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ROLES OF HUMAN DEVELOPMENT AND EPIDEMIOLOGICAL CHANGE IN THE MALAYSIAN HEALTH SYSTEM

TEOH HOCK GEH

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ROLES OF HUMAN DEVELOPMENT AND EPIDEMIOLOGICAL CHANGE IN THE MALAYSIAN HEALTH SYSTEM

By

TEOH HOCK GEH

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

February 2021

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DEDICATIONS

To my wife, thank you for supporting me in all aspects of my life, including your encouragement given to me to take the challenge to pursue this postgraduate research, after a lapse of more than 20 years leaving the academic world.

To my mother, for your endurance in handling difficulties in family life that has given me this impetus to weather through challenges to complete my study. Thank you.

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the Degree of Master of Science

ROLES OF HUMAN DEVELOPMENT AND EPIDEMIOLOGICAL CHANGE IN THE MALAYSIAN HEALTH SYSTEM

By

TEOH HOCK GEH

February 2021

Chair : Professor Law Siong Hook, PhD
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Health financing in mixed health system adopted by Malaysia has faced critical tests of sustainability as a result of progressive changes in political and economic policies toward privatisation, and it is accentuated with the changes of health consumer behaviour along human development progression. The situation is further deepened from rapid demographic and epidemiological transitions which seem not match to the corresponding transition in its health system to better address the current and future needs of its citizens.

This study aims to examine the roles of human development and epidemiological change in a sustainable health system. It lays two objectives which both apply Autoregressive Distributed Lag (ARDL) cointegration framework in analysing the time series data from 1997 to 2016. It is set to investigate the effects on private health spending, as unabated expansion of the private health sector has a potential to adversely affect the universal access to care which is congruent to sustainable health system.

The first objective of this thesis is aimed to investigate demand factors caused by social change on health expenditures based on influences from human development and fertility transition as a substitute, in addition to epidemiological transitions. The findings reveal private healthcare services has become the preference due to influence of human development and epidemiological transition. In causality test, it also clearly shows health expenditures specifically for private healthcare sector has a supply- induced demand on health consumers to use their services for chronic diseases treatment, and this has caused low fertility rate trend in Malaysia. In comparison of human development factors, human development index (HDI) has shown higher influence as compared to fertility rate on health expenditures.

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The second objective of this thesis is set to investigate health financing transition from economic changes perspective of existing financing mechanisms. The empirical results based on the bounds testing procedure reveal that Malaysia has rapid and robust health financing transition despite the upward trend on out-of-pocket health expenditure share of total health expenditure. The study also reveals that only health financing with pooled financing mechanism would be able to control the out-of-pocket and private health expenditures.

Overall, the findings of this thesis are important to the policymakers and health economists in constructing a sustainable health system for upholding social cohesion and welfare. These findings suggest that the government should either improve coverage with options of pooled financing or implement a mandatory universal health financing model to uphold its agenda for universal health coverage. This has become more crucial as the modern societies possess new expectations on health demand as a result from the progress of human development. Thus, it creates an unprecedented phenomenon of inexorable shift towards private healthcare services consumption.

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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Sarjana Sains

PERANAN PEMBANGUNAN INSAN DAN PERUBAHAN EPIDEMIOLOGI DALAM SISTEM KESIHATAN MALAYSIA

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Pembiayaan kesihatan dalam sistem kesihatan campuran yang diterima pakai oleh Malaysia telah menghadapi ujian kelestarian yang kritikal akibat daripada perubahan progresif dasar politik dan ekonomi ke arah penswastaan, dan keadaan ini menjadi nyata dengan perubahan tingkah laku pengguna kesihatan dalam proses pembangunan insan. Situasi ini semakin mendalam dengan kepantasan peralihan demografi dan epidemiologi yang seperti tidak sepadan dengan peralihan sistem kesihatan negara untuk menangani keperluan semasa dan masa depan warganya dengan baik.

Kajian ini bertujuan untuk mengkaji peranan pembangunan insan dan perubahan epidemiologi ke atas kelestarian sistem kesihatan. Ia meletakkan dua objektif yang kedua-duanya menerap kerangka integrasi *Autoregressive Distributed Lag (ARDL)* dalam menganalisis data siri masa dari tahun 1997 hingga 2016. Tumpuan kajian ini ialah menyelidiki kesan kepada perbelanjaan kesihatan swasta, kerana pengembangan sektor kesihatan swasta yang berleluasa mampu menjejaskan hak penggunaan sejagat untuk perawatan kesihatan yang wujub atas sistem kesihatan yang mampat.

Objektif pertama tesis ini bertujuan untuk mengkaji faktor permintaan akibat daripada perubahan sosial ke atas pembelanjaan kesihatan dengan berdasarkan pengaruh daripada pembangunan insan dan peralihan kelahiran sebagai pengganti, selain daripada kesan peralihan epidemiologi. Hasil kajian menunjukkan bahawa penggunaan kesihatan swasta telah menjadi pilihan utama kerana pengaruh daripada pembangunan insan dan peralihan epidemiologi. Daripada sudut ujian sebab-akibat, ia juga menunjukkan dengan jelasnya bahawa pembelanjaan kesihatan terutamanya dalam sektor kesihatan swasta mempunyai ciri pemintaan yang didorongkan oleh pembekalan ke atas

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pengguna kesihatan untuk menggunakan perkhidmatan mereka bagi rawatan penyakit kronik, dan ini telah mangakibatkan arah aliran kadar kelahiran yang rendah in Malaysia. Dalam pembandingan bagi pengaruh pembangunan insan, indeks pembangunan insan *(HDI)* menunjukkkan pengaruh yang lebar besar berbanding dengan peralihan kelahiran ke atas pembelanjaan kesihatan.

Objektif kedua tesis ini ditetapkan untuk menyiasat peralihan pembiayaan kesihatan daripada sudut perubahan ekonomi ke atas mekanisme pembiayaan yang sedia ada. Hasil empirikal berdasarkan prosedur pengujian batasan *(bounds)* menunjukkan bahawa Malaysia mengalami peralihan pembiayaan kesihatan yang pesat dan baik walaupun terdapat arah aliran kenaikan bahagian perbelanjaan kaedah wang saku kesihatan berbanding dengan keseluruhan perbelanjaan kesihatan. Kajian ini juga mengungkapkan bahawa hanya pembiayaan kesihatan dengan mekanisme pembiayaan bertabung dapat mengawal pembelanjaan kesihatan cara wang saku dan pembelanjaan kesihatan swasta.

Secara keseluruhan, penemuan dalam tesis ini amat penting bagi pembuat dasar dan pakar ekonomi kesihatan dalam membina sistem kesihatan yang berkelestarian untuk menegakkan kesejahteraan sosial dan kebajikan. Penemuan ini menunjukkan bahawa kerajaan harus meningkatkan liputan dengan ciri pembiayaan bertabung atau menerapkan model pembiayaan kesihatan sejagat secara wajib bagi menjunjung agenda kerajaan dalam mangamalkan liputan kesihatan sejagat. Perkara ini sangat penting bagi sistem kesihatan yang berdaya tahan kerana masyarakat moden mempunyai permintaan baru ke atas kesihatan akibat daripada perkembangan pembangunan insan. Sememangnya kejadian sebegini tidak pernah terjadi sebelum ini, dimana terdapat kecondongan hebat ke arah pengunaan perkhidmatan kesihatan swasta.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

ARDL	Autoregressive Distributed Lagged
ASEAN	Association of Southeast Asia Nations
DALYs	Disability Adjusted Life Years
EPF	Employees Provident Fund
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GGHE/GGE	General Government Health Expenditure in the Share of General Government Expenditure
GNI	Gross National Income
HDI	Human Development Index
HPRA	Health Policy Research Associates
IHP	Institute for Health Policy
LMIC	Low Medium Income Countries
MCH	Maternal and Child Health
MNHA	Malaysia National Health Accounts
MOH	Ministry of Health Malaysia
NCDs	Non- Communicable Diseases
NHFA	National Health Financing Authority
NHI	National Health Insurance
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-Pocket
PHS	Public Health System
PVHI	Private Voluntary Health Insurance
SDG	Sustainable Development Goals

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SHI	Social Health Insurance
SOCSO	Social Security Organisation
UNA-UK	United Nations Association – UK (Authority)
UHC	Universal Health Coverage
UNDESA	United Nations Department of Economics and Social Affairs
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USA	United States of America
WHO	World Health Organization

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Health has become popular discussion topic to governments, individuals, and researchers in this 21st century, so much so great efforts and expenses are invested into healthcare and wellness planning to improve humans' well-being. It is an indispensable need of nation and its citizens apart from education in improving human capital (Mushkin, 1962). 'Good Health and Well-Being' is one of 17 important global 'Sustainable Development Goals' (SDGs).[1] This goal numbered third was set out with an ambitious agenda for a safer, fairer and healthier world by 2030.[2] Therefore, the subject of topic 'sustainability of health system' has gained considerable attention since the induction of SDGs as the critical factor for improving people's health and access to healthcare services.

The sustainability can be defined as "The ability of the system to produce benefits valued sufficiently by users and stakeholders to ensure enough resources to continue activities with long-term benefits" (UNICEF, 1992, as cited in Olsen, 1998, p.288). A sustainable health system is ascertained if it possesses three key attributes of measurements- affordability, for health consumers and health financiers; acceptability to key constituents, including to health consumers and health professionals; and adaptability, with vigorously respond to the current healthcare needs due to new diseases, changing demographics, scientific discoveries, and dynamic technology changes in order to remain viable (Fineberg, 2012). As for the first quality, affordability, it is closely tied to sustainable health financing. In which, health financing is explained as "function of health system concerned with the mobilisation, accumulation and allocation of money to cover the health needs of the people, individually and collectively" (Liaropoulos and Goranitis, 2015, p.1). Thus, a sustainable health financing system raises adequate funds for healthcare, in ways that ensure people can use needed healthcare services and enable progress towards universal health coverage (UHC) by improving effective service coverage and financial risk protection (WHO, 2007). As for quality of adaptability, it also means that the health system must have high viability to face current challenges such as impact of human development and epidemiological transition on health demand. Both qualities are objectively chosen in this study to qualify the health

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[1] SGDs consist of 17 important global goals laid down by United Nations (UN) during its General Assembly in 2015, it is to ensure "no one will be left behind" and to "endeavour to reach the furthest behind first" by 2030 (UNDP, July 2018).
[2] World Health Organization (WHO) is the promoter for universal health coverage (UHC) movement. Further information is available at https://www.uhc2030.org/.

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system viability for Malaysia case, whereas the quality of acceptability is excluded here, because it requires micro-level studies.

The sustainable health financing system is deemed important because of its coexistent to a successful health system which has three attributes. First, healthy people, which means the citizens can attain the highest level of health; second, superior care with effective, equitable and efficient healthcare services; and the last, fairness, which means no discrimination or disparities to all health consumers and families, and also fair to health professionals, institutions, business supporting and delivering care (Fineberg, 2012). In this thesis, it is hypothesised that human development and epidemiological transition can affect sustainability of Malaysian health system through its influences on health spending and financing mechanisms. Thus, it requires comprehension of health economics and macro-level studies of socioeconomics of Malaysia context.

1.1.1 Universal Health Coverage

Universal health coverage, UHC, is the main pillar for social cohesion and welfare, becoming the greatest social aspiration of most developing countries and an overarching vision of governments for its health sector development (Garrett, Mushtaque, Chowdhury and Pablos-Méndez, 2009). A country is said to have achieved UHC status when its whole population has access to good quality services according to their needs and preferences, irrespective of income levels, social status or residency, thus assimilates the objectives of equity in payments (where the rich should pay more than the poor), financial risk protection (where people should not become poor from using healthcare services) and equity in access or utilisation (where care received is bestowed to needs rather than ability to pay) (Gilson, Doherty, Loewenson and Francis, 2007; Ng, Mohd Hairi, Ng and Kamarulzaman, 2014). In a nutshell, UHC is achieved when access to a comprehensive package of healthcare is made available to the entire population without burdening the poor. In this context, Malaysia is deemed to have achieved this UHC status as per WHO's article published for World Health Day 2018.[3] Arguably, the country was claimed attaining UHC earlier in 1980s, mainly due to significant progress of longer life expectancy at birth and improvements in maternal and child health (MCH) in the past (Savedoff and Smith, 2011; Ahmad, 2019).

1.1.2 Malaysian Health System

Malaysia's health system has gone through rapid transformation in past five decades, particularly in balancing its mixed health system in between private and public health sectors for healthcare provision as well as health financing (Chee,

[3] World Health Day 2018 – Lessons from Malaysia on Universal Health Coverage. Available on https://www.who.int/malaysia/news/detail/18-04-2018-world-health-day-2018-—-lessons-from-malaysia-on-universal-health-coverage.

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2008). In this dichotomous public-private system, the distributive justice of healthcare access which is known as equity lays in between perfect egalitarian system and pure market system (Santerre and Neun, 2010). The former equity system is mainly provided through public healthcare system which it has wide geographical coverage and provides comprehensive care at minimal fees charge to its citizens. This ensures everyone receives equitable access and payments, and it is tantamount to the UHC and provides comprehensive services (Jaafar et al., 2013). On the other hand, the latter equity system is usually provided by private healthcare services, it is acquired by its citizens based on their willingness and ability to pay basis (Ng et al., 2014; Chee, 2008).

Historically, the Malaysian healthcare system has been praised for its remarkable success in several studies, enabling it to become a role model for many other countries to emulate its progressive system in providing access to healthcare for its citizens (Rannan-Eliya et al., 2016), especially for low and middle-income countries of its sustainable healthcare systems in delivering equitable and effective health outcomes at a low cost with strong financial risk protection through its backbone of public health system (PHS) (Ahmad, 2019). It has geographically widespread public healthcare delivery system designed to provide full access to healthcare services to the entire population, regardless of geographic location (Atun, Berman, Hsiao, Myers and Yap, 2016). According to MOH 2018 record, it showed public healthcare services were delivered through 135 hospitals and nine special medical institutions, 2881 public clinics comprise 1090 health clinics and 1791 community clinics, and 343 1Malaysia clinics for basic clinical care and nursing services.[4] All these reaffirm Malaysia has good health indicators in comparison to neighbouring ASEAN countries (Lee, 2015).[5] Malaysia has achieved universal health coverage at a lower income level concurrent with the country's industrialisation, unlike precedents set by some developed countries - Japan and Sweden (Savedoff and Smith, 2011). Malaysia has achieved all these results by devoting smaller gross domestic product (GDP) to the healthcare expenditure than any industrialised country, at rates of between 4.0% and 4.5% since 2009 (Juni, 2014).

1.1.3 Challenges in Malaysian Health System

The demand for private healthcare has outpaced public healthcare.[6] Its health expenditure records show a continuous upward trend with a possible convergence to public health expenditure in later years after 2016 (Figure 1.1). In recent released data by MNHA (2019), private and public health expenditures stood at 48.85% and 51.15% in 2017 respectively, a lower variation than

[4] According to data for 2018 in Health Facts 2019 published by Ministry of Health (MOH) Malaysia.
[5] ASEAN (Association of Southeast Asian Nations) countries are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.
[6] Private health expenditure has faster escalation of its proportion to total health expenditure than public health expenditure since aftermath of Global Financial Crisis 2008, it stood at 39.67% in 2009 and had grown to 48.47% in 2016.

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preceding year 2016 which stood at 48.47% and 51.53% respectively.[7] This poses a risk to maintain its UHC status.

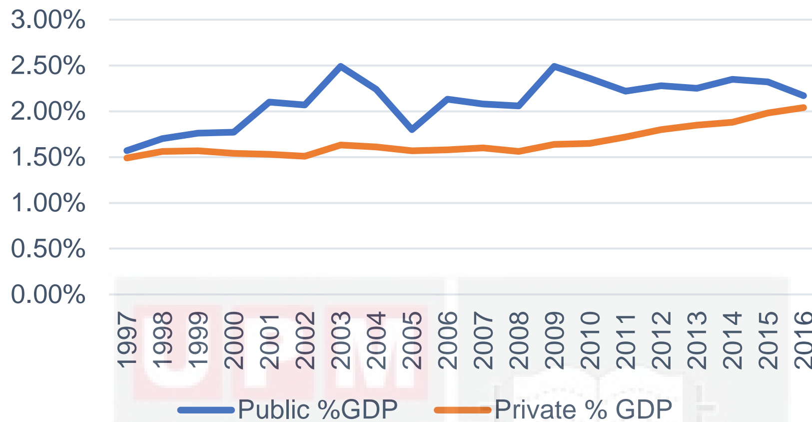

Figure 1.1: Public and private health expenditures as percentage of GDP
(Source: Malaysia National Health Accounts, 2018)

Rannan-Eliya et al. (2016) in his health economics research for MOH warned that Malaysia's health financing system would face continuous unresolved policy challenges with its mixed health system, and especially after more intense political and economic policies on privatisation since 1983 after Malaysia Incorporated concept was promulgated by the government (Savedoff and Smith 2011). In 1983, the government contributed 76% of the total health expenditure (Merican and Yon, as cited in Lee, 2012), but according to MNHA (2018) the government's contribution through MOH has dropped significantly to 43.07% in 2016. The rapid development of the private health sector came about mainly because of reorientation of the government from a welfare-oriented approach to the adoption of privatisation as policy in the health sector, which has caused rapid expansion of the private healthcare sector with primarily growing number of private hospitals and specialised care centres since 1980s (Chee 2008). Barraclough (as cited in Lee, 2012) claimed that aggressive divestment of previous state-managed health enterprises happened in 1990's. This is seen as an effort by the government to increase private participation in the country's economy with the objective of reducing the role of the government in the economy, thus it lowers the level and scope of public spending (Barraclough, 1999; Ng et al. 2014).

The movement causes concentration of private healthcare providers in urban and densely populated areas, resulting major barrier for majority people with

[7] Malaysia National Health Accounts (MNHA) Health Expenditure Report 1997-2017 was published in 2019, but it was released to public in end of 2020. The analysis for this thesis was done earlier than this latest report's publication date, therefore this thesis does not include data of year 2017.

inadequate health financing (Merican and Yon, as cited in Lee, 2012). Notable differences in quality of services provided and better remunerations in the private sector as compared to the public sector in Malaysia has led to an imbalance of distribution of manpower in the public and private sectors. It has created a significant effect on the equity of services as far as efficiency and effectiveness are concerned (Thomas, Loo and Nordin, 2011).

Private health expenditure has shown two obvious trends with different growth rates, occurred prior to and after 2008. Higher real private health expenditure per capita has been recorded for the period 2009-2016 at an average growth rate of 7.2% per annum against a smaller growth rate of 3.2% per annum for the period 1997-2008.[8] In regular market surveys conducted by Willis Towers Watson (2019) and Mercer Marsh Benefits (2019) on various local private insurers.[9] The former had estimated the average medical trend rate of Malaysia from 11.4% to 13.1% per annum, while the latter estimated a rise from 13.4% per annum to a projected rate of 13.6% per annum for same period of 2018 to 2019. Both have cited Malaysia as among the few countries in the Asian region to have extreme high medical trend rate, far exceeding the global average rate, which stood at only 7.6% per annum in 2019 according to Willis Tower Watson (2019). These reflect high demand for private healthcare services especially aftermath of the Global Financial Crisis in 2008.

On the other hand, Malaysia has progressively upgraded of its public healthcare services for public health, and it is brought about by socioeconomic circumstance and challenges (Ng et al., 2014). Thus, Malaysian government has continuously set health as its second bigger economic sector for public expenditures, second after education sector. It was recorded at 6.99% against 20.9% in year 2016 and 7.34% against 21.7% in year 2017 for respective ratio of public sector health expenditure of general government expenditure (GGHE/GGE) and ratio of government expenditure on education of government expenditure.[10] However, the public health expenditure is susceptible to government fiscal space influenced by changes of political policy and economic situation, and it has shown trend of financial and economic austerity in past few years. The frequent economic recessions or contractions such as the Global Financial Crisis (GFC) in 2008 has vividly affected national and household incomes which inevitably translates to low private or public spending on health apart from education and foods consumption (Ali and Hatta, 2013).

In Liaropoulos and Goranitis (2015) study, they discovered that unemployment and economic distress cause strain on government fiscal space, increasing the demand for public health services and limiting access to private services. The incidence was apparent in Malaysia with a sudden drop of government's funding

[8] The annualised rates are derived by calculating geometric mean, a time weighted rate of return (TWRR).
[9] Private insurers provide profit- driven Private Voluntary Health Insurance (PVHI) and employees insurance benefits.
[10] Based on data from MHNA(2018), MNHA(2019) and Word Bank's World Development Indicators.

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to health in relative to other public expenditures from 6.21% in 2006 to 5.48% in GFC 2008, which is represented by general government health expenditure (GGHE) in the share of general government expenditure (GGE). However, according to data in MHNA (2018) the demand for healthcare services continued to increase of its absolute value of health expenditures for both public and private healthcare sectors for period 2006-2009, but higher growth of public health spending as compared to private health spending is seen in 2009 at 60.33% and 39.67% respectively after the economic crisis, a contrast to its preceding year at 56.93% and 43.07% respectively. Nonetheless, the public health expenditure had eventually increased to 7% in 2016 and recorded 7.34% in 2017 according to latest MNHA(2019) report.[11] This level remains uncertain and is still considered deficient against the global target of 11.5% and a proactive target of 15% posited for Africa Union region in WHO's Abuja Declaration (McIntyre and Kutzin 2016).[12]

Demographic transitions significantly affect global health systems and pose challenge to sustainability of health financing systems, it causes population transitions of many countries by shifting from high fertility to low fertility and from high mortality to low mortality (Taylor and Maurice, 2019). This phenomenon has taken place in Malaysia, and the country is projected to become an aged society in between 2050 and 2055 (Figure 1.2), a pivotal time with when Malaysians aged 65 or over is more than pre-working Malaysians aged 14 and below. When compared to the more developed countries, Malaysia has a relative short time to prepare for the population transition into an aged nation. The older population aged 65 years or over will take only 23 years to double from 7 percent in 2020 to 14 percent in 2043 (Tengku Abdul Hamid, 2015, March 13).

[11] MNHA (2019) was published for public after this thesis was submitted for viva voce, therefore analyses in this thesis do not taking in data from this latest edition.
[12] Abuja Declaration was formed in April 2001, which the heads of state of African Union countries have pledged to set a target of allocating at least 15% of their annual budget to improve the health sector. At the same time, they urged donor countries to give at least 0.7% of their GNP as official Development Assistance (ODA) to these African developing countries.

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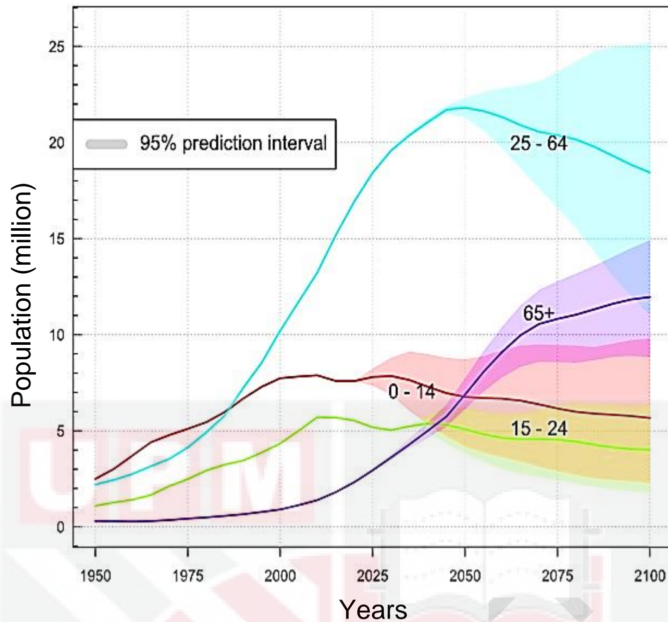

Figure 1.2: Population by broad age groups of Malaysia
(Source: United Nations, Department of Economic and Social Affairs, Population Division World Population Prospects 2019, Volume II: Demographic Profiles)

According to Lee (2003), the classic demographic transition begins with decline of mortality, followed a time by decline of fertility. This has led to an interval of first increased, then decreased population growth before population ageing. The population of Malaysia is expected to have a growth, which has seen Malaysia's post-War II population at about 6 million people and today has reached 30 million people. However, according to UNDESA, the country's population growth trend is projected to be a diminishing one caused by the fertility rate at 2.01 lives births per woman in 2015-2020, a drop from 6.35 lives births per woman in 1950-1955 (Figure 1.3).

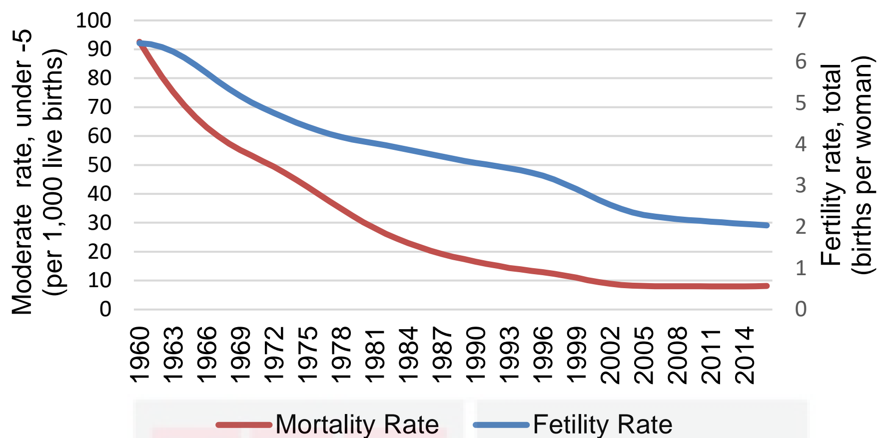

Figure 1.3: Demographic transition in Malaysia
(Source: The World Bank, World Development Indicators)

Many empirical studies have shown that health expenditure per capita rises at older ages (Fuchs, 1998; Meerding, Polder, Bonneux, Koopmanschap and van der Maas, 1998; Mendelsohn and Schwaetz, 1993). In Japan, the trend of age-specific profile of health spending exhibits a J-shape like. The health spending per capita is somewhat high at very young age, it declines along the increase of age and remains stable for most of prime age period, before escalating at old age about age 55 for men and age 60 for women (The Word Bank, 2016). As for Malaysia context, no such microeconomic analysis on health expenditures based on age groups was conducted before, but the report of Lowess smoothing regression adopted in Malaysia Health Care Demand Analysis (2013) with utilisation of healthcare services exhibited a proximate look of this pattern especially of health consumptions by males (Figure 1.4). Nevertheless, both genders showed exorbitant health utilisations towards old age groups and a downward sloping of utilisation of healthcare services from birth until adolescent especially for male.

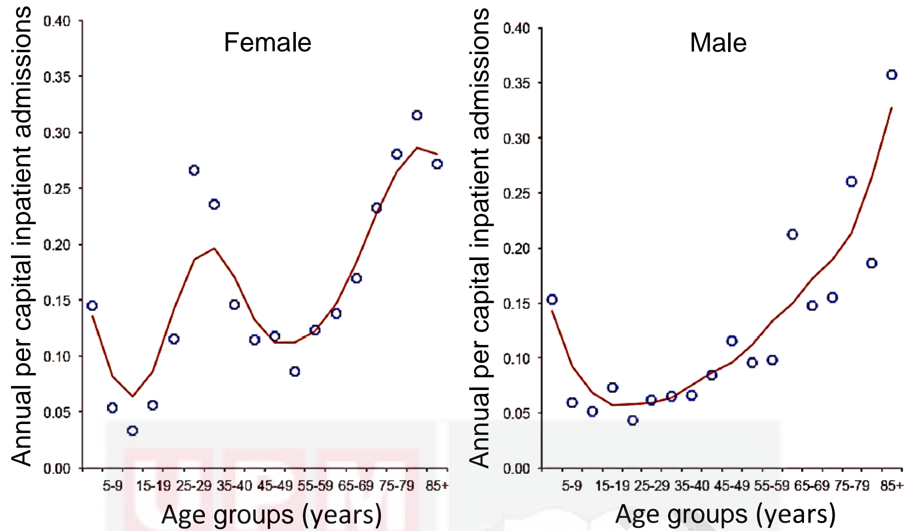

Figure 1.4: Annual per capital utilisation of inpatient care following Lowess smoothing by gender and 5 year age groups, 2011
(Source: Malaysia Health Care Demand Analysis, 2013)

An implication from this demographic transition rises a prevalence of non-communicable diseases (NCDs). Malaysia had recorded the NCDs cases for approximately 60% of burden of disease as measured by Disability Adjusted Life Years (DALYs) lost due to premature death, disability, and morbidity in 1990, and this share went up to approximately 72% in 2013 as shown by epidemiological transition in Figure 1.5 (Atun et al.,2016). As income rising, basic health problem associated with absolute poverty become less significant, but the diseases related to affluence would escalate immensely, resulting a shift from prevalence of communicable to non-communicable disease (NCB) (Aljunid S. M. and Abdul Mohsein N. A., 2002). Murphy et al. (2020) had conducted a study of household economic burden of non-communicable diseases in 18 countries with various group of country's income levels, including Malaysia as one of the upper middle-income countries. He revealed that the absolute risk of catastrophic spending is higher in households with NCDs compared with no NCDs, regardless category of country's income levels.

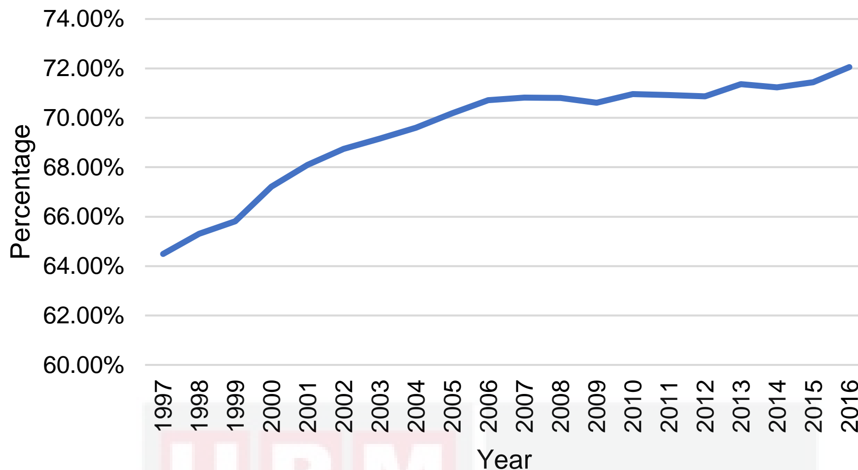

Figure 1.5: Epidemiological transition measured by DALYs (Disability-Adjusted Life Years) for both sexes, all ages and non-communicable diseases (NCDs), 1997-2016
(Source: Institute for Health Metrics and Evaluation Database)

Despite all the challenges mentioned above, Malaysia health spending remains relatively low. The per capita health expenditure in PPP of developed countries ranged from twice to four times higher as compared to Malaysia's level at RM1,038, with USA as the outlier (Figure 1.6). The country's nominal total health expenditures per capita have grown at 7.77% per annum from RM395 to RM 1,636 for period 1996-2017, higher than its nominal GDP per capita growth rate at 5.96% per annum from RM12,945 to RM 38,887 for the same period.[13] This could have alarmed stakeholders and health consumers of seeming unsustainable health spending against income growth in Malaysia with this high variation of growth rates.

[13] Applying geometric mean calculation on the nominal values.

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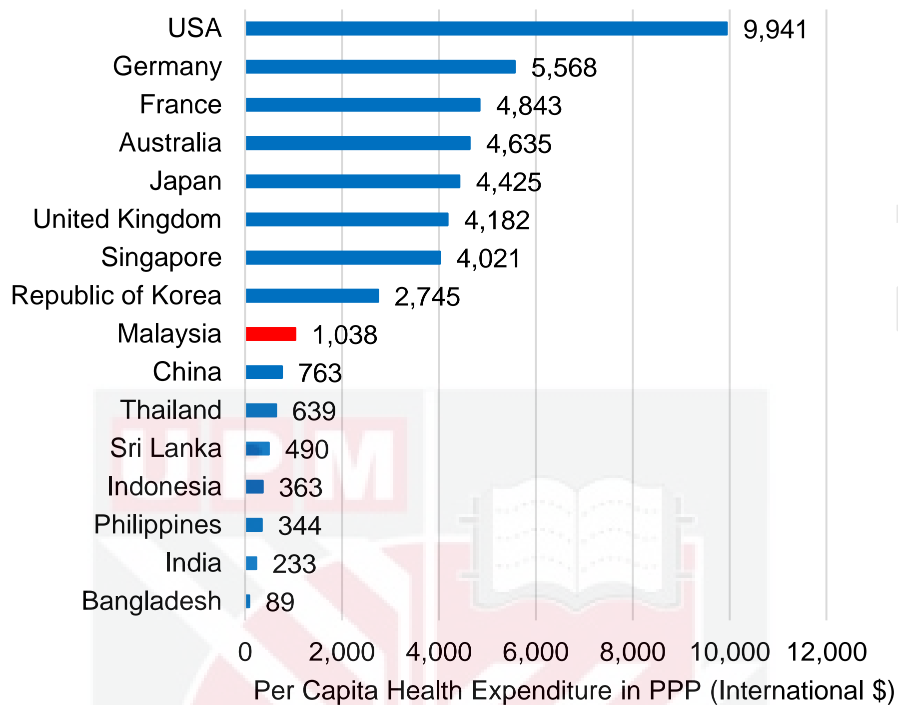

Figure 1.6: International comparison of per capita health expenditure, 2016
(Source: WHO Global Health Expenditure Database)

Overall, the phenomena described above has put Malaysian health system at a crossroad. The effect has created asymmetric transition, where the new challenges of rapid transitions of demography and epidemiology have not been matched with a corresponding transition in the health system to better address the current and future needs of its citizens, albeit the country's health system has evolved much since 1980s with a policy has successfully addressed health issues and provided great outcomes of high levels of maternal mortality, infant mortality and under-five mortality (Atun et al.,2016).

1.1.4 Financial Risk Protection

WHO has identified the ability health system to protect households against financial risks as the core element of effectiveness of primary healthcare (Rannan-Eliya et al.,2013; WHO, 2008), this refers to funding healthcare services in a way that protects individuals or households from financial ruin. It has become a measurement used for the incidence of large catastrophic health spending in disrupting longer term welfare and living standard of households, in which it is considered critical when the out-of-pocket health expenditure exceeding 40% of a household's non-subsistence income (Xu et al., 2003). Thus, it induces the incidence of impoverishment that forces living standards to

below the poverty line. Many studies have recorded that householders face financial catastrophe and impoverishment as a result of relying on out-of-pocket (OOP) (Xu et al., 2003; Xu et al., 2007; Xu et al., 2010). In Malaysia's context, both incidences have declined from 1980s to early 2000s (Rannan-Eliya et al., 2016) despite a high out-of-pocket healthcare expenditure at 38% of total health expenditure (Figure 1.7) and 1.59% of GDP in 2016 (MNHA, 2018). The finding is in contradiction to empirical evidence found by Xu et al. (2010) which had showed catastrophic health expenditure and impoverishment would only remain low in countries where its OOP could represent less than 15-20% of total health expenditure.

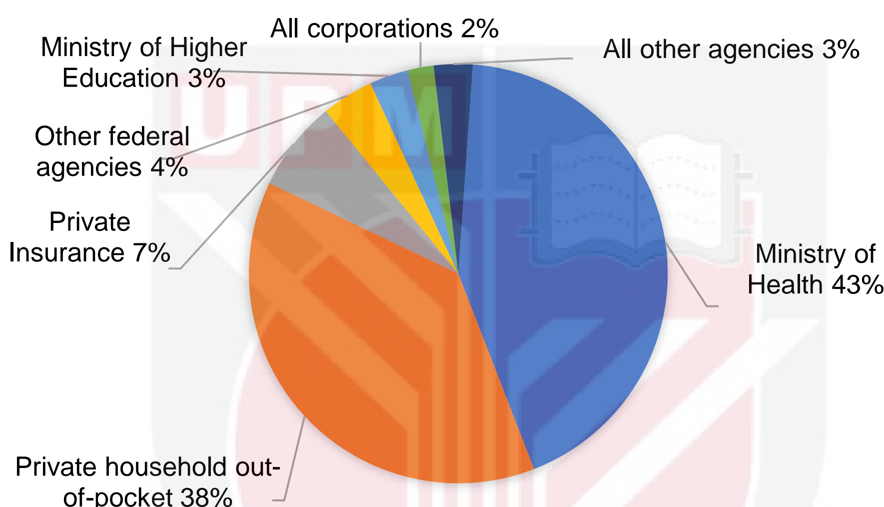

Figure 1.7: Total expenditure on health by sources of financing, 2016
(Source: Malaysia Health Accounts, 2018)

In Malaysia, out-of-pocket health spending is the main constitutor to private health expenditure with a lion's share of 78% of overall private health expenditure, whilst public healthcare is considered almost fully financed by the government through the Ministry of Health (MOH) with universal access (MNHA, 2018). In the report of Malaysia Health Care Demand Analysis, Rannan-Eliya et al. (2013) identified half of household out-of-pocket health expenditure in Household Expenditure Survey (HES) 2009/10 was for purchase of medicines with majority for non- prescriptive medicines for health maintenance, a quarter for outpatient medical treatment and 12% was accounted for inpatient treatment. This situation happened mainly because of private health sector has gained dominant position in primary care services (Juni, 2014). Nonetheless, the country experienced continuous increments of out-of-pocket health expenditure year after year, especially in the post global financial crisis 2008 era. The trend of out-of-pocket health expenditure share of total health expenditure behaved inversely in comparison to peer middle-income countries like Brazil, Mexico,

Thailand and Turkey (Figure 1.8), which all have shown downward trends through their health financing reforms (Atun et al.,2016).

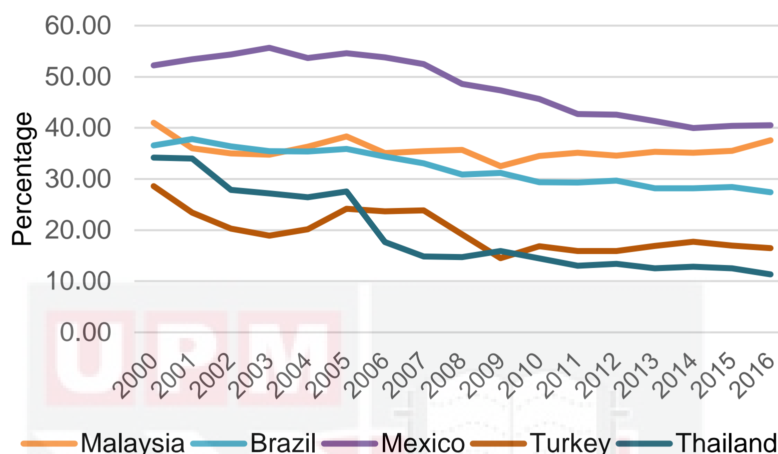

Figure 1.8: Out-of-pocket spending share of current health expenditure (Source: WHO-NHA)

1.1.5 Human Development

Human development is a phenomenon from social change and also a social indicator. Human development was first introduced in 1990 as a new reductionism with emphasises on human well-being as the central object. According to UNDP, its conceptual focus began with improvement of people's lives with greater wellbeing from income growth rather than the economic growth.[14] This expose to opportunities of more freedom to live lives that people value at such as to live a long and healthy life, and to be educated, which the result allows people to have access to resources needed for a decent standard of living. In conclusion, the process enables environment to enlarge people's choices to enjoy long, healthy, and creative lives.[15] The first evolution of human development "People are the real wealth of nations" formed by economist Mahbub ul Haq (UNDP, 1990). However, it faced criticisms in its initial stage from decision-makers who were seemed to believe that economic growth and wellbeing were synonymous. It was only at later time, people begun to utterly understand GDP from the famous affirmation "GDP measures everything in

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[14] United Nations Development Programme (UNDP) through Human Development Report Office (HDRO) promotes and researches matters related human development. Available at http://hdr.undp.org/en/home.

[15] The definition of human development is obtained from United Nations Development Programme (UNDP). Available in website http://hdr.undp.org/en/humandev.

short, except that which makes life worthwhile" left with excitement on this subject.[16]

The human development is encrypted in Human Development Index (HDI). The underlying dimensions of this index are long and healthy life, knowledge and a decent standard of living, the derivation of the index is shown in Figure 1.9. Those represent human-centred rather than commodity-centred socioeconomic indication to the country. In this context, human development index seems more appealing as the single variable represents socioeconomic factors in the study of determinants of health.

According to UNDP Human Development Indices and Indicators, Malaysia is categorised under High HDI category, with index of 0.801 in 2016, improved drastically from its initial index of 0.643 in 1990 to 0.706 in 1997 (Figure 1.10). HDI is ranked on a scale from 0 to 1.0, with 1.0 being the highest human development. HDI was originally broken down into four tiers- Very high (approximate 0.8 to 1.0), high (approximate 0.7-0.79), medium (approximate 0.55-0.70), and low (below 0.55).[17]

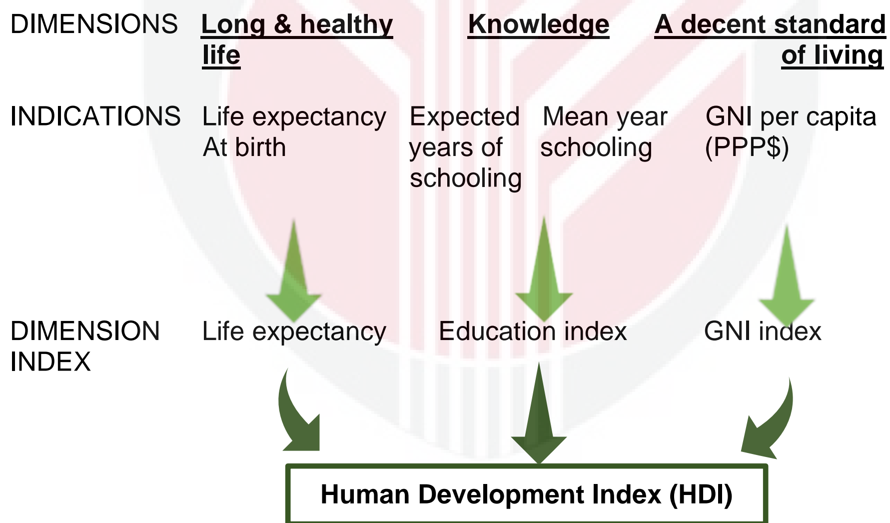

Figure 1.9: Human Development Index (HDI)
(Source: UNDP)

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[16] From Robert F. Kennedy's critiques of GDP at the University of Kansas on March 18, 1968. It triggered economists to have interest of human development. Available in website https://www.jfklibrary.org/learn/about-jfk/the-kennedy-family/robert-f-kennedy/robert-f-kennedy- speeches/remarks-at-the-university-of-kansas-march-18-1968.

[17] The index level for all categories of Human Development Index (HDI) is subjected to change. It has been adjusted higher along the years since its establishment in 1990.

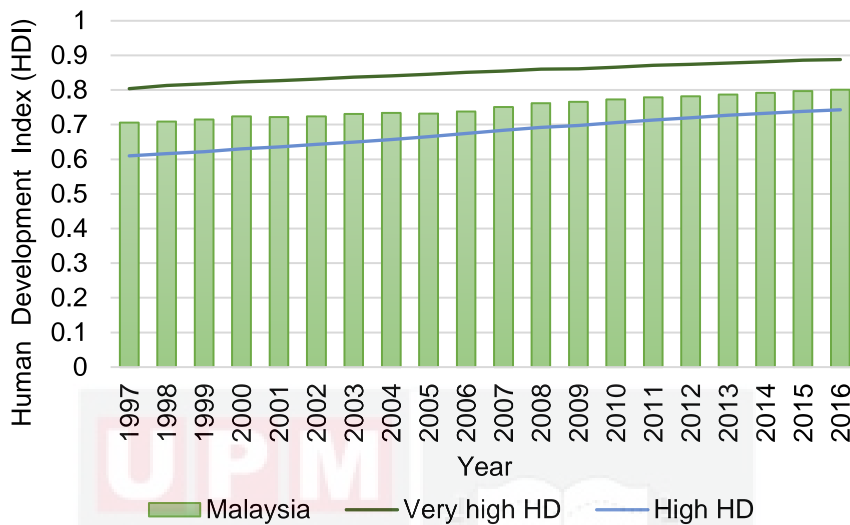

Figure 1.10: Human Development Index of Malaysia, year 1997-2016
(Source: UNDP, Human Development Reports)

The emergence of Malaysia health consumers' new expectation and preference as their incomes rise has caused high demand for private healthcare services, despite the country has universal access to healthcare services provided by the public healthcare services. Such a trend with high proportion of private healthcare expenditure is likely affecting the equity of health financing predominantly of lower income people, given that the poor tend to have lower health status or higher health risk and more vulnerable to financial risk (Chai, Whynes and Sach, 2008).

1.1.6 Malaysian Health Financing System

At a glance of Malaysian mixed health system, public health expenditure occurs in public healthcare services. It is a taxation-based health financing with primarily financed by general government revenue or government spending on health through Ministry of Health and other national, states and local agencies, and public facilities paid by social health insurance SOCSO, public retirement fund EPF.[18] The Social Security Organisation (SOSCO) provides medical benefits for work related injuries of employed population earning less than RM3,000.[19] While saving contributions to Employee Provident Fund (EPF) from the formal working population, of which 30% of individual contributions can be withdrawn

[18] SOSCO and EPF are compulsory for formal working population, and optional to sole-proprietors of small business owners.
[19] Prior to 1 June 2016, SOSCO was only mandatory for employees who were earning less than RM3,000 per month. It was then adjusted to RM4,000 per month since the date. Employees who were earning more than RM3,000 per month could "opt in" to SOCSO.

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for reimbursement of healthcare expenditure. Health financing from Private Voluntary Health Insurance and out-of-pocket health spending are negligible in public health spending.[20] Inversely, private health expenditure comes from direct individual's out-of-pocket and funds received from Private Voluntary Health Insurance (PVHI), private corporations, SOCSO and EPF. Figure 1.11 elaborates in detailed of the health spending and financing flows in Malaysia.

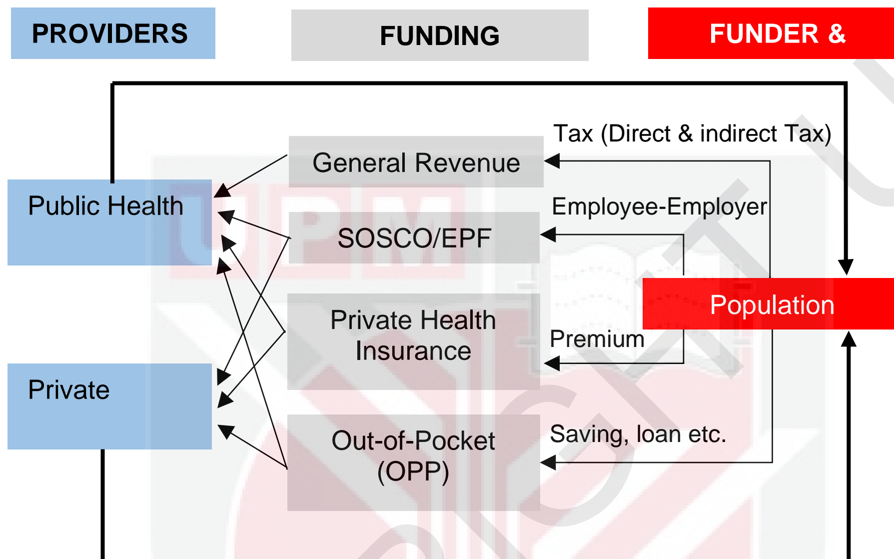

Figure 1.11: Health spending and financing flows
(Source: Malaysia Health Systems Research Volume 1, 2016)

Despite substantial improvement of its parallel delivery of healthcare services via the government-funded public sector and private sector in tandem with high demand on healthcare services over the years, the country's health financing system still remains status quo without adoption to any mandatory universal health financing mechanisms since its establishment. There are notable mandatory universal health financing mechanisms around the world, which have brought the countries to achieve high sustainable level of UHC. The countries like Canada, South Korea and Taiwan have applied national health insurance (NHI), which its healthcare services are provided through private providers and are paid by government-run insurance[21] ; Germany, France and Japan adopt to Bismarck model, a social health insurance (SHI) with universal insurance system financed jointly by employers and employees through payroll deduction[22] ; and Great Britain, Spain, and New Zealand uphold their Beveridge model of using

[20] In this study, we have used health expenditure and health spending in a same meaning.
[21] NHI model has elements of both the Beveridge and Bismarck models. All citizens fund through a premium or tax.
[22] Bismarck model offers non-profit health insurance plans, a social insurance. Doctors and hospitals tend to be private, but it has tight regulation of medical services and fees.

tax monies to pay for expansion of government-funded delivery covering almost all care in public healthcare cost (Wallace, 2013).[23]

According to World Health Organization (2008 and 2010), regardless of which health financing system is employed, the system must be robust enough to attain and sustain increased coverage whist is able to ensure no financial barriers prevent people from using the services they need and does not cause financial hardship because paying for these services. Furthermore, the health financing functions shall focus on three core tasks- raising sufficient funds; pooling funds to spread financial risks; and spending wisely.

However, Malaysia is currently having plethora of national health issues as described in preceding sections that requires judiciously planning to address its health financing system as the solution. There are three biggest issues, namely unequal distribution of healthcare benefits, rising healthcare cost, and strain on public healthcare institutions (Lee, 2012). Due to these challenges, there were several past attempts by the government to replace existing tax revenue-funded system which solely benefiting public healthcare system to a social health insurance (SHI) since 1996 Seventh Malaysia Plan, with a guise of the National Health Financing Authority (NHFA) at that time following after failure to corporatise state hospitals (Chee, 2012; Lee, 2012). Many health consumers have also seen the failure of Private Voluntary Health Insurance (PVHI) as the health financing solution in handling the impact of the government promoted policy of privatisation (Ahmad, 2019). It has adverse effect of increasing Out-of-pocket (OOP) payments by those unable to afford private healthcare insurance but require private care, and deficient against social health insurance (SHI) which ameliorating the inevitable rise in healthcare cost; provide steady and sustainable source of finance in addressing equity in payment issue; and avoiding risk rating by spreading risks between those with high needs and low needs for healthcare services apart from inducing mandatory universal coverage (Lee, 2012). To date this initiative remains unsuccessful to implement despite many planning had been done.

1.2 Problem Statement

Economic development in in Malaysia has brought about changes in population composition and changes of lifestyles. These changes have also caused transitions in morbidity and mortality patterns. The socioeconomic has evolved and it causes impetus to its citizens to have higher levels of health needs and demand. This happens concurrently with changing of political economy in the country. In these situations, it has accentuated the need of sustainable health system, especially without compromise of financial risk protection and equity which are the main agenda of Malaysia's health policy.

[23] In Beveridge model, most of hospitals and clinics owned by the government. Private doctors collect their fees from the government.

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The modern health consumers possess new expectations, a situation of no longer buying 'cure' on their health consumptions but buy 'care'. This preference has created an unprecedented phenomenon with a great shift towards private healthcare services. Laissez-faire, health consumers expect quality healthcare services with demand of fair opportunities and choices, thus expanding the richness of consumers' lives, rather than simply the richness of the economy in which the consumers live on.[24] Hence, the phenomenon of human development has surfaced in this socioeconomic condition. Therefore, in traditional determinants of health study which usually focuses on demographic transition might not be able to provide a holistic parameter for the production of good health in this circumstance.

Population ageing through changes of population age structure is influencing economy of the country, and this has taken place in Malaysia. Working, consuming, sharing and saving are integral economic activities affected by the trend of this population ageing (Mason and Lee, 2011). In a descending trend of fertility rate, it raises the share of the elderly population, parents with fewer children are able to invest more in each child, such as health for family and education for children, this reflects a quality-quantity trade-off (Lee, 2003). However, this subject seems to be an implicit factor to the progress of human development and is rarely investigated especially on its possible economic impact on the spread of divergence in between public and private healthcare consumptions.

In the progression of human development, people have rapidly improved their lifestyle resulting from higher income earning, better education level and better job opportunities. Lifestyle changing has contributed to nutritional transition. These contributed to the rise in the prevalence of Non-Communicable Diseases (NCDs). This prevalence has increased health risk, demand, cost, and expenditure. In other words, the epidemiological transition poses challenging to health system, as it is detrimental to health financing and can jeopardise financial protection.

Socioeconomic changes including income growth, and the effects of demographic and epidemiological transitions are commonly claimed to have significant implications on health expenditure in voluminous studies. But it could cause a "red herring" in determinants of health study by just focusing on demand side as the factors, because it distracts from other important underlying cost drivers, the supply side, usually non-demographic factors such as policy choices, inflation, supply-induced demand effects and technological progress (World Bank, 2016). Hence, a study of existing health financing mechanisms specifically the out-of-pocket and prepayment mechanisms on health expenditures, apart from government funding on health within government fiscal space, through

[24] United Nations Development Programme has done intensive research on human development issue. It published yearly UNDP Human Development Report since modern concept of human development theory was introduced in 1990 by Mahbub ul Haq, Üner Kirdar, and Amartya Sen. Available in website http://hdr.undp.org/en/humandev.

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health financing transition can provide a round out study of factors affecting health expenditures and enables investigation on supply side. Thus, it helps to verify sustainability of health financing system in the midst of influence of human development and epidemiological change on Malaysian health system.

1.3 Research Questions and Objectives

The main interest of this study is to investigate the subjects of human development and health financing transition on health expenditures. This study has raised two important questions to be investigated:

i. As the human development issue has become bigger concern to modern societies, so does it provide holistic factor in determining the trend of health expenditure?
ii. Does the country in the right path of financial risk protection against escalation of health spending?

In answering these two queries, this thesis is segregated into two research objectives, which answer to demographic and non-demographic factors separately:

i. To investigate the determinants of health based on human development index and epidemiological transition.
ii. To investigate the health financing transition based on existing health financing mechanisms applied in both private and public healthcare services.

1.4 Significance of Study

The subject of relationship between human development and health spending is still rarely investigated by health economists. On the other hand, there is an absence of literature about health financing transition specifically for Malaysia's context. Therefore, this study would be able to fill the gap of literature for both issues. Apart from interest arouses these, it is specifically designed to test these factors in influencing private health expenditure, as the private health spending seemingly outpacing the public health spending with obvious growth trend after Global Financial Crisis 2008. Both objectives in this study are tested for cointegration to study any possible long-term relationship or equilibrium amongst variables, which it proves sustainability of any existence of cointegration relationships in between health expenditures and existing financing mechanisms, and as such a time series data analysis ARDL method is adopted for investigations.

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The findings are extremely important and critical for the stakeholders involved in this health sector. For policymakers and health economists, this study provides a critical information of viability of the existing mixed health system through the investigation of the robustness of existing health financing mechanisms congruent with the sustainability of the health financing system. While through the study of human development factor in determinants of health, it would allow to the stakeholders to evaluate the degree its influence on health spending by studying its elasticity level. The results help them to prioritise and position their resources in assuring UHC and good health for the welfare of citizens.

Indeed, Malaysia has demonstrated a classic case of asymmetric transition in its current health system as claimed by Atun et al. (2016). Therefore, this study is deemed important at this crossroad. It attempts to verify and quantify the sustainability of current health system. The results from this study allow the policymakers to capitalise or improve current health financing system or finding new health policy with more proactive health financing system model. The findings in this thesis would allow the country to identify any potential gap in health system, realign its health policy and system to uphold its UHC agenda, these in line with its commitment to SDG for the good health and well-being of its citizens.

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