

# Education, Work Participation and Economic Growth in Indonesia

Authors:

Imro'atul Husna Afriani, S.S., M.Pd

English Education Study Program, University of 17 August 1945 Banyuwangi

Email: imroatul.h.afriani@untag.banyuwangi.ac.id

Eny Lestari Widarni

Affiliation: STIE Jaya Negara Tamansiswa Malang

Corresponding email: enylestariwidarnimalang@gmail.com

## Abstract

This study investigates the role of education on work participation and economic growth in Indonesia. We use secondary data from world banks and quantitative analysis methods Vector Autoregression. We find that education plays an important role in increasing work participation and economic growth.

**Keywords:** Education, Work Participation, Economic Growth

**JEL Classification :** C10, J24

## Introduction

Indonesia is one of the countries with a large population (Meilianti et al, 2021). A large population can be a valuable asset in improving community welfare (Mamun et al, 2020). Community welfare can be formed naturally by encouraging work participation (Baerlocher et al, 2021). To encourage work participation, sufficient human capital is needed (Iskhakov & Keane, 2020). Sufficient human capital can encourage work participation in society. Human capital enables humans to be economically productive, which is work participation in economic development.

Education plays an important role in increasing people's knowledge and ability to absorb information and increase expertise in their respective fields (Durnali, 2019). Thus, work participation in society increases which has an impact on increasing income and encouraging economic growth (Agasisti & Bertolotti, 2020). Economic growth that is driven by work participation indicates that the population is a valuable asset in increasing national productivity (Heathcote et al, 2017). A large number of people who are educated and have sufficient human capital can drive economic growth (Han & Lee, 2020).

## Literature Review

Education is a mechanism for developing thinking skills, absorbing information and knowledge and the ability to acquire new skills (Bottomley et al, 2019). Education plays an important role in developing human capital nationally. Good education encourages economic growth and ultimately increases the ability of the community

and the state to invest in human capital in the form of investment in the education sector (Spring, 2015).

Education encourages the development of human capital nationally which has an impact on increasing human capital in society which is needed for work participation (Adejumo et al, 2021). Human capital owned by the community has an impact on the ability of society to increase productive activities and ultimately enables the community to promote welfare and economic growth through work participation mechanisms (Azizi, 2018). Educational investment is driven by the need for sufficient human capital for productive activities. Of course, investment in education itself requires financial capital obtained from the income from these productive activities. Productive activities carried out by the community economically are activities in the form of work participation in accordance with their respective fields in society (Blanchard & Olney, 2017).

The greater the work participation of the community, the more productive the community will have an impact on increasing income. Increased income has an impact on increasing education investment so that education services are getting better and in the end, increasing human capital which encourages work participation resulting in economic growth and the result of this productive activity is income that can be invested in education to encourage human capital and continue like that so that the economy can continue growing.

### **Research Method**

The type of data used in this study is quantitative data, while the data source in this study is secondary data. Secondary data is data that already exists, and has been collected for research purposes. The data population can be defined as the set of all possible observations. The population in this study is all investment in education, work participation, and gross domestic products that occur in real terms in Indonesia. The sample in this study is represented by all investment in education, work participation, and gross domestic products recorded by the world bank.

To obtain representative data (sample), as a basis for determining this sample, the authors do several ways, including:

- Library research, namely by studying the literature related to the title.
- Collect secondary data from the World Bank.

This study using the VAR method to see the response and impulse between variables so that the dependent variable in this study is education investment, work participation, and gross domestic product.

Independent variables are variables that are believed to be predictors that cause fluctuations in the dependent variable. The independent variable of this study uses the VAR method to see the response and impulse between variables so that the independent variables in this study are education investment, work participation, and gross domestic product.

Based on the mathematical model and literature review, it is possible to simulate the likelihood of responses and impulses between variables with unknown future economic data. To see the responses and impulses of the key economic variables that

we discuss in this journal, we use the Vector Autoregression (VAR) method to estimate the likelihood that could happen in the future based on forecasting simulations or forecasting. Follows the following equation model:

$$Y_t = C + A_1 Y_{t-1} + \dots + A_p Y_{t-p} + e_t$$

Where  $Y_t = (Y_{1t}, \dots, Y_{Kt})$  is the set of  $K$  time series of variables,  $c$  is  $K \times 1$  vector of constants,  $A$  is  $K \times K$  coefficient matrix and  $e_t$  is error terms

The vector Autoregression Model (VAR) is an extension of the univariate autoregression model for multivariate time series data. The VAR model is a multi-equation system in which all variables are treated as endogenous (dependent). There is one equation for each variable as the dependent variable. We focus on simulating pre-corona response and impulse based on past data sets for the period 2000 to 2019 with the assumption that variables outside the key variables we studied do not change.

### Results and Discussion

In understanding the relationship between variables using the Vector Autoregression analysis tool in analyzing the interconnectivity relationship of Education, Community Work Participation and Economic Growth. The results of the estimation of the Vector Autoregression are shown in the following table:

**Table 1.** Vector Autoregression Estimation Results

	GDP	EDUCATION	PARTICIPATION
GDP(-1)	2.209061	0.065072	1.14E-05
	-0.256	-0.01359	-1.20E-05
	[ 8.62928]	[ 4.78884]	[ 0.92800]
GDP(-2)	-1.449128	-0.069819	-2.33E-05
	-0.33705	-0.01789	-1.60E-05
	[-4.29939]	[-3.90255]	[-1.43944]
EDUCATION(-1)	-30.15702	-0.71994	6.13E-05
	-5.51845	-0.29292	-0.00027
	[-5.46476]	[-2.45783]	[ 0.23118]
EDUCATION(-2)	16.97125	1.044586	0.000321
	-7.56602	-0.4016	-0.00036
	[ 2.24309]	[ 2.60105]	[ 0.88210]
PARTICIPATION(-1)	5559.829	264.2869	1.004619
	-6451.73	-342.455	-0.31008
	[ 0.86176]	[ 0.77174]	[ 3.23985]
PARTICIPATION(-2)	16614.78	703.9457	-0.05018
	-6466.22	-343.224	-0.31078
	[ 2.56947]	[ 2.05098]	[-0.16147]
C	-2.05E+12	-9.06E+10	5981958
	-4.80E+11	-2.50E+10	-2.30E+07
	[-4.27653]	[-3.56842]	[ 0.26007]
R-squared	0.994801	0.991068	0.991188
Adj. R-squared	0.991966	0.986197	0.986382

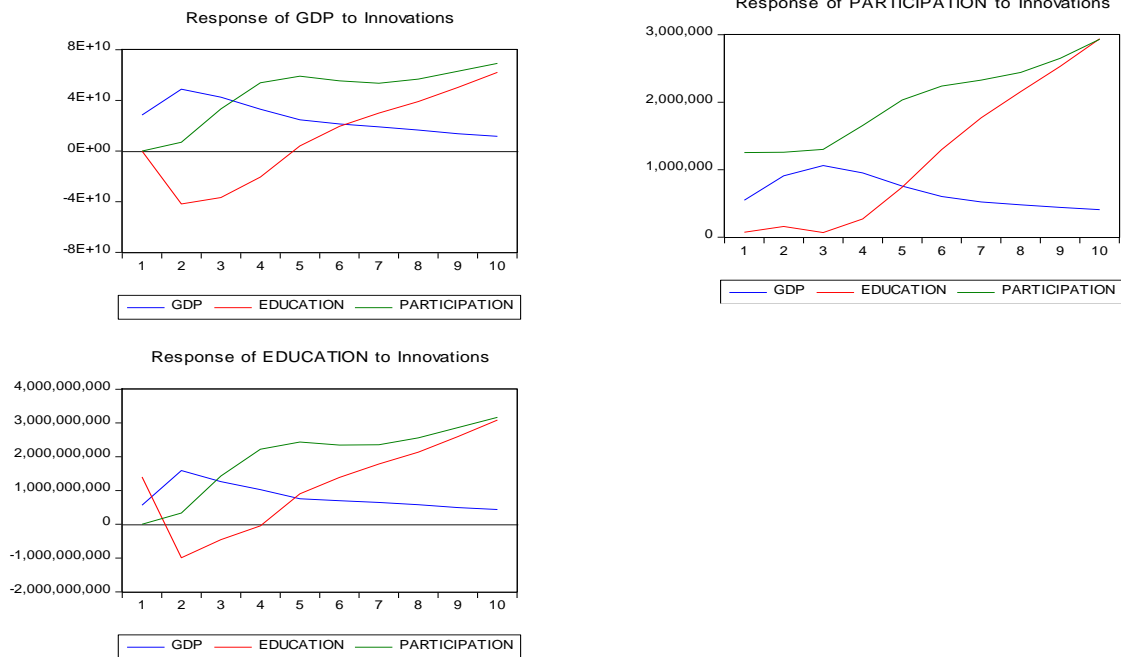
Sum sq. resids	8.92E+21	2.51E+19	2.06E+13
S.E. equation	2.85E+10	1.51E+09	1368402
F-statistic	350.8251	203.4293	206.2204
Log likelihood	-454.4078	-401.5605	-275.4334
Akaike AIC	51.26753	45.39561	31.38149
Schwarz SC	51.61379	45.74186	31.72774
Mean dependent	6.75E+11	2.34E+10	1.16E+08
S.D. dependent	3.18E+11	1.29E+10	11726074
Determinant resid covariance (dof adj.)	2.49E+51		
Determinant resid covariance	5.69E+50		
Log likelihood	-1128.435		
Akaike information criterion	127.715		
Schwarz criterion	128.7537		
Number of coefficients	21		

From the estimation results of the Vector Autoregression, as shown by the table that all variables have a significant effect, the significance of the variable is seen by comparing the t-statistical value of the variable with the T-table. The results of the analysis show that the previous GDP variable has an effect on the current GDP and the previous GDP has an effect on education now. However, there are positive and negative influences where when there is a negative effect, it indicates the use of income to invest in human capital which has an impact on increasing income and work participation in the future. And, the cycle detected from the analysis tool continues over time so that it can be understood that the cycle of investment, work participation and economic growth is sustainable. The Impulse Response Function (IRF) describes the response of an endogenous variable to the shock that occurs in other variables at one VAR dynamic system.

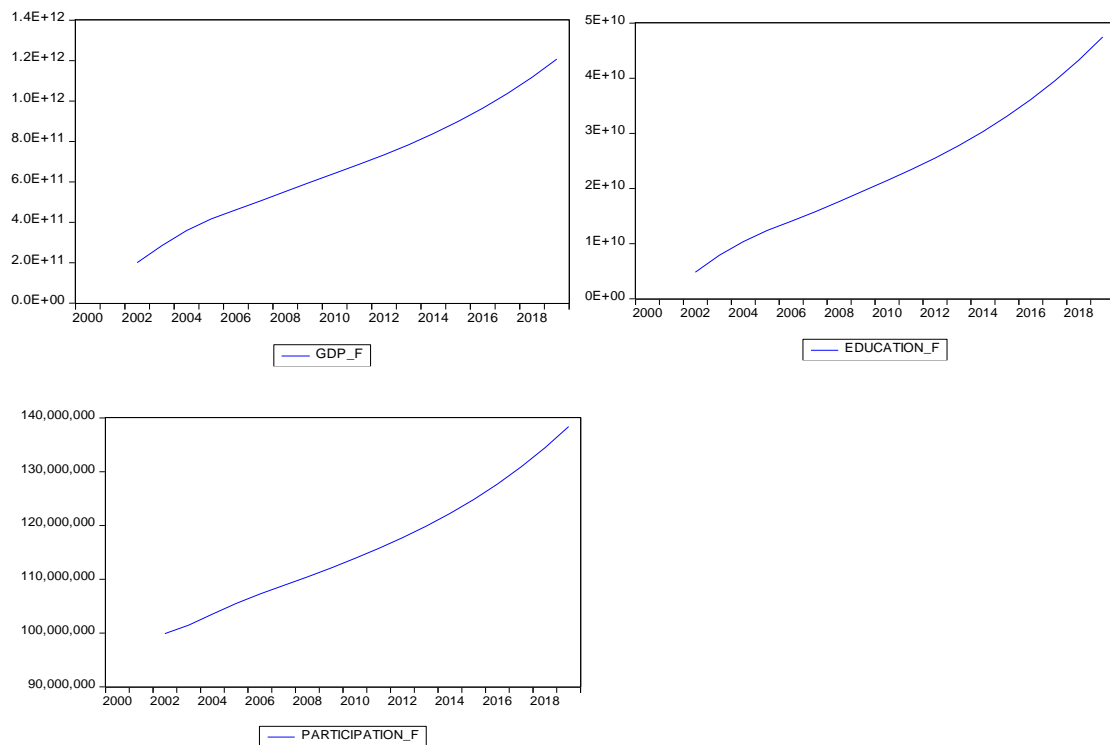
IRF can be used to see the effect of fluctuation or shock from one variable on the value of another variable, either at present or in the future. By understanding the impulse response, past data behaviour can be understood to predict or predict and simulate what will happen in the future. So that a policy can be decided in achieving a goal. For example, the amount of human capital investment needed to improve the economy and increase employment is needed by looking at the potential impact of increasing work participation. This is important to prepare available jobs to welcome the potential for increased work participation caused by increased human capital. Because economic growth is the impact of increasing work participation. The results of the Impulse Response Function (IRF) are shown in chart 1.

### Graph 1. Results of the Impulse Response Function (IRF)

Response to Cholesky One S.D. (d.f. adjusted) Innovator



From the results of the impulse response, it can be seen that there is an increase in GDP as a result of past investment in the first and second year periods and a human capital investment cycle occurs so that there is a decrease in GDP followed by an increase in education and work participation. When the investment process and increased work participation is complete, a surge in economic growth will follow. To predict a future economic spike assuming no major shocks after 2019 are as follows:



If seen from the results of the impulse response in the form of a GDP graph, it has a negative relationship with work participation and education. However, when forecasting the data movement is in a unidirectional direction. This shows a relationship between human capital investment through education and GDP which is an indicator of income. Where to improve education requires investment costs taken or obtained from GDP so that in the investment period GDP is used for human capital investment when the human capital investment process in the form of an educational mechanism does not occur in real economic production in the form of goods and services but the consumption process in the form of educational services.

However, along with the education process, there is an increase in human capital which encourages work participation so that in the impulse response the direction of the education graph and work participation is in the same direction. And the next process occurs a boost to economic growth as a result of encouraging work participation. This push occurred in the same year. Because the impulse response graph is in the form of a processing period so that it looks like the one presented and the process can be understood when presented forecasting or forecasting of the relationship between the GDP process, human capital investment through the education process and work participation.

### **Conclusion**

Encourage economic growth, it can be done through human capital investment through educational mechanisms. Where education encourages community work participation which in turn encourages economic growth.

### **Reference :**

Adejumo,O.O., Asongu,S.A., Adejumo,A.V. (2021).Education enrolment rate vs employment rate: Implications for sustainable human capital development in Nigeria. *International Journal of Educational Development*, Volume 83, May 2021, 102385. DOI : <https://doi.org/10.1016/j.ijedudev.2021.102385>

Agasisti,T., Bertolotti,A. (2020).Higher education and economic growth: A longitudinal study of European regions 2000–2017.*Socio-Economic Planning Sciences*.DOI :<https://doi.org/10.1016/j.seps.2020.100940>

Azizi,S.S. (2018).The impacts of workers' remittances on human capital and labor supply in developing countries.*Economic Modelling*.Volume 75, November 2018, Pages 377-396. DOI : <https://doi.org/10.1016/j.econmod.2018.07.011>

Baerlocher,D., Parente,S.L., Rios-Neto,E.(2021).Female Labor Force Participation and economic growth: Accounting for the gender bonus.*Economics Letters*.Volume 200, March 2021, 109740. DOI : <https://doi.org/10.1016/j.econlet.2021.109740>

Blanchard,E.J., Olney,W.W. (2017).Globalization and human capital investment: Export composition drives educational attainment.*Journal of International Economics*, Volume 106, May 2017, Pages 165-183. DOI : <https://doi.org/10.1016/j.jinteco.2017.03.004>

- Bottomley,J., Maude,K, Prymachuk,S.(2019).Critical Thinking Skills for your Education Degree. St Albans : Critical Publishing
- Durnali, M.(2019).Utilizing Technology, Knowledge, and Smart Systems in Educational Administration and Leadership. Hershey : IGI Global
- Han,J.S., Lee,J.W.(2020).Demographic change, human capital, and economic growth in Korea.Japan and the World Economy.Volume 53, March 2020, 100984. DOI :<https://doi.org/10.1016/j.japwor.2019.100984>
- Heathcote,J., Storesletten,K., Violante,G.L.(2017).The macroeconomics of the quiet revolution: Understanding the implications of the rise in women’s participation for economic growth and inequality.Research in Economics.Volume 71, Issue 3, September 2017,Pages 521-539. DOI :<https://doi.org/10.1016/j.rie.2017.03.002>
- Iskhakov,F., Keane,M.(2020).Effects of taxes and safety net pensions on life-cycle labor supply, savings and human capital: The case of Australia.Journal of Econometrics. DOI : <https://doi.org/10.1016/j.jeconom.2020.01.023>
- Mamun,S.A.K., Rahman,M.M., Khanam,R.(2020).The relation between an ageing population and economic growth in Bangladesh: Evidence from an endogenous growth model.Economic Analysis and Policy.Volume 66, June 2020, Pages 14-25.DOI: <https://doi.org/10.1016/j.eap.2020.02.001>
- Meilianti,S., Smith,F., Ernawati,D.K., Pratita,R.N., Bates,I.(2021).Research in Social and Administrative Pharmacy. DOI :<https://doi.org/10.1016/j.sapharm.2021.03.003>
- Spring,J.(2015).Economization of Education: Human Capital, Global Corporations, Skills-Based Schooling. London : Routledge