

Human Development Based on Composite Indicator of Human Development Index

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Abstract: This research analyzed the influence of life expectancy, consumption per capita, average length of school and literacy rate on economic growth in South Sulawesi Province. This research is quantitative research. The research used secondary data in the form of the annual time-series data from 2008 to 2017 which are quantitative data. Data analysis using multiple linear regression statistical analysis. The findings show that life expectancy, consumption per capita, and literacy rate have a significant influence on economic growth in South Sulawesi Province.

Index Terms: Human Development, Economic Growth

I. INTRODUCTION

The study of the impact of human development on economic growth has received great attention from the economy. Human development which has implications for the formation of human capital will increase output and contribute to economic growth (Mincer, 1958; Schultz, 1961; Becker, 1962). Thus, it is widely accepted that human development can be considered as one of the main determinants of economic growth (Barro, 2001), and has also been identified as a key element in strengthening the effects of investment factors in technology on economic growth (Romer, 1990; Aghion & Howitt, 1998). There are several studies that have emphasized the role of human development in explaining differences in growth between countries (Krueger & Lindahl, 2001; Bassanini & Scarpetta, 2002; Engelbrecht, 2003).

There are two ways in which human development can contribute to the process of economic growth. First, human development can directly participate in production as a productive factor. In this term, the accumulation of human capital will directly produce output growth. Second, human development can contribute to improving technical progress because education facilitates innovation, diffusion and adoption of new technologies. In this way, the level of human capital affects productivity growth (Freire-Seren, 2001). The human development paradigm that has been developed so far is a process of expanding choices for the population. Thus the population is the ultimate goal and development as a means to an end. To achieve human development goals, there are four main things that must be considered, namely productivity, equity, sustainability, and empowerment.

However, the development paradigm has drawn much criticism because the results of development have also created inequality and disparity, ecological damage, and shackles human freedom. This materialistic development paradigm measures the achievement of development results only from the physical aspects quantified in mathematical and statistical figures, so that it tends to ignore the human dimension as the main subject of development and ignore human dignity.

In the Human Development Index (HDI) there are three composite indicators used to measure the achievement of the average of a country in human development, namely: length of life, as measured by life expectancy at birth; education measured by the average length of school and literacy rates of the population aged 15 years and over; standard of living measured by adjusted expenditure per capita becomes purchasing power parity.

This research study focuses on studying the effect of life expectancy, consumption per capita, average length of school and literacy rates on economic growth in South Sulawesi Province.

Economists have agreed that the human resources of a nation, not just physical capital or material resources are the factors that determine the character and speed of the social and economic development of a nation concerned (Todaro & Smith, 2011). The process has at least two basic requirements; first, the existence of human resources in quantity and quality capable of processing and utilizing other resources in the development process, and second, the existence of markets that support transactions in goods and services produced in the development.

The long-term growth process is directed at sectoral growth which includes the primary production sector and the secondary sector, while the tertiary sector is considered a function of industrial development (Kaldor, 1963). In another perspective it is stated that the factors that influence economic growth are capital and labor with quality elements included (Lucas, 1988).

The dominant factors affecting economic growth are capital and labor (Solow, 1956). The model equation as follow

$$Q = f(K, L) \quad (1)$$

where:

Q = Output
K = Capital
L = Labor

This approach uses a production function model that was first introduced by Cobb and Douglas during 1927-1947, which focuses on the importance of the role of human capital in the production function initially developed by (Solow, 1956) and its arguments developed by (Becker, 1993), and finally the model was developed by (Lucas, 1988) one of which was applied and developed by (McMahon et al., 2002).

The role of education in general towards economic growth, using endogenous growth models is formulated as follows (McMahon et al., 2002).

$$Y = A [(\mu l h N)^{1-\alpha} K^\alpha] h_a \psi \varepsilon \quad (2)$$

where:

Y	= output or Gross Domestic Product (GDP)
A	= level of technology that is considered constant
μl	= time allocation of workers used for production
h	= quality of labor that can be represented by level of education
N	= total labor
$\mu l h N$	= labor capital
K	= physical capital is used to proxy the value of gross domestic fixed capital formation
h_a	= community education
α	= physical capital coefficient which shows the role or influence of physical capital on GDP
$1-\alpha$	= labor capital coefficient which show the role or influence of labor capital on GDP
ψ	= community quality coefficient which show the role or influence of community quality on GDP
ε	= error term

Through the transformation process, the endogenous economic growth model becomes the following linear form.

$$\ln Y = \ln A + (1-\alpha) \ln (\mu l h N) + \alpha \ln K + \psi \ln h_a \quad (3)$$

Economic growth increases the supply of resources needed by human development. Increasing resources along with appropriate resource allocation and wider distribution of opportunities, especially employment opportunities will encourage better human development. This also applies the opposite, human development encourages increased economic growth. The high level of human development greatly determines the ability of the population to absorb and manage sources of economic growth, both in relation to technology and to institutions as an important means of achieving economic growth (Pohjola, 2002; Hanushek, 2013; Barro & Lee, 2013; Temple, 2001; Sonmez & Sener, 2009).

Thus the relationship between human development and economic growth can be understood from 2 (two) directions, namely the influence of economic growth on human development and the influence of human development on economic growth. The link between economic growth and human development cannot be considered linear or direct, but is determined by the extent of the role of the factors that connect the two concepts (Wolff, 2000; Bloom et al., 2004; Cohen & Soto, 2007).

II. METHOD

This research is a quantitative approach. The type of data used in this study is secondary data in the form of annual time series starting from 2008-2017 which are quantitative data.

To find out the effect of life expectancy, consumption per capita, average length of school, and literacy rates on economic growth in South Sulawesi, it will be analyzed using a multiple linear statistical test model. Multiple linear statistical tests are used to test the significance of the relationship of more than two variables through the regression method. Where multiple linear regression is linear regression which involves more than two variables, namely one dependent variable (Y) and more than two independent variables (X_1, X_2, \dots, X_n). This analysis test is used to analyze the relationship between independent variables in this case life expectancy (X_1), consumption per capita (X_2), average length of school (X_3) and literacy rate (X_4) with the dependent variable in this case growth economy (Y). All of these variables can be summarized in a functional relationship as follows:

$$Y = f(X_1, X_2, X_3, X_4) \quad (4)$$

The functional relationship above can be formulated in a linear function as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu_i \quad (5)$$

where:

Y	= Economic Growth (Percent)
X_1	= Life Expectancy (Year)
X_2	= Consumption per capita (Percent)
X_3	= Average Length of School (Year)
X_4	= Literacy Rate (Percent)
β_0	= Constant

$\beta_1, \beta_2, \beta_3$ = Parameter
 μ_i = Error term

III. RESULTS AND DISCUSSION

In this study multiple regression models were used with the dependent variable (dependent variable), namely economic growth (Y) and independent variables (independent variables), namely life expectancy, consumption per capita, average length of school, and literacy rates. A summary of the results of data processing is presented in the following table.

Table 1 Research Results

Variable(s)	β	t	Sig.	Result
(Constant)	-88.140	-4.946	0.001	
Life expectancy	1.307	3.745	0.003	Sig.
Consumption per capita	0.337	2.349	0.027	Sig.
Average length of school	-3.064	-1.148	0.154	No Sig.
Literacy rate	0.326	3.383	0.020	Sig.

Source: Secondary data analysis, 2018.

In regression the influence of life expectancy, per capita consumption, average length of school, and literacy rates on economic growth in South Sulawesi by using multiple linear regression equation models, obtained regression coefficient values for each variable in the study with the following equation:

$$Y = -88,1400 + 1,307X_1 + 0,337X_2 - 3,064X_3 + 0,326X_4 \quad (6)$$

From the regression results it was found that the magnitude of life expectancy had a positive and significant effect on economic growth in South Sulawesi. This means that a 1-year increase in life expectancy will increase the rate of economic growth by 1.307% each year. From the results of the t test it can be concluded that life expectancy variables can influence the magnitude of economic growth in South Sulawesi. Increasing life expectancy illustrates the improvement in nutrition and public awareness of health and the environment so that it will affect the improvement of population productivity which will have a positive impact on the rate of economic growth. The higher the life expectancy of a person, which means the longer the life span will increase the productivity of the community. Increased productivity will automatically trigger economic growth (Ranis & Stewart, 2001).

Consumption per capita has a positive and significant effect on economic growth. This means that a 1% increase in the rate of consumption per capita will increase the economic growth rate by 0.337% annually. The results obtained show a significant effect which means that per capita consumption variables affect the magnitude of economic growth in South Sulawesi. Per capita consumption has a positive impact on increasing economic growth if there is an increase in real per capita consumption, namely an increase in nominal household expenditure higher than the inflation rate in the same period. Where if per capita consumption increases, demand will also increase so that production will also increase. In line with this increase, it will trigger an increase in economic growth in South Sulawesi (Sonmez & Sener, 2009; Hasan & Azis, 2018; Hasan, 2019).

The average length of school does not have a significant effect on economic growth. It was found that the absence of the influence of the average length of school on economic growth indicates that the increase in the average length of school has less impact on the level of productivity. When viewed from the level of labor productivity which is more dominant in the agricultural sector, there are those who only go to elementary school and even those who drop out of school. Most of the population graduating from elementary schools and dropping out of school, especially in rural areas, prefer to go directly to the fields (Hasan, 2015; Hasan & Azis, 2018; Hasan, 2019).

Literacy rates have a positive and significant effect in predicting economic growth. This means that a 1% increase in literacy rates will increase by 0.326% economic growth each year. The results obtained are significant which means that the literacy rate variable influences the magnitude of economic growth in South Sulawesi. High literacy rates illustrate a fairly good level of public education and increased community productivity which has implications for improving economic growth in South Sulawesi. Science and investment in human resources can spur economic growth. Education is the basis of economic growth. Adult literacy has a positive and significant effect on economic growth (Ranis & Stewart, 2001).

IV. CONCLUSIONS

The findings of this study indicate that life expectancy, consumption per capita, and literacy rates have a positive and significant effect on economic growth, while the average length of school does not have a significant effect on economic growth in South Sulawesi. The policy implication of the study is that life expectancy is used as a proxy for the condition and system of health services of a community. This is seen as a final form of efforts to improve the level of public health. Life expectancy in South Sulawesi, which is quite high, will still receive attention from the government by maintaining and improving health status through improving facilities, health facilities and infrastructure for the community. In addition, nutritional needs and healthy environmental awareness for the community also need special attention from the government because good nutrition and a healthy environment will have an impact on improving community health status.

Furthermore, consumption per capita that continues to increase from year to year illustrates that the community's ability to fulfill their needs is getting better. Therefore the government still has to pay attention to the community so that consumption per capita can increase further the following year. Based on the results of the study it was found that the average length of school did not affect economic growth. This happened because of the low average length of school in South Sulawesi. Therefore the government needs to pay serious attention to the education system in South Sulawesi. Both in efforts to improve the education curriculum, or through the provision of various educational facilities. In addition, the 9-year compulsory education program launched by the government should be increased to 12 years.

The high literacy rate that continues to increase each year illustrates the government's success in eradicating illiterate population in South Sulawesi. Efforts to develop better quality human resources in the form of eradicating illiteracy are to increase skills and knowledge so that opportunities in employment opportunities and open employment opportunities are wider. Therefore, education is likely to receive proper attention by the government as an education facilitator. For this reason, the government needs to strive to improve education through various programs, both in the form of increasing education facilities and infrastructure, compulsory education programs, scholarships or school operational assistance.

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REFERENCES

- [1] Aghion, P., and Howitt, P. (1998). *Endogenous Growth Theory*. Cambridge, MA: The MIT Press.
- [2] Barro, R. (2001). Human Capital and Growth. *American Economic Review*, 91, pp. 12-17.
- [3] Barro, R. and Lee, J. (2013). *A New Data Set of Educational Attainment in the World, 1950-2010*, H104, pp. 184-198.
- [4] Bassanini, A., and Scarpetta, S. (2002). Does Human Capital Matter for Growth in OECD Countries? A Pooled Mean Group Approach. *Economics Letters*, 74, pp. 399-405.
- [5] Becker, Gary S. (1962). Investment in Human Capital: A Theoretical Analysis, *Journal of Political Economy*, 70 (Supplement), pp. 9-49.
- [6] Becker, Gary S. (1993). *Human Capital*. Chicago: The University of Chicago Press.
- [7] Bloom, D.E., Canning, D. and Sevilla, J. (2004). The Effect of Health on Economic Growth: A Production Function Approach. *World Development*, 32, pp. 1-13.
- [8] Cohen, D. and Soto, M. (2007). Growth and Human Capital: Good Data, Good Results, *Journal of Economic Growth*, 12, pp. 51-76.
- [9] Engelbrecht, H. (2003). Human Capital and Economic Growth: Cross Section Evidence for OECD Countries, *Economic Record*, 79, pp. 40-51.
- [10] Freire-Seren, M. J. (2001). Human Capital Accumulation and Economic Growth, *Investigaciones Economicas*, 3, pp. 585-602.
- [11] Hanushek, E.A. (2013). Economic Growth in Developing Countries: The Role of Human Capital, *Economics of Education Review*, 37, pp. 204-212.
- [12] Hasan, M. (2015). Analisis Struktur Ekonomi dan Pengaruhnya terhadap Tingkat Kemiskinan di Kabupaten Kepulauan Selayar, *Jurnal Economix* Volume 5 Nomor 1, ISSN 2302-6286. Makassar: Fakultas Ekonomi Universitas Negeri Makassar.
- [13] Hasan, M, dan Azis, M. (2018). *Pembangunan Ekonomi & Pemberdayaan Masyarakat: Strategi Pembangunan Manusia dalam Perspektif Ekonomi Lokal*. Makassar: CV. Nur Lina Bekerjasama dengan Pustaka Taman Ilmu.
- [14] Hasan, M. (2019). Characteristic of Human Development: Socio-economic Dimension. *KnE Social Sciences*, 3(11), 865–874. <https://doi.org/10.18502/kss.v3i11.4055>
- [15] Kaldor, N. (1963). *Capital Accumulation and Economic Growth*. London: MacMillan.
- [16] Krueger, A. B., and Lindahl, M. (2001). Education and Growth: Why and for Whom? *Journal of Economic Literature*, 39, pp. 1101-1136.
- [17] Lucas, R. (1988). On the Mechanics of Economic Development, *Journal of Monetary Economics*, 22, pp. 3-42.
- [18] McMahon, Walter W, and Appiah, Elizabeth M. (2002). The Social Outcomes of Education and Feedbacks on Growth in Africa. *Journal of Development Studies*, 38(4).
- [19] Mincer, Jacob. (1958). Investment in Human Capital and Personal Income Distribution, *Journal of Political Economy*, 66(4), pp. 281-302.
- [20] Pohjola, M. (2002). The New Economy in Growth and Development, *Oxford Review of Economic Policy*, 18, pp. 380-396.
- [21] Ranis, Gustav, and Stewart, Frances. (2001). Growth and Human Development: Comparative Latin American Experience, *Working Papers 826*, Economic Growth Center, Yale University.
- [22] Romer, P. (1990). Endogenous Technological Change, *Journal of Political Economy*, 98, pp. S71-S102.
- [23] Schultz, Theodore W. (1961). Investment in Human Capital, *The American Economic Review*, 51, pp. 1-17.
- [24] Solow, Robert M. (1956). A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics*, 70, pp. 65-94.
- [25] Sonmez, F.D. and Sener, P. (2009) Effects of Human Capital and Openness on Economic Growth of Developed and Developing Countries: A Panel Data Analysis. *World Academy of Science, Engineering and Technology*, No. 30, pp. 1242-1246.

- [26] Temple, J.R.W. (2001). Generalizations That Aren't? Evidence on Education and Growth. *European Economic Review*, 45, pp. 905-918.
- [27] Todaro, M. P. and Smith, S. C. 2011. *Economic Development*. UK: Pearson Education Limited.
- [28] Wolff, E.N. (2000). Human Capital Investment and Economic Growth: Exploring the Cross-Country Evidence. *Structural Change & Economic Dynamics*, 11, pp. 433-472.

