

**THE IMPACT OF ENVIRONMENTAL QUALITY ON
PUBLIC HEALTH EXPENDITURE IN MALAYSIA**

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**THE IMPACT OF ENVIRONMENTAL QUALITY ON PUBLIC
HEALTH EXPENDITURE IN MALAYSIA**

BY

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ABSTRACT

Health is one important factor in the development of human capital. Good health will lead to increased levels of productivity. This study was conducted to examine the co-integration between environmental quality and socio economic factor for national health expenditure. This study used secondary data from the World Bank Indicators and the Department of Statistics Malaysia. This analysis employs annual time series data on real per capita Health Expenditure (HE), real per capita Gross Domestic Product (GDP), Carbon Dioxide (CO₂), Nitrogen Dioxide (NO₂) and Sulphur Dioxide (SO₂) emission in metric tonnes per capita, Fertility Rate (FR), Mortality Rate (MR) infant per 1,000 live births. The data were obtained from World Bank Development Indicator (WDI) and spanned over the period 1970 – 2013. This data was analyzed using the software E-views and the methodology applied was a co-integration and ARDL approach in order to explore the possibility of estimating both short and long run impacts of environmental quality. The study found that GDP, CO₂, MR, FR, NO₂ and SO₂ could be treated as having relationship which health expenditure in the long run in Malaysia. SO₂, fertility and infant mortality rate showed a significant factor in the country's health expenditures affect substantially. The new generation is an important element in ensuring the continuance and sustainability of national development in the future.

ABSTRAK

Kesihatan merupakan salah satu faktor penting dalam pembangunan modal insan negara. Kesihatan yang baik akan mendorong kepada peningkatan kadar produktiviti negara. Kajian ini dijalankan bagi mengenalpasti perkaitan antara kualiti alam sekitar dan faktor socio ekonomi terhadap perbelanjaan kesihatan negara. Kajian ini menggunakan data sekunder daripada World Bank Indikator dan Jabatan Statistik Malaysia bagi tahun 1970-2013. Analisis ini menggunakan data tahunan siri masa per kapita sebenar Perbelanjaan Kesihatan (HE), Keluaran Dalam Negeri Kasar per kapita (KDNK), Karbon Dioksida (CO₂), Nitrogen Dioksida (NO₂) dan Sulfur Dioksida (SO₂) dalam tan metrik per kapita, kadar kesuburan (FR) dan kadar kematian (MR) bayi bagi setiap 1,000 kelahiran hidup. Data ini dianalisis menggunakan perisian E-views dan metodologi yang digunakan adalah model ARDL iaitu untuk melihat kesan kualiti alam sekitar dalam jangka masa pendek dan jangka masa panjang. Kajian mendapati bahawa KDNK, CO₂, MR, FR, NO₂ dan SO₂ mempunyai hubungan dengan perbelanjaan kesihatan dalam jangka panjang di Malaysia. SO₂, kesuburan dan kadar kematian bayi menunjukkan faktor penting dalam perbelanjaan kesihatan negara dan memberi kesan yang penting. Generasi akan datang adalah faktor penting dalam memastikan kesinambungan dan kelestarian pembangunan negara dan penting kepada kita untuk memastikan bahawa segala usaha pada hari ini akan memberi kesan yang baik kepada pembangunan modal insan negara.

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CHAPTER ONE

INTRODUCTION

This chapter outlines the introduction of the thesis. In this context, the rationale of the study is presented in the form of problem statement, research hypotheses and research objectives. The importance and scope of the study are also outlined in this chapter. The chapter closes with the research organization.

1.1 Background of the Study

Concern for health has traditionally underlain much of the political priority given to environmental issues across the world. There are many factors out there that influence the health of a population, such as diet, sanitation, socio-economic status, literacy, lifestyle and also environmental. The impact of environmental risk factors on health are extremely varied and complex in both severity and clinical significance. The effects of environmental degradation on human health can range from death caused by cancer due to air pollution to psychological problem resulting from noise. Air pollution from rapid industrialization and the use of energy has been recognized to be a cause of serious health problem.

The increasing deterioration in environmental quality across the world is posing serious challenge to healthy living through the increasing threat of global warming. Increase of global warming and greenhouse gas emissions due to consumption of fossil fuels was affecting the environmental quality. Particulate, sulphur dioxide and carbon dioxide emission from burning of fossil fuels are contributing significantly to pollution

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REFERENCE

- Aurangzab. (2003). Relationship between Health Expenditure and GDP in an Augmented Solow Growth Model for Pakistan: An Application of Co-integration and Error Correction Modelling, *Lahore Journal of Economics, Pakistan, Vol.8, No,2*
- Brempong, K.G and Wilson, M. (2004). Health Human Capital And Economics Growth In Sub Saharan African And OECD Countries. *The quarterly review of economics and finance, Vol. 44. pp: 296-320*
- Baldacci, E.B (2004). The Impact of Poor Health on Total Factor Productivity”, *The Journal of Development Studies* 42 (6). 918-938
- Barro, R.J (1996). *Health and Economic Growth, Mimeo*. Cambridge, MA : Harvard University
- Bakare A.S and Olubokun S.(2011). Health Care Expenditure and Economic Growth In Nigeria: An Empirical Study. *Journal of Emerging Trends in Economics and Management Science,(JETEMS)* 2 (2): 83-87
- Berger. MC , and Messer J (2002). Public Financing Of Health Expenditures, Insurance and Health Outcomes. *Appl. econ, 34:2105-2113*
- Bloom, David E. David Canning and Jaypee Sevilla. (2001). The Effect Of Health On Economic Growth; Theory And Evidence. *NBER working paper no 8587*
- Bloom, David E. David Canning and Jaypee Sevilla (2003). The Effect Of Health On Economic Growth: A Production Function Approach. *World Developemnt, 32(1): 1-13*
- Boachie, M.F, Mensah, I.O, Sobiesuo,P., Immurana, M., Iddrisu, A., & Kyei-Brobbey, I. (2014). Determinants of Public Expenditure in Ghana: A Cointegration Analysis. *Journal of Behavioral Economics, Finance, Entrepreneurship, Accaounting and Transport* 2(2), 35-40
- Dauda, R.O (2001). Investment In Education And Economic Growth In Nigeria: An Empirical Evidence. *International Research Journal Of Finance And Economics, 55:158-169*
- Eneji. Juliana and Onabe, (2013) “Health Care Expenditure, Health Status And National Productivity in Nigeria (1999-2012)”. *Journal of Economics and International Finance Vol5(7),pp 258-272*
- Elmi and Sadeghi (2012). Health Care Expenditure And Economic Growth In Developing Countries: Panel Co-Integration And Causality. *Midle East Journal of Scientific Research* 12(1): 88-91
- Filmer. D.J & Pritchett.L. (1998). Health Policy In Par Countries: Weak Links In The Chains. *World Bank Policy. Research Working Paper, No. 1874. Washington DC. World Bank*

- Gallup, J.L., Jeffery, D.S. and Andrew, D. M. (1998). *Geography and Economic Developmet, Chap. In World Bank Annual Conference On Development Economics, Washington, D.C: World Bank*, pp. 127-178
- Gupta. I and Mitra (2003). Economic Growth, Health And Poverty:An Explanatory Study On India. *India Health Report: Oxford University Press*
- Hansen, A.C., and Selte, H.K. (2000). Air Pollution and Sick Leaves : A Case Study Using Air Pollution Data From Oslo. *Environment and Resource Economics* 16, 31-50
- Jerret, M., Eyles, J., dufournound, C., and Birch, S. (2003). Environment Influence On Healthcare Expenditure:An Explarotary Analysis From Ontorio, Canada. *Journal Of Epidemiology And Community Health* 57, 334-338.
- John N and Philippe U (2006): The Relationship Between Health Care Expenditure And Health Outcomes:Evidence And Caviets For A Causal Link. *The European Journal Of Health Economics*, Vol.7, No 1, pp7-18
- Kim and Lane (2013). Government Health Expenditure and Public Health Outcomes: A Comaparative Study among 17 Countries and Implications for US Health Care Reform. *American International Journal of Contemporary Research*, Vol3.No.9
- Kiymaz, H., Akbulut, Y., and DEMir, A. (2006). Test Of Stationarity And Cointegration Of Healthcare Expenditure And Gross Domestic Product: An Application To Turkey. *The European Journal Of Health Economics* 7(4), 285-310
- Mayer-Foulkes, D (2003). Market Failures In Helath And Education Investment For Mexico's Youth. *Human Capital And Economic Growth Working Papers*.
- Ministry Of Health Malaysia (MOH). *Annual report from various years*. Information And Documentation System Unit.
- Narayan, P.K., and Narayan, S. (2008). Does Environmental Quality Influence Health Expenditure? Empirical Evidence From A Panel Of Selected OECD Countries. *Ecological Economics*, 367-374
- Nurudeen A. Usman A(2010). Governement Expenditure And Economic Growth In Nigeria, 1970-2008. *A Disaggregated Analysis. Bus. Econ. J* 4(1)
- Odusunya, 1A, Adegboyega, SB, and Kuku, MA (2014). Environmental quality and Health Care Spending In Nigeria. *Fountain Journal of management and Social Science*; 3(2), 57-67
- Odubimu, Saka and Oke (2012). Testing The Cointegration Relationship Between Health Care Expenditure And Economic Growth In Nigeria. *International Journal Of Economics and Finance*, Vol 4 No 11

- Odusola. A.E (1998). Rekindling Investment And Economic Development In Nigeria. *Nigeria Economic Society Selected Paper For The 1998 Annual Conference*
- Okunade, A A. (2005). Analysis And Implication Of The Determinants Of Healthcare Expenditure In African Countries. *Healthcare Management Science*, Vol. 8(4), pp. 267-276
- Oni, Babatunde L (2014). Analysis of the Growth Impact of Health Expenditure in Nigeria. *Journal Economic and Finance*, Volume 3. pp77-84
- Pesaran, M.H., Shin, Y., and Smith, R.P. (1997). *Pooled Estimation of Long Run relationships in dynamic heterogenous panels*: University of Cambridge, Department of Applied Economics
- Pesaran, M.H., Shin, Y., and Smith, R.P. (1999). Pooled mean group estimation of dynamic heterogenous panels. *Journal of The American Statistical Association*, 94(446), 621-634
- Pesaran, M.H., Shin, Y., and Smith, R.P. (2001). Bound testing approach to the analysis of level relationships. *Journal of Applied Econometrics* 16; 289-326
- Rahman Md Mostafizur (2011). Causal Relationship among Education Expenditure, Health Expenditure and GDP: A Case Study for Bangladesh. *International Journal Of Economics and Finance*, Vol 3, No. 3
- Ramesh , M. and Asher, M. (2000) *Welfare Capitalism in Southeast Asia: Social Security, Health and Education Policies in Indonesia, Malaysia, the Philippines, Singapore and Thailand*. Basingstoke: Macmillan
- Ramesh. M (2007). Malaysian Health Policy In Comparative Perspective. In Chee, HL & Barraclough, 5. Health Care In Malaysia. The Dynamics Provision, Financing And Access. (pp. 72-84). London Routledge
- Ravallion, M., heil M. and Jalan J. (2000). Carbon Emission and Income Inequality, *Oxford Economic Papers*, 52:651-669
- Riman HB, Bassey JU, Edu BE (2010). Healthcare Expenditure In Nigeria. Does The Level Of Government Spending Really Matters?.
- Sapuan and Sanusi (2009). Assessing The Effect Of Public Social Expenditure And Human Capital Development On Malaysian Economic Growth: A Bound Testing Approach. (78-82)
- Wang, Z.J. and Rettenmaier, A.J. (2007). A Note on Cointegration of Health Expenditure and income. *Health Economics*, 16(6), pp. 559-578
- WHO. (2000). The World Health Report. Health Systems: Improving Performance. Geneva: World Health Organisation

Wilson K, Eyles J, Elliot S, and Keller-Olaman S (2008). Health In Hamilton Neighbourhood; Exploring The Determinants Of Health At The Local Level. *Health Place* 15; 374-382

World Bank (2014). World Development Indicators; World Bank, Washington