. (2021), which uses panel data from 34 provinces in Indonesia from 2011 to 2020. Mutmainah et al. examines the effect of domestic investment (PMDN), foreign investment (PMA), and human capital on economic growth. Mutmainah et al. using the human development index (IPM) as a proxy for human capital, which includes aspects of health and education. The results of the research by Mutmainah et al. shows that PMDN has a positive and not significant effect on economic growth, FDI has a positive and significant effect on economic growth, human capital has a negative and significant effect on economic growth, and PMDN, FDI, and human capital together have a positive effect on economic growth.

Several conclusions are drawn from research by Mutmainah et al. (2021), including the fact that foreign investment is more effective than domestic investment in promoting economic growth in Indonesia and that human capital has a negative impact on economic growth as a result of the issue of the mismatch between the quality and quantity of labor and market needs, human capital needs to be increased through increased access, quality, and relevance of education and health for all Indonesian people, and investment in health and education must be balanced with investments in other fields, such as infrastructure, technology, innovation, and the environment.

Investments in public health, such as good access to health services, immunization programs, control of communicable diseases, and promotion of healthy lifestyles, have a significant impact on economic growth. Good health increases labor productivity, reduces absenteeism, and reduces long-term medical expenses. Healthy communities are also better able to take advantage of economic opportunities and participate actively in economic activities. Investment in education is also a key factor in the formation of human capital. A good education imparts knowledge, skills and analytical abilities to individuals, which has a positive impact on productivity and innovation. An educated workforce tends to have better access opportunities to better jobs, which in turn contributes to economic growth. Education also plays a role in increasing adaptability to technological changes and market demands. Healthy and educated people have greater potential to contribute to the economy through increased productivity, innovation and skills needed in various sectors of the economy. Investments in health and education not only provide short-term benefits in the form of increased individual income, but also form a solid foundation for long-term growth (Saleh, Surya, Annisa Ahmad, & Manda, 2020). Therefore, this study aims to analyze the correlation between human capital through health investment and education investment on Indonesia's economic growth.

Research Method

This study will analyze and examine the link between human capital investment and economic growth in Indonesia. Data is sourced from the World Bank with a measurable range of 2000-2020. The variables we use are health investment, level of education and economic growth which are analyzed using Vector Autoregressive (VAR) with the following systematic equations:

$$ECG_{it} = \beta_0 + \beta_1 HIN_{it} + \beta_2 EIN_{it} + e_{it} \quad \text{eq1 1}$$

$$HIN_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 EIN_{it} + e_{it} \quad \text{eq1 2}$$

$$EIN_{it} = \beta_0 + \beta_1 ECG_{it} + \beta_2 HIN_{it} + e_{it} \quad \text{eq1 3}$$

Information:

ECG = Economic Growth

HIN = Health investment
 EIN = Education investment
 β = Constant
 e = Error term
 t = Time Period

Result and Discussion

The unit root test needs to be done to find out which variables are stationary at a certain level. This test is intended to see and ensure there are no problems with data stationarity shown in table 1.

Table 1. Stationerity Test ECG, HIN, and EIN Result.

Variable	Level		First Difference	
	Prob.	Description	Prob.	Description
ECG	0.3129	Not fulfil	0.0293	Fulfil
HIN	0.9721	Not fulfil	0.0012	Fulfil
EIN	0.8501	Not fulfil	0.0123	Fulfil

Based on the stationary unit root test in table 1. All variables are stationary at the first difference level so there is no problem with data stationarity. Furthermore, the optimum lag determination test was carried out to determine the optimum lag to be used in this research study. The optimum lag test will be shown in below.

Table 2. Lag test result

Lag	LogL.	LR	FPE	AIC	SC	HQ
0	-52.23706	NA	0.133354	6.498477	6.645515	6.513093
1	-33.96287	27.94875*	0.045992*	5.407397*	5.995548*	5.465860*
2	-25.28504	10.20922	0.054339	5.445298	6.474562	5.547609

Based on the results of the optimum lag test in table 2, the lag that will be used as the optimum lag is lag 1. Then a VAR analysis was carried out which is shown in table 3.

Table 3. VAR Test Result

	ECG	EIN	HIN
ECG(-1)	0.265635 (0.36683) [0.72414]	-2.558979 (1.24566) [-2.05432]	0.081735 (0.10391) [0.78658]
HEIN(-1)	-0.077599 (0.11307) [-0.68627]	-0.081263 (0.38397) [-0.21164]	0.025105 (0.03203) [0.78380]
HIN(-1)	1.291669 (1.32656) [0.97370]	6.374462 (4.50465) [1.41509]	0.278647 (0.37577) [0.74154]
C	6.838537 (7.58666) [0.90139]	67.97133 (25.7623) [2.63841]	-0.158370 (2.14905) [-0.07369]

3 Based on the results of the VAR test listed in table 3 above, it can be concluded that there is a significant effect between ECG(-1) and EIN on the t-statistic value of [-2.05432]. This finding indicates that there is a strong link between education level and current economic growth. Furthermore, these results illustrate that an increase in the level of education can have a significant impact on the dynamics of economic growth in the ongoing period.

In addition, the results of the VAR test also show that there is a significant influence between HIN(-1) and EIN on the t-statistic value of [1.41509]. This fact confirms the relationship between investment in the health sector in the previous period and the level of education in the current period. That is, increased investment in health in the past can have a positive correlation with current developments in education, reflecting the complex interactions between these sectors in directing economic growth.

18 In addition to the previous findings, the results of the analysis also revealed that there was a significant effect between the ECG and HIN(-1) on the t-statistic value of [0.97370]. This indicates that factors such as the level of education and investment in health from the previous period still have an important impact on the current economic dynamics. These findings provide further evidence regarding the importance of continued interaction between the education and health sectors in shaping a more robust and sustainable direction of economic growth.

17 Overall, the results of this VAR analysis show that there is a significant relationship between variables such as ECG, EIN, and HIN(-1) with different t-statistics. These findings show the importance of looking at the framework of interaction between the education sector, health investment, and other factors in understanding economic growth patterns and formulating appropriate policies to achieve sustainable economic development.

Conclusion

We discovered a significant relationship between educational attainment and recent economic expansion. The dynamics of continued economic growth might be significantly impacted by rising education levels. Investment in the health sector in the past has a direct relationship with current levels of education. In this context, past investments in health have implications for the development of education, demonstrating the complex interconnections between these sectors in shaping the direction of economic growth.

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