

**AN EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN
GOVERNMENT EXPENDITURE ON EDUCATION AND
ECONOMIC GROWTH IN MALAYSIA**

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**AN EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN
GOVERNMENT EXPENDITURE ON EDUCATION AND
ECONOMIC GROWTH IN MALAYSIA**

**A Project Paper Submitted to Othman Yeop Abdullah
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in Partial Fulfillment of the Requirements for
Master's Degree in Economics**

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ABSTRACT

The main purpose of this study is to investigate the relationship between education and economic growth. The study is based on annually time series data range from period 1970 until 2010. The indicators for education are government operating expenditure and government development expenditure in education sector. Following the endogenous growth theory, log linear model is build based on Cobb Douglas production function. In order to answer the three objectives in this study, the tests been carried out included Augument Dikey Fuller test (ADF) test to test unit root, Ordinary Least Squares (OLS) test to estimate how dependent variable changes when there is an increase in independent variables, Johansen cointegration test to investigate the existence of long run relationship in the model and Granger causality test to determine the direction of causality between all variables. The finding of the study is consistent with most of the empirical studies and theory where there is a long run relationship between education and economic growth. Besides that, the estimated results show that operating expenditure is relatively bring more impact to gross domestic product compared to development expenditure. In addition, the empirical evidence demonstrates that operating expenditure exits bilateral causality relationship with economic growth.

Keywords: Education, Economic growth, Granger causality, Expenditure on education

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CHAPTER 1

INTRODUCTION

1.1 Background

The relationship between education and economic growth has become an issue in the macroeconomic field. The relationship between these two variables remains controversial in theory and empirical findings. There are two things to be determined. The first is the nature of the relationship between the two, if one exists. The second is the direction of causality between education and economic growth. While several researchers and academicians have surveyed the theme, the results obtained are not consistent with some studies suggesting a positive relationship and others a negative or indeterminate relationship.

The ultimate goal of a country is to achieve economic development through economic growth, which is distinct from the former. Economic growth refers to rises in national income per capita from increasing production of goods and services in a country, while economic development refers to benefits from structural changes in economy and society. Examples of structural changes in the Malaysian context are the transition from an agricultural to an industrial economy, reduction in gender inequality, equity of income distribution and reduction of poverty rate. Economic growth alone is necessary but not sufficient for economic development. It is important because the increase in the incomes of the people and increase in government income allow greater expenditure on public services which raise the standard of living of the nation. While this may not benefit every

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REFERENCES

- Adawo, M. A., (2011). Has Education (Human Capital) Contributed to the Economic Growth of Nigeria?. *Journals of Economics and International Finance* 3(1), 46-58.
- Afzal, M., Farook, M. S., Ahmed, H. K., Begum, I. & Quddus, M. A., (2010). Relationship between School Education and Economic Growth in Pakistan: ARDL Bounds Testing Approach to Cointegration, *Pakistan Economic and Social Review* 48(1), 39-60.
- Babalola, S. J., (2011). Long-Run Relationship between Education and Economic Growth: Evidence from Nigeria. *International Journal of Humanities and Social Science*, 1(14), 123-128.
- Babatunde, M. A. & Adefabi, R. A., (2005). *Long Run Relationship between Education and Economic Growth in Nigeria: Evidence from the Johansen's Cointegration Approach*. Regional Conference on “Education in West Africa: Constraints and Opportunities.. Dakar, Senegal, November 1-2.
- Baldacci, E., Clements, B., Gupta, S., & Cui, Q., (2008). Social Spending, Human Capital, and Growth in Developing Countries. *World Development* 36(8), 1317- 1341.
- Baltagi, B. H., (2008). *Econometrics Fourth Edition*. New York: Springer-Verlag Berlin Heidelberg.
- Barro, R. J., (2013). Education and Economic Growth. *Annals of Economics and Finance* 14(2), 301-328.
- Bassanini, A. & Scarpetta, S., (2001). Does Human Capital Matter for Growth in OECD Countries? Evidence from Pooled Mean-Group Estimates. *Economics Department Working Paper* No. 282, Paris, France: OECD.
- Dadkhah, K., (2009). *The Evolution of Macroeconomic Theory and Policy*. New York: Springer-Verlag Berlin Heidelberg.

- Gordon, R. J., (2012). *Macroeconomics Twelfth Edition*. United States: Addison Wesley.
- Granger, C. W. J., (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica* 37 (3), 424–438.
- Granger, C.W. J. & Newbold, P., (1974). Spurious Regressions in Econometrics. *Journal of Econometrics* 2, 111-120.
- Hill, R. C., Griffiths, W. E. & Lim, G. C., (2012). *Principles of Econometrics Fourth Edition*. United States: John Wiley & Sons Pte Ltd.
- Hussin, M. Y. M., Muhammad, F, Abu, M. F. & Razak, A. A., (2012). Education Expenditure and Economic Growth. *Journal of Economics and Sustainable Development*, 3(7), 71-81.
- Jajri, I. & Ismail, R., (2010). Impact of Labour Quality on Labor Productivity and Economic Growth. *African Journal of Business Management* 4(4), 486-495.
- Johansen, S., (1988). Statistical Analysis of Co-integration Vectors. *Journal of Economic Dynamics and Control*, 12(23), 1-254.
- Johansen, S. & Juselius, K., (1990). Maximum Likelihood Estimation and Inference on Cointegration-with the Application to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52, 169-210.
- Jung, H. S. & Thorbecke, E., (2003). The Impact of Public Education Expenditure on Human Capital, Growth, and Poverty in Tanzania and Zambia: A General Equilibrium Approach. *Journal of Policy Modelling* 25(8), 701-725.
- Kakar, Z. K, Khilji, B. A. & Khan, M. J., (2011). Relationship between Education and Economic Growth in Pakistan: A Time Series Analysis. *Journal of International Academic Research* 11(1), 27-32.
- Knowles, S. & Owen, P. D., (1997). Education and Health in an Effective Labour Empirical Growth Model. *Econ. Record* 73, 314-328.

- Kwack, S.Y. & Lee, Y. S., (2006). Analyzing the Korea's Growth Experience: the Application of R&D and Human Capital Based Growth Models with Demography. *Journal of Asian Economics*, 17(5), 818–3.
- Lee, C. G., (2010). Education and Economic Growth: Further Empirical Evidence. *European Journal of Economics, Finance and Administrative Sciences*, 23, 161-169.
- Lin, T. C., (2004). The Role of Higher Education in Economic Development: An Empirical Study of Taiwan Case. *Journal of Asian Economics*, 15(2), 355–71.
- Liu, C. & Armer, J. M., (1993). Education's Effect on Economic Growth in Taiwan. *Comparative Education Review* 37(3), 304-321.
- Loening, J. L., (2004). Time Series Evidence on Education and Growth: The Case of Guatemala, 1951-2002. *Revista de Analisis Economico*, 19(2), 3 -40.
- Malaysia Economic Report 1974/75 – 2011/12, Kuala Lumpur.
- Mankiw, N. G., (2010). *Macroeconomics Seventh Edition*. New York: Worth Publishers.
- Permani, R., (2009). The Role of Education in Economic Growth in East Asia: A Survey. *Asian-Pacific Economic Literature* 23(1), 1-20.
- Rada, C. & Taylor, L., (2006). Developing and Transition Economies in the Late 20th Century: Diverging Growth Rates, Economic Structures, and Sources of Demand. *Department of Economic and Social Affairs Working Paper No.34*, New York, USA: UN.
- Rahman, I. & Doris, P. S., (1999). Health, Education and Economic Growth In Malaysia. *IIUM Journal of Economics and Management* 7(2), 1-15.
- Romer, P., (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94(5), 1002–1037.
- Sacerdoti, E., Brunshwig, S. & Tang, J., (1998). The impact of human capital on growth: evidence from West Africa. *IMF Working Paper*. 98(162), 1-32.

- Seddighi, H. R., (2012). *Introductory Econometrics: A Practical Approach*. New York: Routledge Taylor & Francis Group.
- Shaihani, A. L. M., Haris, A., Ismail, N. W. & Said, R., (2011). Long Run and Short Run Effects on Education Levels: Case in Malaysia. *International Journal Economics Research*, 2(6), 77-87.
- Sharif, T., Ahmed, J. & Abdullah, S., (2013). Human Resource Development and Economic Growth in Bangladesh: An Econometrics Analysis. *European Journal of Business Management*, 5(7), 133-144.
- Sushil, K. H. & Girijasankar, M., (2010). Does Human Capital Cause Economic Growth? A Case Study of India. *International Journal of Economic Sciences and Applied Research* 3(1), 7-25.
- Tamang, P., (2011). The Impact of Education Expenditure on India's Economic Growth. *Journal of International Academic Research* 11(3), 14-20.
- Vos, R., (1996). Educational Indicators: What's to be Measured? *INDES Working Paper Series I(1)*, Washington D.C.
- Wang, Y. & Yao, Y. D., (2001). Sources of China's Economic Growth, 1952-99: Incorporating Human Capital Accumulation. *The World Bank*.
- Yang, D. T., (2004). Education and Allocative Efficiency: Household Income Growth during Rural Reforms in China. *Journal of Development Economics*, 74(1), 137–162.