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JUDUL: DETERMINANTS OF HEALTH CARE EXPENDITURE

IJAZAH: BACHELOR OF SCIENCE WITH HONOURS DEGREE

SAYA: HEI SOH MEI (HURUF BESAR) SESI PENGAJIAN: 07/08

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DETERMINANTS OF HEALTH CARE EXPENDITURE

HEI SOH MEI

THIS DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS REQUIRED TO BE CONFERRED THE BACHELOR OF SCIENCE WITH HONOURS DEGREE

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DECLARATION

I declare that this dissertation is the result of my work, except the quotations and summaries each of which the source has been mentioned.

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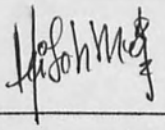

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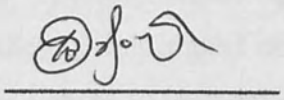

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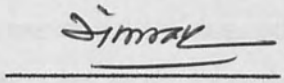

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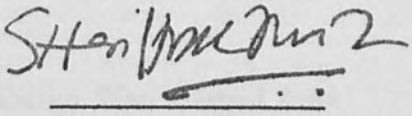

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Initially, this dissertation is prepared to fulfill part of the requirements required for us to obtain the degree. Yet along the process of writing this dissertation, the obstacles and challenges faced had provided me some new experiences and joy. Studying about the economy of Malaysia has always been an interesting subject for me especially regarding to what factors giving what kind of effects on the economy, how they giving impact on certain economy industries and others. This has been the main reason I chose to undertake this title for my dissertation.

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ABSTRACT

The study of the determinants of health care expenditure has been one of the important issues in developments of economy of a country. Most of the researchers preferred study on the health expenditure of the Organization for Economic Cooperation and Development (OECD) countries because most of the OECD countries are developed countries. Developed countries have one major characteristic that is the growing share of health care expenditure in gross domestic product (GDP), so that in those countries, they have such issue where government try to control and to limit the increase of those expenditure. In order to do so, they need to know which are the main determinants of health care expenditure and what is their impact. The aim of this study is to determine which determinants explain the growing of the aggregate health care expenditure in Malaysia. This paper focus on five common independent variables that usually used by researchers that are gross domestic product (GDP), proportion of population ≥ 65 years old, number of doctor, amount of medical save scheme and the number of medical physicians. Two methods are used in testing the relationship between variables that are the multiple regression model and the Koyck Lag model. The data being used are annual data from 1987 to 2006. By using the logarithmic transformation on the data of not normally distributed, the result shows that only the ageing population and the interaction of the ageing population with the number of doctor and the amount of medical save scheme will give some impact on the changing of the health care expenditure. This may because Malaysia is still in the process of developing and the government may not give more effort in developing the health sector.

PENENTU-PENENTU PERBELANJAAN PENJAGAAN KESIHATAN

ABSTRAK

Kajian tentang penentu-penentu perbelanjaan penjagaan kesihatan merupakan salah satu isu yang penting dalam pembanguanan ekonomi sesebuah negara. Kebanyakan penyelidik mengutamakan kajian perbelanjaan kesihatan bagi negara-negara dalam Organisasi kerjasama ekonomi dan pembangunan (Organization for Economy Cooperation and Development, OECD) kerana negara dalam OECD adalah kebanyakan negara membangun. Negara-negara membangun mempunyai satu ciri utama iaitu peningkatan perbelanjaan penjagaan kesihatan dalam Keluaran Dalam Negeri Kasar (KDNK). Oleh itu, negera-negara membangun akan cuba untuk mengawal dan menghadkan peningkatan perbelanjaan atas kesihatan. Maka, mereka perlu mengetahui penentu utama perbelanjaan penjagaan kesihatan dan berapakah kesan mereka. Tujuan kajian ini adalah untuk menentukan penentu yang menjelaskan peningkatan jumlah perbelanjaan penjagaan kesihatan di Malaysia. Kertas ini menumpu kepada lima penentu yang biasanya digunakan oleh penyelidik iaitu Keluaran Dalam Negeri Kasar (KDNK), kadar penduduk berumur $\geq$ 65 tahun, jumlah bilangan doktor, jumlah skim simpanan perubatan, dan jumlah bilangan ahli fizik perubatan. Dua kaedah digunakan dalam pengujian hubungan antara penentu-penentu iaitu model regresi berganda dan model Koyck Lag. Data yang diguna adalah data tahunan dari tahun 1987 hingga 2006. Dengan menggunakan transformasi logaritma ke atas data yang tidak tertabur secara normal, keputusan yang diperolehi menunjukkan bahawa hanya penduduk kian tua dan interaksi penduduk kian tua dengan jumlah bilangan doktor dan jumlah skim simpanan perubatan memberi kesan ke atas perubahan perbelanjaan penjagaan kesihatan. Ini mungkin disebabkan Malaysia masih dalam proses membangun dan kerajaan tidak memberi penekaan dalam membangunkan sektor kesihatan.

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LIST OF SYMBOLS

β	coefficient of variable
ε	error term
ESS	residual sum of squares
α	level of significance
H_0	null hypothesis
H_A	alternative hypothesis
DF	degrees of freedom
R	correlation coefficient
S^2	variance of the sample
e_t	error term with t time lag
z_i	resulting residuals

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Expenditures on health care and its determinants are major issues around the world. People from all walks of life have giving more concerns on health issues and this had led some commentators to conclude that such spending produces at the margin 'caring', rather than 'curing', components of health (Newhouse, 1977 and Cullis and West,1979). In some countries, especially the OECD (Organization for Economic Cooperation and Development) countries tend to classify health care spending as a luxury good, because most estimates of the income elasticity of health care spending in OECD countries, at least for developed countries, their income elasticity of health care spending have exceeded unity.

Healthcare in Malaysia has undergone radical transformations. Earliest pre-colonial medical care was limited to traditional remedies especially among local populations of Malays, Chinese, Indians and other ethnic groups. The arrival of colonialism brought western medical into the country. Since independence in August 1957, the system of medical has been transformed to meet the needs of emerging disease, as well as national political requirements.

Healthcare in Malaysia is presently provided by the private and public sectors, as well as by nongovernmental organizations (NGOs). NGOs included residential care facilities such as homes for aged, homes for the physically and mentally handicapped or facilities to threat drug and alcohol problems. The major provider and financier of the health services is the Ministry of Health, which is responsible for the health of the population, as stated in the Federal Constitution. Other health care providers include traditional and complementary medicine (TCM) practitioners and nongovernmental organizations. TCM in Malaysia included traditional Malay, Chinese and Ayuverdic medicines, among others, and is well accepted by both rural and urban communities. According to the report of WHO (2006), the National Health and Morbidity survey in 1996 stated that basic health care, through static health facilities, is currently available and accessible within 5km for more than 93% of the population of Peninsular Malaysia, 76% in Sabah and 61% in Sarawak. This coverage will be higher if the non-static health facilities, such as flying doctor squad and mobile health teams are included.

According to the report of the Ninth Malaysia Plan (2006), medical care services comprising primary, secondary and tertiary care which included outpatient and inpatient care services ranging from primary care at the health clinics to the advanced medical care at tertiary care centre in the hospitals. Secondary and tertiary care services are widely available in government and private hospitals across country. Health is administered from the Ministry of Health although it is with decentralized management. Health and medical care are decentralized to the regions, states and districts to increase efficiency.

Over the pass few decades, there has been an increasing role of the private sector in the provision of health care for the country, especially in urban areas. However, according to the report from the World Health Organization (WHO) representative office in Malaysia (2006), there is inadequate integration between public and private health services. The growth of the private health care sector has caused the steady migration of senior doctors, specialists and experienced health professionals from the public sector to the private sector. There is insufficient information on the quality of services in the private sector. Enforcing regulations under the Private Health Care Facilities and Services Act 1998 will help to monitor the quality and control the distribution of private providers.

According to the health facts report (2006) that calculated by the Institute of Development (IDS) Malaysia, Planning and Development (P&D) Department and Ministry of Health (MOH) in 2006, Malaysia spent an estimated 3.5% of the Gross Domestic Product (GDP) on health in 2005. This is still a well short of WHO recommendations of 5% to maintain an impressive network of general hospitals and districts clinics. In 2006, the government allocated 6.33% of the national budget to health. Health care services provided in the public sector is highly subsidized by the government. However, over-dependence on public hospitals is also an issue, for inpatient care, maternity care and the care for chronic illness. According to the World Health Report (2007), private households' out-of-pocket payment as percentage of private sector expenditure on health had increased from 74.1% in 2004 to 74.2% in 2005. There is an increasing trend of private health care expenditure.

A strong and positive correlation between national income and national expenditure on health care has been the consistent finding of research in examining the determinants of aggregate health care expenditure, for example, Newhouse (1977, 1987), Cullis and West (1979), Parkin et al. (1987) and Hitiris and Posnett (1992). In these studies, real per capita health care expenditure (HCE) is hypothesized to be a function of real per capita income (GDP) and a selection of some non-income variables. In this research on the determinants of health care expenditure in Malaysia, the aggregate health care expenditure as the hypothesis as well as with some other determinants such as gross domestic product (GDP), proportion of population $\geq$ 65 years old, medical save scheme, doctor per thousand of population and proportion of medical physicians. Since Malaysia not yet a developed country likes other OECD countries, is it will be the same determinants that affect Malaysian's spending on health care?

1.2 DEFINITION

From the definition in Concise Oxford English Dictionary (1999), determinant is a factor which determines the nature or outcome of something while factor is a circumstance, fact, or influence that contributes to a result. In this research, a few variables are being used as the determinants of health care expenditure. Definition for these variables that are gross domestic product (GDP), government health expenditure to gross domestic product, proportion of population $\geq$ 65 years old, doctor per population, medical save scheme, proportion of medical physician are as follow:

1.2.1 Gross Domestic Product (GDP)

Gross domestic product is a measure of the income and expenditures of an economy. According to Mankiw (1998), the GDP of a country is defined as the market value of all final goods and services produced within country in a given period of time. It is also considered the sum of value added at every stage of production of all final goods and services produced within a country in a given period of time. The most common approach to measuring and understanding GDP is the expenditure method:

GDP = consumption + investment + government spending + (exports-imports)

Consumption and investment in this equation are the expenditure on final goods and services. Consumption includes most personal expenditures of households such as food, rent, medical expenses and so on but does not include new housing. Investment is defined as business investment in capital such as purchases of software, or purchases of machinery and equipment for a factory. Spending by households on new houses is also included in investment. Government expenditures on final goods and services include salaries of public servants, purchase of weapons for the military, and any investment expenditure by a government. It does not include any transfer payments, such as social security or unemployment benefits. GDP captures the amount a country produces, including goods and services produced for overseas consumption, therefore exports are added. M is gross imports. Imports are subtracted because imported goods will be included in consumption, government spending and investment, so, must be deducted to avoid counting foreign supply as domestic. The exports minus imports are

then calculate by subtracting the expenditure not produced domestically (the imports), and adding back the expenditure produced domestically (the exports).

GDP per capita is often used as an indicator of standard of living in economy because GDP is widely used by economists to observe how the economy is moving, however, its value as an indicator for the standard of living is considered to be limited. One main problem in estimating GDP growth over time is that the purchasing power of money varies in different proportion for different goods, so when the GDP figure is deflated over time, GDP growth can vary greatly depending on the basket of goods used and the relative proportions used to deflate the GDP figure.

1.2.2 Number of Doctor

Health care service is manpower intensive, so the rising manpower cost is also a cause of concern. Seng (2004) stated that as the number of doctor grows, the health care consumption increases as more physicians would induce more demand. The number of doctor is used as a measure of productivity improvement: the more the staff per hospital, the higher the expenditure, and vice versa. In Malaysia, doctors are required to perform 3 years of service with public hospitals throughout the nation, ensuring adequate coverage of medical needs for the general population. Foreign doctors are encouraged to apply for employment in Malaysia, especially if they are qualified to a higher level. There is still, however, a compound shortage of medical workforce, especially that of highly trained specialists resulting in certain medical care and treatment only available in large cities.

According to Eight Malaysia Plan report (2006), to support the expansion and delivery of quality health services as well as to solve the acute shortage of various categories of health manpower, 6 public universities and 3 private medical colleges expanded their capacity to produce doctors, dentists and pharmacists and in addition, the government also sent students for medical education abroad. However, there was still a shortage and unequal distribution of health manpower which affected the quality of services provided. Some more in order to overcome the shortage, retired specialists were employed on contract basis.

1.2.3 Proportion of Population ≥ 65 years old

Aljunid (1997) stated that few authors have giving some definition for aging such as Kazutomo defined aging as "regression of physiological function accompanied by advancement of age" and Harman defined aging as "the progressive accumulation of changes with time associated with, or responsible, for the ever increasing susceptibility to disease and death which accompany age". Besides that, Aljunid (1997) found a report made by United Nations in 1993, a country is said to be aging when at least 7% of the population are elderly. There is various definition of aging, however, no matter whatever the definition is, it is important to realize that aging is an event that occur over a period of time and it is not a reversible process. Intuitively, the elderly will spend more on medical care than the young, so when the percentage of elderly population in a country rises, then the aggregate health care will rise as well.

According to Aljunid (1997), in Malaysia, the annual growth rate of the elderly increased from 3.1% in 1980 to 1990 period to 4.0% in period between 2000 and 2010 and as stated that by the year 2020 Malaysia would qualify to be an aging population when the proportions of the elderly reached nearly 7% and five years later it will increased to just over 9%. Although Malaysian retirement age level is around 70-75, but the data for proportion of aging population $\geq$ 65 years old is used in this research in order to compare with other countries' researches.

1.2.4 Medical Save Scheme

According to the Eighth Malaysia Plan (2006), changing of disease patterns, new technologies and medicines, the growing expectations of consumers for high quality of care and the expansion of the private sector have led to the decision to establish a new national health financing mechanism that is the National Health Insurance System (NHI). NHI emphasizes equity, efficiency, acceptability, accessibility, affordability and comprehensive coverage. The government will help for disadvantaged groups such as the poor, the elderly, and the disabled. This scheme should be able to create greater integration of health services at primary, secondary and tertiary levels and also within the public sector and between the public and private sector. However, although the government is committed to provide good and affordable basic medical services to all Malaysian through the provision of heavily subsidized medical services at public hospital, individuals are still encouraged to take responsibility for their own health by saving for medical expenses.

Besides that, in most countries, the state has to take the responsibilities for the health care of the population to save for their old age. Mandatory saving scheme such as Employees Provident Fund (EPF) in Malaysia could potentially be used to fund for health care of the population. According to the statistics of the financial statement of the EPF in 2006, presently the employees contribute 11% of their monthly wages and 12% from the employers. Besides that, the financial statement stated that the funds were divided into three categories: Account I which consists of 60% of the savings and could only be withdrawn by the age of 55; Account II which made up of 30% of the savings which could be withdrawn to buy or build the house and Account III which made up of 10% is to finance medical treatment for critical illness approved by EPF. The coverage would also include the spouse, children and parents.

1.2.5 Number of Medical Physicians

The high economic growth is increasing consumers' demand for high quality services, technological developments, and different types of specialists' services. Thus, the rate of growth in demand for staff, as well as the composition of the skilled workforce has been changing over time. The acute shortage and misdistribution of key groups of personnel, including nurses and doctors, pose a real threat. According to the report of the Eighth Malaysia Plan (2006), 11 new nursing colleges and 16 allied health professional training centers were approved for construction while eight existing colleges and centers were expanded during the Plan period to supply 1080 trainees. In addition, the Ministry of Health outsourced training for additional allied health professionals with the cooperation of the private institutions. These efforts improved

the manpower supply for the health sector. Proportion of medical physician included nurses, pharmacists, dentists, midwives and medical assistants.

1.3 RATIONAL OF THE STUDY

There are many researches done on determinants of health care expenditure such as Seng (2004), Newhouse (1992), Gerdtham and Jonsson (1992), Hitiris and Posnett (1992), Hansen and King (1996), Okunade and Murthy (2000), and many others. Generally, most of the researches suggested that the gross domestic product (GDP), proportion of aging population, number of doctor per thousand population, medical save scheme and number of medical physicians are the important determinants in estimating the health care expenditure in overall countries in the world. These determinants have been tested using many different types of statistical tests to test their effects on health care expenditure although the resulting effects may be different according to different health care managing system in each country.

1.4 IMPORTANCE OF THE STUDY

According to Ministry of Health report (2006), socioeconomic development in Malaysia including for health, is planned using three types of planning horizons. One is five-year socio-economic development plan where currently Malaysia has just completed the Eighth Malaysia Planning Cycle (2001-2005). Another is the mid-term plan that is known as the Outline Perspective Plan (OPP). The third OPP (2000-2010) is known as the National Vision Policy and has the objective of achieving national

unity and solidarity to improve the overall economy of the country. According to the Eighth Malaysia Plan (2006), the long-term goal of Vision for Health 2020 is to create "a nation of healthy individuals, families, and communities through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally adaptable, and consumer friendly." Like what have been done by Seng (2004) in finding the determinants of health care expenditure in Singapore, believed that the research has indeed provided some insight on what are the factors that will impact the growth in health care expenditure, the government control on resources spent on health as well as the performance of the economy are important determinant that cannot be ignored.

According to the Eighth Malaysia Plan (2006), the new thrust in the Ninth Malaysian Plan (2006-2010) is "towards achieving better health through consolidation of services". This stated that the plan is focus on wellness, upgrading and maintenance of existing facilities and equipment, and the quality of health care. Knapp, Moscone and Tosetti (2007) believed that their research may help central government to gain a better understanding of the factors that influence local spending levels, including variations over time and between municipalities in their achievement of expenditure-related and other performance targets.

In order to achieving the Vision for Health and the Mission of MOH, managing the expenditures on health care and finding out determinants that effect the expenditure are important. Finding out the determinants of health care expenditure may oversee the externality problem related to health care provision and so the need of coordination.

Spending on health care whether on the demand side or the supply side, both are important in achieving the effectiveness and efficiency in the health care system.

1.5 OBJECTIVES OF RESEARCH

The main objective in doing this research is to find out which determinant giving the most effect on the health care expenditure in Malaysia. Other objectives are:

i. To estimate a simple regression model for the determinants of health care expenditure.

ii. To determine how much health care expenditure of Malaysia differs from other countries.

iii. To determine the overall effect of longevity on health care spending for elderly.

iv. To help gaining a better understanding of few factors that affects the expenditure in health care.

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