

Original Article

The Effect of Human Capital and Unemployment Rate on Economic Growth on the Island of Sumatra

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Abstract - This study aims to analyze the effect of human capital and the open unemployment rate on economic growth on the island of Sumatra. This type of research is quantitative, using the random effect (REM) method. The data used is annual secondary data between time series on the island of Sumatra in the period 2012-2019. The results showed that the variable school enrollment rate (APS) and life expectancy (AHH) had a positive and significant effect on economic growth on the island of Sumatra. Meanwhile, the open unemployment rate (TPT) has a negative and significant effect on economic growth on the island of Sumatra.

Keywords - Human capital, School enrollment rate, Life expectancy, Unemployment rate, Economic growth.

I. INTRODUCTION

Investments can be made not only in physical, but also in non-physical fields. Physical investment includes buildings such as factories and employee housing, machinery and equipment, and inventories such as raw materials, semi-finished goods, and finished goods. Non-physical investment includes education, training, migration, health care and employment. Non-physical investment, better known as human resource investment, is the amount of funds spent and the opportunity to earn income during the investment process. The income during this investment process is in return and is expected to earn a higher level of income to be able to achieve a higher level of consumption. Such investment is called human capital. The word human capital became famous when Mincer (1958) published his article entitled "Investment in Human Capital and Personal Income Distribution". After Mincer's publication, the term human capital was more popularly known since Gary S. Becker, a Nobel laureate in economics, made a publication entitled "Human Capital" (Becker, 1964) about human capital with an emphasis on the importance of education. Increased education will encourage technological progress, income and population.

After that Theodore W. Schult (1959) and other economists began to discuss the impact of investment in human resources for economic growth, then this matter became a concern. The discussion on this issue is that the relationship between investment in human resources and productivity began to spread, especially after the emergence of Gary S. Becker with his analysis of Human Capital (Warsito Jati, 2002). The main concept of human capital according to Becker (1993) is that humans are not just resources but are capital that produces returns and every expenditure made in order to develop the quality and quantity of capital is an investment activity.

Human Capital is a noun that is defined as the expertise, knowledge, and experience possessed by individuals or residents, viewed in terms of individual value or costs for an organization or country. Bellante in 1983 stated that human capital is funds or individual expenditures that are invested in the stock of producing power or called earning power. The concept of human capital according to the modern view was pioneered by Schultz (1960) and Becker (1964). In its development, the concept of human capital can be explained as the ability or capacity either from birth or descent or collection formed during productive working age followed by other forms of capital or inputs aimed at achieving economic stability. Another definition mentions more specifically the concept of human capital is basically education or intellectual, skills and work experience (Yan et al. 2003). The term human capital is then generally defined as the accumulation of education, including working age knowledge and skills accumulated through formal education, training and experience.

According to Becker, education received at school, computer training, health spending, good and timely education, and honesty are also capital. This condition can be seen that a person will find it easier to increase income and health and can guarantee a better life. Therefore, economists have agreed to pay more attention to the costs of education, training and health which are important investments for human capital. It is said that human capital is because humans cannot be separated from knowledge, skills and



invaluable health from money and physical assets (The Concise Encyclopedia of Economics 2002).

Becker adds that formal education is not the only way to invest in human capital. Apart from investing in education, workers must also learn and join training through training outside of working time especially for non-permanent work. This is because most universities do not provide such training to students while they are in college. Therefore, to enter the world of work, especially precarious work, these prospective workers must attend formal and informal training programs. For some jobs, training is available while working for employees. However, the amount of training available on the job is limited in terms of time. Thus, training outside of work time is also very necessary, especially to understand a complex job that takes a long time.

Having a higher level of education guarantees ongoing improvements in the level of technology people use. Thus accelerating the realization of the Vision of the Unitary State of the Republic of Indonesia, (National Development Planning Agency, 2019) President Joko Widodo initiated the "Indonesian Dream 2015-2085", namely: (1) Indonesian human resources whose intelligence outperforms other nations in the world; (2) Indonesian people who uphold pluralism, culture, religion and uphold ethical values; (3) Indonesia becomes the center of world education, technology and civilization; (4) The public and government officials are free from corrupt behavior; (5) The development of infrastructure that is evenly distributed throughout Indonesia; (6) Indonesia becomes an independent country and the most influential country in the Asia Pacific; and (7) Indonesia is a barometer of world economic growth. In realizing this dream, the Vision of Indonesia Year 2045 was formulated with 4 (four) pillars, namely: (1) Human Development and Mastery of Science and Technology, (2) Sustainable Economic Development, (3) Equitable Development, and (4) Consolidating National Resilience. and Governance.

Open unemployment is a workforce who really does not have a job. This type of unemployment is quite a lot because they have not got a job even though they have tried their best and as a result the increase in job vacancies is lower than the increase in the workforce. The effect of this situation in a long period of time they do not do a job. So they are unemployed for real and half the time, and hence the name open unemployment. Open unemployment can also exist as a result of declining economic activity, from technological advances that reduce the use of labor, or as a result of a decline in the development of an industry. In talking about unemployment, what is always considered is not about the number of unemployed, but about the unemployment rate expressed as a percentage of the labor force. To see the affordability of workers (employment opportunities), the formula for the Open Unemployment Rate is used. The definition of the open unemployment rate is the percentage

of the population who are looking for work, who are preparing for a business, who are not looking for work, because they feel it is impossible to get a job, who already have a job but have not started working from the existing workforce. The open unemployment rate provides an indication of the working age population that is included in the unemployed group. The unemployment rate is measured as a percentage of the number of unemployed to the total labor force. To measure the open unemployment rate in an area, it can be obtained from the percentage dividing the number of unemployed by the number of the labor force and expressed in percent.

Previous research relevant to this study, P. Eko Prasetyo (2008), In the process of complete and sustainable economic development, macroeconomic stability of a country is an important prerequisite to produce quality economic growth. To achieve quality economic growth, it is necessary to invest in sustainable human resources and use science and technology in a sustainable manner. The process of economic development will be able to change the condition of society from a vicious circle to a vicious circle if the economic growth is of good quality. Marno Kastowo (2011), regarding the role of human capital for economic growth from 1970-2008, that human capital with life expectancy, basic education, and labor productivity is proven to have a positive influence on the significance of economic growth. Efforts to increase human capital through education, health and work productivity need to be carried out consistently to promote sustainable economic growth. Hayat Abdullah (2014), to improve people's welfare requires a comprehensive synergy between human capital and adequate infrastructure development, of course this must be supported by a fiscal restructuring in policy making as well as substantive and accommodative reallocation. So that in the implementation of AFTA 2015, Indonesia is ready to become a trend setting in increasing economic growth, community welfare, increasing human resources and integrative development.

This research was conducted to analyze the effect of human capital and open unemployment on economic growth on the island of Sumatra. By looking at the influence of the School Enrollment Rate (APS), Life Expectancy (AHH) and Open Unemployment Rate (TPT) on economic growth on the island of Sumatra from 2012-2019.

II. RESEARCH METODHOLOGY

The approach used in this study is a quantitative descriptive approach. This study uses panel data, a combination of time series data for the period 2012-2019 and cross section data consisting of 10 provinces on the island of Sumatra to analyze the effect of human capital and the open unemployment rate on economic growth. model of this research are:

$$PE = \beta_0 + \beta_1 APS_{it} + \beta_2 AHH_{it} + \beta_3 TPT_{it} + \varepsilon_{it}$$

Where,

- PE : Economic growth
- β_0 : Intersep / constant
- APS : School Participation Rate
- AHH : Life expectancy
- TPT : Open Unemployment Rate
- E_t : Error term

A. Model Selection Method for Panel Data

a) Chow test

Chow test is used to determine the better approach between Pooled Least Squared/PLS and Fixed Effect Model (FEM). The basis for rejecting the hypothesis above is to compare the F-statistical calculation with the F-table if the result of F-statistic > F-table, the most appropriate model to use is the Fixed Effect Model (Widarjono, 2013).

b) Hausman test

Hausman test plays a role in choosing the Fixed Effect Model (FEM) or Random Effect Model (REM). With the condition that if Chi-Squared statistic < Chi-Squared table, then the correct REM is used.

c) Langrange Multiplier Test

The Langrange Multiplier (LM) test is performed to determine whether the Random Effect or Common Effect model is more appropriate. The LM test is carried out by looking at the LM value of the Breusch-Pagan. If the LM statistical value is greater than the chi square statistical value at a level of significant 5%, the appropriate Random Effect model is used.

B. Classic assumption test

a) Normality test

The data is normally distributed by comparing the Jarque-Bera probability value with a significance level of 0.05. If the Jarque-Bera probability > α 0.05 then it could be said that the residuals are normally distributed (Gujarati, 2013).

b) Multicollinearity Test

One way to check for multicollinearity is to look at the unknown values between the independent variables in the model. If the value of each correlation coefficient is greater than the rule of thumb (0.8), then the model contains multicollinearity (Gujarati, 2013).

c) Heteroscedasticity Test

Heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from one observation to another observation. The model says it contains heteroscedasticity if the White statistic > chi-square table and vice versa (Gujarati, 2013).

d) Autocorrelation Test

One of the tests to detect autocorrelation is the Durbin-Watson test. The Durbin-Watson (DW) statistic value from the calculation using Eviews was then compared with the DW table value. Determining the area is assisted by DL and DU table values (Gujarati, 2013).

C. Hypothesis testing

a) Coefficient of Determination (R^2)

The value of the coefficient of determination R^2 is used to measure how much the independent variables together could explain the variation of the dependent variable used in the research. The value of R^2 lies between zero and one. The closer to one, the better model.

b) t-statistic test

The t-statistic test was used to determine whether the independent variable partially had a significant effect on the dependent variable at level $\alpha = 0.05$. With the criteria t-statistic > t-table. Then it could be shown that the independent variable, partial, dependent variable and vice versa.

c) F-statistics test

The F-Statistic test is used to prove whether the independent variables used in the research together significantly affect the dependent variable. With Criteria F-statistics > F-table then it could be said that independent variables are together affected the independent variable and vice versa (Widarjono, 2013).

III. RESULT

Based on the estimation results of the model selection test by comparing the values of the Chow test, Hausman test and LM test that have been carried out, the appropriate panel data model is the Random Effect Model (REM).

A. Classic assumption test

From the classical assumption test that has been done, the panel data regression model in this research is normally distributed, free from multicollinearity and free from heteroscedasticity or homoscedasticity. The standard OLS estimation model could not be a matter of space and time. Thus it is possible that unobservable effects on exports could be correlated to several explanatory variables. REM has the advantage of being able to overcome the problem of this type of explanatory variable, but produces inconsistent estimators because it ignores the display between the unobserved effect in the error and the explanatory variable (Trung Kien, 2009). The following are the results of panel data regression using a random effects model.

Table 1. Regression Results of Random Effect Model

Variable	Coefficient	t-Statistic	Prob.	Conclusion
Constant	81.21444	4.877021	0.0000	-
APS	0.085548	3.084208	0.0028*	Significant
AHH	1.033955	4.292621	0.0001*	Significant
TPT	-0.472537	-4.929338	0.0000*	Significant
R-squared	0.457725			
F-statistic	21.38344			

Description: (*) 5% significant.

B. Hypothesis testing

a) Coefficient of Determination (R2)

The results of this study indicate the R2 value of 0.457725. This indicates that 45% of the value of economic growth on the island of Sumatra is jointly influenced by the school enrollment rate (APS) of higher education, life expectancy (AHH) and the open unemployment rate (TPT). While the remaining 55% is influenced by other factors outside the model.

b) F-Statistics Test Results

In this research, using a significance level of 5% (0.05), degrees of freedom (df) 1 = k-1 (3-1), df2 = nk (80-3) with the criteria k is the variable and n is the number of observations. The F-statistic value is 21.38344 > F-table is 3.12 so that the independent variable in this case has a significant or overall effect on the economic growth variable on the island of Sumatra.

c) T-statistics test results

By using a significance level of 5% ($\alpha = 0.05$) and degrees of freedom (n-k-1) = 76, the t-table value is 1,66515. So it could be said that each variable has an effect on on the economic growth variable on the island of Sumatra.

IV. DISCUSSION

A. Effect of Human Capital on Economic Growth on the Island of Sumatra

Based on the results of research estimates, it can be seen that the school enrollment rate (APS) of higher education has a positive and significant influence on economic growth on the island of Sumatra. With a coefficient value of 0.085548 to economic growth on the island of Sumatra, so that if the school enrollment rate (APS) in higher education increases by 1 percent, economic growth on the island of Sumatra will increase by 0.085548 percent. Likewise, life expectancy (AHH) has a positive and significant influence on economic growth on the island of Sumatra. With a coefficient value of 1.033955 for economic growth on the island of Sumatra, so that if the life expectancy (AHH) increases by 1 percent, economic growth on the island of Sumatra will increase by 1.033955 percent.

From the two explanations above, it can be explained that human capital has a positive and significant influence on economic growth on the island of Sumatra.

B. Effect of the Open Unemployment Rate (TPT) on Economic Growth on the Island of Sumatra

Based on the estimation results of the study, it can be seen that the open unemployment rate (TPT) has a negative and significant effect on economic growth on the island of Sumatra. With a coefficient value of -0.472537 for economic growth on the island of Sumatra, so that if the open unemployment rate (TPT) increases by 1 percent, economic growth on the island of Sumatra will decrease by -0.472537 percent.

V. CONCLUSION

The results of data analysis that have been carried out show that the increase in human capital has a positive and significant effect on increasing economic growth on the island of Sumatra. Meanwhile, the open unemployment rate (TPT) has a negative and significant effect on economic growth on the island of Sumatra.

VI. SUGGESTION

The implementation of human capital is expected to be able to open up opportunities to increase economic growth and welfare so that it is necessary to improve the quality, quantity and existing education and health facilities. By increasing the level of education, it can produce human resources who can compete in the world of work and can create new jobs to reduce the unemployment rate on the island of Sumatra.

REFERENCES

- [1] Abdullah, Hayat. 2014. Realokasi Kebijakan Fiskal: Implikasi Peningkatan Human Capital dan Pembangunan Infrastruktur Terhadap Pertumbuhan Ekonomi dan Kesejahteraan Masyarakat. *Jurnal Bina Praja* , 6(2)(2014) 117 – 128
- [2] Adriani, Evi.. Pengukuran Modal Manusia (Suatu Studi Literatur). *J-MAS (Jurnal Manajemen dan Sains)*, 4(1)(2019)176-183
- [3] Anwar, Aminuddin. 2017. Peran Modal Manusia Terhadap Pertumbuhan Ekonomi Regional di Jawa. *JURNAL ECONOMIA*, 13(1) (2017).
- [4] Arsyad, Lincolin. 2010. *Ekonomi Pembangunan*. Yogyakarta: UPP STIM YKPN.
- [5] Atmanti, Hastarini Dwi. 2005. Investasi Sumber Daya Manusia Melalui Pendidikan. *Dinamika Pembangunan Vol. 2 No. 1*. Juli 2005 : 30-39
- [6] Baron, Angela dan Michael Armstrong. 2013. *Human Capital Management*. Jakarta Pusat: Penerbit PPM.
- [7] Barro, Robert J, Jong-Wha Lee. 1993. *International Comparison of Education Attainment*. NBER Working Paper No.4349
- [8] Barro, Rober Jt; Sala-I-Martin, Xavier. 1999, *Economic Growth*. McGraw-Hill. Inc
- [9] Becker, Gary S. 1993 *Human Capital, A Theoretical and Empirical Analysis, With Special Reference to Education*. University of Chicago.

- [10] Bellante, Don. A Subjectivist Essay on Modern Labor Economics. *Managerial and Decision Economics* 4 (4) (1983) 234-245.
- [11] Boediono. 1982. *Pengantar Ilmu Ekonomi No.2, Ekonomi Makro*. Yogyakarta: BPPE
- [12] Budiarty DA, Ida. 2019. *Ekonomi Sumber Daya Manusia*. Bandar Lampung: Pustaka Media.
- [13] Ehrenberg. 2003. Financing Higher Education Institution in the 21st Century. *Econometric Studies of Higher Education*.
- [14] Fahmi, Mohamad, Yeni Oktavia Mulyono. 2015. Pendidikan, Human Capital atukah Signaling? Studi Kasus Indonesia. *JEPI*, 15(2) 2015
- [15] Gujarati, Damodar N. 2006. *Ekonometrika Dasar*. Jakarta : Penerbit Erlangga.
- [16] H. A. R Tilaar. 2000. *Pendidikan Abad ke-21 Menunjang Knowledge-Based Economy*.
- [17] Jojo, Abel Gandhi, Endang Sari Simanullang, Ana Frasila. 2019. Analisis Human Capital Terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal OPTIMA II*
- [18] Mankiw, N. Gregory. 2007. *Makroekonomi Edisi Keenam*. Penerbit Erlangga.
- [19] Maulana, Ridwan. 2015. Pengaruh Human Capital Terhadap Pertumbuhan Ekonomi Regional di Provinsi Jawa Tengah. *Economics Development Analysis Journal* 4 (2) (2015)
- [20] Mincer, J. 1958. Investment In Human Capital and Personal Income Distribution. *Jurnal of Poliyical Economy*. 66(4) (1956) 281-302.
- [21] Prasetyo, P Eko. 2008. The Quality Of Growth: Peran Teknologi dan Invenstasi Human capital Sebagai Pemacu Pertumbuhan Ekonomi Berkualitas. *JEJAK*, 1(1)(2008).
- [22] S. Muhamad, Nor Fatimah Che Sulaiman, J. Saputra. 2018. The Role of Human Capital and Innovation Capacity on Economic Growth in ASEAN-3. *Jurnal Ekonomi Malaysia* 52(1) 2018 257 – 268
- [23] Schultz TW .1959. Human wealth and economic growth. *Humanist* 2:109–17
- [24] Sieng, Lai Wei, Ishak Yussof. 2014. Human Capital Accumulation and Economic Growth in Malaysia – Investigating the Long Run Nexus. *Jurnal Ekonomi Malaysia* 48(1) 2014 155 – 165
- [25] Solow, Robert (1988), Growth Theory and After, *American Economic Review*, June.
- [26] Sukirno, Sadono. 2008. *Makroekonomi Teori Pengantar*. Raja Grafindo Persada. Jakarta..
- [27] Sukoco, Iwan, Dea Prameswari. 2017. Pendekatan Human Capital untuk Pengelolaan Sumber Daya Manusia Yang Lebih Produktif. *Jurnal AdBispreneur*, 2(1)(2017) 93-104
- [28] Suparmoko. 1994. *Pengantar Ekonomika Makro, Edisi Ketiga*, BPFE, Yogyakarta.
- [29] Tarigan, Robinson. 2005. *Ekonomi Regional. Teori dan Aplikasi*. Jakarta. Bumi Aksara.
- [30] Teixeira, Pedro. 2014. Gary Becker's early work on human capital: Collaborations and distinctiveness, *IZA Journal of Labor Economics*, ISSN 2193-8997, Springer, Heidelberg, 3, 1-20
- [31] Todaro, Michael. P. 2000. *Economic Development*, 7th edition, Addison Wesley Longman.
- [32] Todaro, Michael. P. dan Semith, S. C. 2003. *Economic Development (8th Edition)*. Jakarta: Gelora Aksara Pratama.
- [33] Warsito Jati. 2002. Indonesia Krisis Sumber Daya Manusia. *EDENTS No. 6/XXVI/2002*, Semarang. Him : 7 – 9
- [34] Widarjono, Agus. 2013. *Ekonometrika Pengantar dan Aplikasinya*. Yogyakarta. UPP STIM YKPN.