JEE 9 (1) 2020 : 64-70

Journal of Economic Education

http://journal.unnes.ac.id/sju/index.php/jeec

The Impact of Quality of Education and Higher Education on Economic Growth

Arman Arman[1]✉, Budhi Purwandaya[2], Asep Saefuddin[3]

[1] Fakultas Bioindustri, Universitas Trilogi, Indonesia
[2] Fakultas Ekonomi dan Bisnis, Universitas Trilogi, Indonesia
[3] IPB University, Indonesia

Article Info

Article History :
Received December 2019
Accepted January 2020
Published June 2020

Keywords:
Economic Growth, Education, Higher Education, Quality

Abstract

Education is the basic capital to create quality economic growth. Skillful and competitive human resources are a source of basic capital to create religious industrial technological innovation in order to support quality economic growth. This study aims to (1) analyze the relationship between education and growth in Indonesia and (2) compile a formulation of education policy as an important driving factor in long-term growth. The observation units analyzed were 33 provinces in Indonesia in the period 2013-2015. The data is then analyzed using the Data Analysis Panel approach. The results showed that the level of prosperity and prosperity was positively correlated with regional economic growth. This shows that the more qualified human development and increasing prosperity, the better economic growth in the region. Furthermore, the better the quality of education, the better economic growth. This result is inversely proportional to the large number of universities where the number of tertiary institutions does not have an influence on regional economic growth. This shows that the number of universities does not have a positive effect if it is not balanced with the number of qualified lecturers.

✉ Correspondence :
Jl TM Pahlawan Kalibata Jakarta Selatan, Indonesia 12760
E-mail: arman@universitas-trilogi.ac.id

p-ISSN 2301-7341
e-ISSN 2502-4485

INTRODUCTION

Indonesia is the largest country in Southeast Asia, both from the aspect of area, population to natural resources. On the other hand, Indonesia and various parts of Indonesia are still considered "still slow to develop" when compared to other Southeast Asian countries such as Singapore, Thailand and Malaysia. The delay is mainly in the education sector and the quality of economic growth. This comparison can be seen clearly from the side of education expenditure on the Gross Domestic Product (GDP) among the 5 ASEAN countries. Indonesia is ranked fourth after (1) Thailand, (2) Malaysia and (3) Singapore.

Table 1. The percentage of Education expenditure on the GDP of several Asean countries

HDI Rank	Country	2000	2005	2006	2007	2008	2009	2010	2011	2012
9	Singapore	3.40	..	..	..	2.80	3.30	3.50	3.20	3.31
62	Malaysia	6.00	..	4.50	4.40	4.00	6.00	5.10	..	5.11
89	Thailand	5.40	4.20	4.30	3.80	3.80	4.10	3.80	5.80	5.81
108	Indonesia	..	2.90	3.60	3.00	2.90	3.50	3.00	2.80	2.81
117	Philippines	3.30	2.40	2.50	2.60	2.70	2.70	..	..	2.71

Source: UNDP, 2013, http://hdr.undp.org/en/content/expenditure-education-public-gdp

UNDP (2013) provides information on education expenditures, which are expressed as a percentage compared to the national output of a country, with the rank of the Human Development Index in that country, for various countries. The following table shows several selected countries in Southeast Asia. It appears that countries with a relatively low percentage of education expenditure have a lower Human Development Index (HDI) ranking compared to countries with a higher percentage. Slywester (2002) warns that the link between education and growth occurs not immediately, but over time. In other words, the benefits of education will be felt some time later.

The data shows that the Indonesian government's attention to education and human resources is still relatively low when compared to other ASEAN countries. Indeed, the greater the government's attention is reflected in the size of education and research allocations. This is important because skilled human resources are the basic capital to strengthen innovation and technology.

Education has an important role in the process of improving human well-being. The availability of education and health services is two important public goods that should be available to the people to improve their welfare. Furthermore, research and development variables, which at first may be private goods because they are carried out by private companies, can over time become public goods. As a public good, which can be in the form of education (Bose, Haque & Osborn, 2007), it will improve the quality and quantity of human resources, which in turn will accelerate the accumulation of increased resource capital. It is this increase in human resources which then encourages economic growth.

In 2016, Indonesia had a total of 4,512 tertiary institutions/colleges and a total of 5,153,971 students. However, the number of A-accredited colleges is only around 26 universities. Furthermore, only 2 universities are among the top 500 in the world according to QS World University Ranking, namely Indonesian Universities and Bandung Institute of Technology (ITB). The number of lecturers is 227,734 people, of which 18,883 who hold doctorates and 4,949 are professors. (Kementerian riset, teknologi & pendidikan tinggi, 2017)

Unfortunately, the support of human resources and the number of universities have not been supported by the quality of research. This is reflected in the number of Lecturer publications in Indonesia which is still smaller compared to Malaysia, Singapore and Thailand (in 2016). The progress in the field of research that has been achieved by the countries of Malaysia, Singapore and Thailand has an effect on the discovery and development of innovation and technology in the country. The discovery of innovation and technology can trigger industrial development and productivity.

The role of the government is very strategic to support the development of innovation and

technology. Therefore, the government needs to conduct intermediation between universities and the business world broadly related to research and industry support. The business world needs a touch of innovation to support the development of business worlds based on innovation and technology. On the other hand, the government needs to encourage research through universities to support the development of innovation-based industries (Todeva, 2013).

Todevo (2013) intermediation is meant that the government can provide strong legitimacy for universities to improve research performance and produce innovation and technology. On the other hand, universities need to produce religious innovations and technology in order to support the business and industry.

Etzkowitz & Ranga (2010) say that universities need to carry out hybrid institutions, namely the synergy between the government, the business world and universities. Higher education must be more open and broaden the horizons of research through an interdisciplinary research industry consortium. It needs to be supported by modern laboratories, financial institutions, technology-based companies and government institutions.

Etzkowitz & Ranga (2010) further emphasize that it is necessary to make a breakthrough in terms of regulation in order to accelerate the progress of the fields of innovation and technology. One of the expected breakthroughs is collaborating with universities to develop entrepreneurship in small and medium scale industries. Therefore, universities need to produce innovations that are not only useful in the large-scale business world but are able to create innovations and technologies used by small and medium enterprises. This suggests that universities must produce knowledge innovations that are relevant to the industry (Shin & Lee, 2012).

One of the characteristics of a developed country is a country that is supported by its income through the role of a strong entrepreneur. Entrepreneurs can develop more broadly if supported by various innovations and technologies. The role of universities is one of the institutions' responsible for transferring technology and innovation (Etzkowitz & Ranga, 2010).

Furthermore, entrepreneurship can drive economic growth and increase competitiveness. One of the supports needed by entrepreneurs is the availability of financial incentive. This support can help entrepreneurs to innovate various types of businesses. Furthermore, financial incentives encourage beginner entrepreneurs to dare to innovate and develop their business. The development of entrepreneurship can create better economic growth and create more qualified business environment (Feldman & Francis, 2004).

There are a number of studies that link education and economic growth. Interestingly, these studies are mostly carried out in developing countries, for example in Tunisia (Trabelsi, 2017), in Saudi Arabia (Ageli, 2013), in Iran (Jeyhoon Tabar et al, 2017), in Pakistan (Riazat, Atif & Zaman, 2013), in Ghana (Owusu-Nantwi, 2015) in ASEAN countries and the Pacific (Mallick, Das & Pradhan, 2016), although some are implemented in Canada (Annabi, et al., 2007).

The study generally explains the association between education, which is shown by the public budget for education, and economic growth. While this growth has not fully benefited if it does not result in improving the welfare of the majority of the community. Research analyzing the relationship between education and HDI has been carried out by Narayama (2006) and Tomas (2011). Research like this has also been done several times for the case of Indonesia, (Patriotika, 2011; Beauty, 2016).

This study aims to (1) analyze the linkages between education and regional economic growth in Indonesia and (2) formulate the formulation of education policies as an important driver of long-term growth.

METHODS

This research is an explanatory study, that explains and analyzes relationships between variables. What was observed was a change in the prosperity of the community in 33 provinces in Indonesia during the period 2013-2016, which was associated with educational variables and economic conditions in these provinces. The empirical model built is based on the thinking of the endogenous growth model proposed by Romer (1990). Where the driver of changes in

prosperity comes from within itself, namely human quality and research developed in the economy.

To explain this linkage, secondary data is needed from the agency or institution that provides the data, including the Central Bureau of Statistics and Bank Indonesia. For international secondary data data will be used published by UNDP, World Bank and IMF. To obtain data and information, national and international, a library study was conducted. The data is analyzed using the Data Analysis Panel approach. Regression is done with 2 approaches: fixed effect model and random effect model. The estimation results of the two models are then compared and tested with the Hausman test to choose a relatively better model.

Changes in prosperity are indicated by the rate of economic growth (growth), as the dependent variable. While the independent variable in this model is the level of community welfare shown by HDI, the prosperity of the community represented by income per capita (ycap). Educational variables consist of the quality of education shown by the ratio of students and lecturers (STDTech), while the education quantity is indicated by the number of colleges or universities (UNIV).

RESULTS AND DISCUSSION

The results of the empirical model estimation are shown in the Figure 1.

```
. xtreg growth hdi ycap stdtech univ,fe

Fixed-effects (within) regression               Number of obs      =        99
Group variable: prov                            Number of groups   =        33

R-sq:                                           Obs per group:
     within  = 0.3241                                         min =         3
     between = 0.1415                                         avg =       3.0
     overall = 0.0935                                         max =         3

                                                F(4,62)            =      7.43
corr(u_i, Xb)  = -0.9733                        Prob > F           =    0.0001

------------------------------------------------------------------------------
      growth |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         hdi |   .1833999   .0378902     4.84   0.000     .1076584    .2591414
        ycap |   .0001989    .000085     2.34   0.023      .000029    .0003688
     stdtech |  -.0683739    .023096    -2.96   0.004    -.1145421   -.0222056
        univ |  -.0076543   .0209721    -0.36   0.716     -.049577    .0342684
       _cons |  -11.94492   5.252418    -2.27   0.026    -22.44435   -1.445484
-------------+----------------------------------------------------------------
     sigma_u |  6.6265302
     sigma_e |  .86955358
         rho |    .983072   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(32, 62) = 8.96                     Prob > F = 0.0000
```

Source: Data Processed, 2020.
Figure 1. Model analysis results

Endogenous growth which considers that true capital is not only interpreted as investment and savings. Science is an important factor to produce skilled human resources. Advanced science can produce more modern technological innovations. It is needed by the industry to achieve a more efficient and optimum scale of production. This means that quality knowledge capital does not lead to gradual decline in yields but results in more recent technological

innovations in order to support the economic industry. Economic growth is an indicator in analyzing economic development that occurs in a country or region (Nur et al., 2013; Zuhdiyaty & Kaluge, 2017). Thus human capital will encourage output productivity instead of producing dimming returns. Human capital has a positive relationship with economic growth, so the implication is that education also has a positive relationship with productivity or economic growth (Nugroho, 2014).

The results of this study indicate that human resources are getting better, as a result of improved quality of education, proxied through a smaller ratio of lecturers and students giving a good influence on regional and national economic growth in aggregate. This shows that the availability of skilled and qualified teaching staff has an important role to produce skilled and innovative human resources. Skilled and innovative human resources are the basic inputs for the industry to innovate technology and services. Furthermore, technological innovation influences productivity and efficiency in the industrial and economic fields in the aggregate. The rapid economic growth in Asian countries and progressive changes in production towards high-tech industry and services have resulted in increased demands from the business world for the need for skilled and educated (quality) human resources, Nugrahadi & Rinaldi (2017).

Education is considered to have the most important role in determining human quality. The implication is that the higher the education, the human life will be of higher quality. In relation to the national economy, the higher the quality of life of a nation, the higher the level of growth and welfare of the nation (Arifin, 2019). In line with HDI which shows a positive influence on economic growth, this further reinforces that long-term human capital as an endogenous factor is able to avoid diminishing returns as predicted by Romer (1990). Furthermore, human development not only encourages economic growth but provides equal opportunities for each individual to earn a decent income. This is because every human resource has sufficient skills to support industries and services. Economic growth becomes more qualified because growth is not only represented by certain people but can be represented by the average of every human resource. Thus, better human capital not only encourages economic growth, but is able to create equitable income and the quality of growth itself. Improving the quality of human resources is an educational task. Education aims to develop human abilities and personality to meet the expectations of society (Fauzi, 2018).

The same results are also shown in the model that the greater per capita growth has a positive influence on economic growth. The increasingly positive per capita growth accompanied by improved HDI and the availability of skilled and skillful human capital have an influence on the quality of economic growth. However, the number of universities has a different influence on economic growth. The number of higher education institutions during the 2013-2015 period did not have an effect on economic growth. Government policies that provide leeway to develop human resources by opening educational institutions in each autonomous region are considered ineffective in helping each region strengthen the regional economy.Increasing the number of tertiary institutions does not have an impact on economic growth. The number of universities in Indonesia reaches 4,350, including private and Government University. This amount is far greater than in China, where the population is far greater than Indonesia. The large number of universities in Indonesia has grown since the era of regional autonomy. The era of autonomy, local governments are required to increase HDI. The efforts of the regional government to respond are to establish higher education institutions in the regions. Unfortunately, this effort has not been balanced with the supply of human resources and infrastructure facilities such as laboratories, learning buildings and supporting facilities for the learning process. This is what has the potential to cause the growth in the number of tertiary institutions not to have an influence on economic growth. Despite the increase in HDI, but not accompanied by the growth of technological innovation and research on a regular basis. As a result, the resources and existence of tertiary institutions have not been able to produce innovative energy to support the development of entrepreneurship and industry. As explained in

the research of Harlik et al. (2013) and Widiansyah (2017) that education makes a significant contribution to economic development, this has become an absolute and axiomatic justification.

It is the time to revitalize the existence of universities in Indonesia by the government. The government must focus more on fixing higher education institutions more seriously. Colleges do not have to be all world class universities or research universities, but each role must be divided into universities. The government's focus is to establish a number of universities that are deemed eligible for research university awards. Furthermore, other higher education institutions can be established as teaching university, local university, Agriculture University, Technology University, Entrepreneur University and others. This focusing is an effort to encourage higher education institutions to be more focused on developing technological innovations, especially technology in the industrial era 4.0. This is also in order to facilitate cooperation between businesses and industries with universities.

Universities that are considered to be still low in resources or have not carried out many research activities and are still very limited in terms of infrastructure should be "merged" with other universities in order to encourage efficiency and improve the quality of higher education. This is one of the efforts to increase the ratio of qualified teaching staff to the number of students. The merging of universities that are considered unproductive will facilitate consolidation and make it easier for the role of the state and government to plan and evaluate these developments. The government will also more easily regulate the allocation of funds for the development of research, entrepreneurship and development.

Furthermore, the government needs to intermediate between regional universities with small scale industries to large scale industries. The intermediation aims to synergize the needs of innovation in the industrial world with short-term and long-term plans for university research. Support for innovation and technology from universities prevents diminishing returns on companies. Collaboration between universities and industry synergies not only encourages economic growth but opens up great opportunities to advance the entrepreneurial spirit. Therefore, the quality of the teaching staff in the university must be improved in quality and quantity. This is an effort to support industry, entrepreneurship and economic growth.

CONCLUSION

The results of this study indicate that the availability of improved human capital can help national economic growth. HDI and positive per capita income have an influence on economic growth, but the number of tertiary institutions has no effect on economic growth. Furthermore, the government needs to formulate a policy formulation that encourages an increase in the ratio of lecturers to students to support human capital and economic growth. The government needs to intermediate between universities and the business world to develop short-term and long-term research plans needed by the industrial world. The development of entrepreneurship needs to be prioritized to support economic growth and economic quality.

REFERENCES

Ageli, M. (2013). Wagner's law in Saudi Arabia 1970-2012: An econometric analysis.

Annabi, N., Harvey, S., & Lan, Y. (2011). Public expenditures on education, human capital and growth in Canada: An OLG model analysis. *Journal of Policy Modeling*, *33*(6), 852-865.

Arifin. (2019). The Effect of Education on Economic Growth in Riau Province. *Turast: Journal of Research and Community Services, 7*(2), 1-9.

Baltagi, B. H. (2005). *Econometrics Analysis of Panel Data*. John Willey & Sons, Ltd. England.

Beauty F. N. (2016). The Analysis Of Government Expenditure For Education And Health Sector On Human Development Index (Hdi) In Indonesia Year 2008-2013. *Jurnal Ilmiah Mahasiswa FEB, Brawijaya, 4*(2), 1-7.

Bose, N., Haque, M. E., & Osborn, D. R. (2007). Public expenditure and economic growth: A disaggregated analysis for developing countries. *The Manchester School*, *75*(5), 533-556.

Etzkowitz, H., & Ranga, M. (2010, October). A Triple Helix System for knowledge-based regional development: From "Spheres" to "Spaces". In *VIII Triple Helix Conference* (pp. 1-29).

Fauzi, A. (2018). Human resource management in improving the quality of PTKIS lecturers. *At-Ta'lim: Jurnal Pendidikan, 4*(1), 21–34.

Feldman, M. P., & Francis, J. L. (2004). Homegrown solutions: Fostering cluster formation. *Economic Development Quarterly*, *18*(2), 127-137.

Harlik, H., Amir, A., & Hardiani, H. (2013). Factors affecting poverty and unemployment in Jambi City. *Journal of Regional Financing and Development Perspectives, 1(*2), 109– 120.

Jeyhoon Tabar, F., Najafi, Z., & Sistani Badooei, Y. (2017). The impact of educational expenditures of government on economic growth of Iran. *AD-minister, 4*(3), 217-235.

Kementerian riset, teknologi dan pendidikan tinggi]. (2017). Annual Report 2016. Bureau of Cooperation and Public Communication Secretary General. Jakarta: Ristekdikti.

Mallick, L., Das, P. K., & Pradhan, K. C. (2016). Impact of educational expenditure on economic growth in major Asian countries: Evidence from econometric analysis. *Theoretical & Applied Economics*, *23*(2), 1-8.

Matlay, H., & Mitra, J. (2002). Entrepreneurship and learning: the double act in the triple helix. *The International Journal of Entrepreneurship and Innovation*, *3*(1), 7-16.

Narayana, M. R. (2006). Measurement of Education Achievement in Human Development: Evidence from India. *International Education Journal*, *7*(1), 85-97.

Nugroho, S. B. M. (2016). The effect of education on economic growth. *Media Economics and Management, 29(*2), 1-7.

Nur, I., Mulatsih, S., & Asmara, A. (2013). Analysis of the economic structure and the factors that influence economic growth in South Sumatra. *Jurnal Ekonomi dan Kebijakan Pembangunan, 2*(1), 1-6.

Owusu-Nantwi, V. (2015). Education Expenditures and Economic Growth: Evidence from Ghana. *Education*, *6*(16), 1-6.

Patriotika, P. M (2011). The Analysis Of Factors That Influence Human Development Index In West Java. *Thesis*. Institut Pertanian Bogor.

Riasat, S., Atif, R. M., & Zaman, K. (2011). Measuring the impact of educational expenditures on economic growth: evidence from Pakistan. *Educational Research*, *2*(13),: 1839-1846.

Romer, P. M. (1990). Endogenous Technological Change. *The Journal of Political Economy*, 98(5), 71-102.

Shin, J. C., Lee, S. J., & Kim, Y. (2012). Knowledge-based innovation and collaboration: a triple-helix approach in Saudi Arabia. *Scientometrics*, *90*(1), 311-326.

Sylwester, K. (2000). Income inequality, education expenditures and growth. *Journal of Development Economics, 6*(3), 379-398.

Sylwester, K. (2002). Can education expenditures reduce income inequality?. *Economics of Education Review, 2*(1), 43-52.

Todeva, E. (2013). Governance of innovation and intermediation in Triple Helix interactions. *Industry and Higher Education*, *27*(4), 263-278.

Tomáš, V. (2011). National Competitiveness and Expenditure on Education, Research and Development. *Journal of Competitiveness, 2*(1), 3-10.

Trabelsi, S. (2018). Public Education Spending and Economic Growth: The Governance Threshold Effect. *Journal of Economic Development*, *43*(1). 101-124.

Ul Haq, M. (1990). *Human Development Report 1990*. United Nations Development Program: 9-16.

UNDP. (2013). Expenditure on education. http://hdr.undp.org/en/content/expenditure-education-public-gdp.

Widiansyah, A. (2017). The role of economics in education and education in economic development. *Cakrawala-Jurnal Humaniora, 17*(2), 207–215.

Zuhdiyaty, N., & Kaluge, D. (2017). Analysis of factors affecting poverty in Indonesia over the last five years. *Jurnal Ilmiah Bisnis dan Ekonomi Asia, 11*(2), 27–31.