



Faculty of Economics and Business

**THE RELATIONSHIP BETWEEN INCOME DISTRIBUTION AND
MORTALITY AND ITS POSSIBLE EFFECTS TOWARDS THE GDP PER
CAPITA: IN THE CASE OF MALAYSIA**

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29739

Bachelor Degree in Economics with Honours
(International Economics)
2014

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MORTALITY AND ITS POSSIBLE EFFECTS TOWARDS THE GDP PER
CAPITA: IN THE CASE OF MALAYSIA**

BERNARD NATHAN SEBASTIAN

This project is submitted in partial fulfillment of the requirements for the degree of
Bachelor of Economics with Honours
(International Economics)

Faculty of Economics and Business
UNIVERSITI MALAYSIA SARAWAK

2014

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Final Year Project Report

Masters

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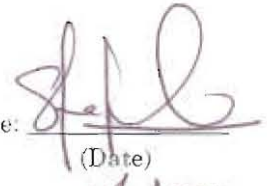
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ABSTRACT

THE RELATIONSHIP BETWEEN INCOME DISTRIBUTION AND MORTALITY AND ITS POSSIBLE EFFECTS TOWARDS THE GDP PER CAPITA: IN THE CASE OF MALAYSIA

By

Bernard Nathan Sebastian

The objective of this study is to assess the relationship between income distribution and mortality, which are statistically significant to the GDP per-capita in Malaysia. This study uses the annual time series data of GDP per-capita, Gini Index and mortality from year 1968 to 2010. The methodologies that been employed in this study include the Phillips-Perron (PP) unit root test, the Johansen-Juselius Cointegration test, Vector Autoregressive (VAR) test, and the Variance Decompositions (VDC) test. The empirical results indicate that there is a unidirectional causality running from GDP per capita towards Gini Index and mortality and also there is a feedback relationship between Gini Index and mortality. In the context of out sample, the GDP per capita appears to be the most exogenous variable and mortality appears to be the most endogenous variable at the 20 year horizon period. Several policies have been suggested in this study that may be carried out by the Malaysian government to further expand the nation's economic development that may eventually be absorbed into the economic growth of Malaysia.

ABSTRAK

HUBUNGAN ANTARA PENGAGIHAN PENDAPATAN DAN KADAR KEMATIAN DAN KESAN KEMUNGKINAN TERHADAP KDNK PER KAPITA: DALAM KES MALAYSIA.

Oleh

Bernard Nathan Sebastian

Kajian ini bertujuan mengkaji hubungan diantara pengagihan pendapatan dan kadar kematian dan kesan kemungkinan terhadap KDNK per kapita dalam konteks Malaysia dengan menggunakan data tahunan yang merangkumi tempoh diantara tahun 1968 dan 2010. Metodologi yang digunakan dalam kajian ini ialah Phillips-Perron (PP) unit root test, Johansen-Juselius cointegration test, Vector Autoregressive (VAR) dan akhir sekali Variance Decompositions (VDC). Keputusan empirical menunjukkan bahawa terdapat hubungan sebab dan akibat yang bergerak dari KDNK per kapita ke pengagihan pendapatan and kadar kematian dan juga pengagihan pendapatan dan jangka kematian. Beberapa polisi telah dicadangkan dalam kajian ini yang boleh dilaksanakan oleh pihak kerajaan Malaysia bagi menggalakkan pertumbuhan ekonomi Malaysia di masa hadapan.

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**TITLE: THE RELATIONSHIP BETWEEN INCOME DISTRIBUTION AND
MORTALITY AND ITS POSSIBLE INTERACTIONS WITH GROSS
DOMESTIC PRODUCT (GDP) PER CAPITA: IN THE CONTEXT OF
MALAYSIA.**

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study is a fusion of economic growth, development and epidemiology because it involves GDP per capita, income distribution and mortality, in the case of Malaysia.

Gross Domestic Product (GDP) Per Capita

Gross domestic product (GDP) per-capita is one of the economic growth indicators in which Simon Kuznets (1966) stated economic growth as “a sustained increase in per capita or per worker product”. This notion was widely supported by Douglass North and Robert Paul Thomas (1973) with total output growing being faster than the size of population. GDP per capita, indicates the share of an average person or in general, because by definition, it is the total gross domestic product

(GDP) divided by midyear population size. GDP is a sum of gross value added by all resident producers in the economy adding product taxes and subtracting any subsidies not included in the value of the products. It is calculated without making any deductions for depreciation of fabricated assets or for depletion and degradation of natural resources¹.

This study is aimed at capturing the distribution of income in relation to the GDP per-capita in Malaysia between years 1968 to 2010. Needless to say, behind this scene of distribution of income, lies a variety of personal experiences. GDP per-capita is also reflected in the quality of life, as national income is naturally associated to its population, hence, an increase in the size of population is expected to increase GDP in the long run. Because GDP per-capita is able to capture how much of the total national income is distributed among the total population, this study focusses on the mortality as a factor that affects the GDP per-capita in general. GDP on its own will not be used because it is not a perfect measure of well-being or quality of life, because it is limited to the growth factor and does not include development in general. However, development goes hand in hand with growth as far as economic progress is concerned. Development as a culture could alter the mentality of the population because civilization comes with great knowledge. Hence, when the population develops, economic growth will take effect naturally. GDP also does not take into account for economic activities that has values, for instance, non-government organization (NGO) activities. This is due to the absence of transaction

¹ Definition is obtained from <http://data.worldbank.org/Indicator/NY.GDP.PCAP.CD/countries/MY?display=graph>.

cost or a market price. Apart from the NGO's, black market transactions, students and housewives are excluded from the labour force. As mentioned by two Nobel Award winning economists, Amartya Sen and Joseph E. Stiglitz, GDP alone is not sufficient and therefore measures of sustainability and human well-being should be included when considering issues of quality and life. The GDP only concerns all the goods and services made available in a country in a given period of time. GDP generally indicates the overall health status of a country's economy for comparative purpose. In essence, it is theoretically the amount of money every individual obtains in a particular country, of the people. This implies that GDP per capita provides a much better measure of living standards as compared to GDP alone.

However, the historical evidence between the upwards trend of the demographic and the income level that has been described are still ambiguous (Thirwall, 1994). There is no clear consensus as to whether population expansion is good or bad to the living standard or the per capita income. The relationship between population growth and per capita income could be considered as positive when the population is expanding in a country which stimulates the economic development, boosts competition in business transactions and stimulates market growth. On the other hand, this could be considered a negative relationship because when population grows rapidly, it will be a burden to the country's economic development, and because of that, it will increase the dependency burden. From the very beginning, Thomas Malthus (1798) has warned that the increasing world population or better known as over population has a negative impact on living standards. But not all scholars shared the same point of view, for instance, Simon (1996) said that the

ultimate resource is the human beings itself which contributes to economic development.

Income Distribution

It is best to begin with the quotation by David Ricardo in year 1817 “The produce of earth, all that is derived from its surface by the united application of labour, machinery and capital, is divided among three classes of the community, namely, the proprietor of the land, the owner of the stock or capital necessary for its cultivation, and the labourers by whose industry it is cultivated. But in different stages of society, the proportions of the whole produce of the earth which will be allotted to each of these classes, under the names of rent, profit and wages, will essentially be different. To determine the laws which regulate this distribution is the principle problem in Political Economy”. This quote gives a very broad yet simple understanding of the distribution of income. Scarce resources are controlled or owned by personal interest and allocating them is what changes individual benefits. The allocation reflects the way competing interests are resolved in the pursuit of efficiency. Without thinking about the distributive consequences, it is difficult to deal with distributive problems without some allocation dimension. On the global scale, the distribution of income became more unequally distributed when the industrial revolution took place, also, income distribution can help to explain the rate of growth of the GDP per capita. (Berg, 2012).

There is no specific theory of income distribution (Atkinson and Bourguignon, 2000). The author stated that there is no unified theory in the determinants of wages in the labour market, factor shares and the accumulation of wealth but the theory offers a series of building blocks with which distribution issues are studied. The distribution of income has encompassed a number of theoretical developments in the micro and macro theory of factor pricing and factor accumulation. A theory of income distribution must be drawn on a union so that it may hold and the dynamic of the competitive structure of an economy. That is why the theory of income distribution is referred to building blocks rather than a unique theory.

Income distribution can be measured using several methods. One of it, which is the most common practice in measuring, is the, Gini coefficient. It is an index that ranges from zero to one. With a value of zero indicates that income is distributed equally through the country, meanwhile, with a value of one, income inequality occurs where only one individual receives most of the income in the economy. In short, the poor becomes poorer and the rich becomes richer. However, there are other several methods to measure the distribution of income, such as, the Robin Hood index, Theil index, and Palma ratio

The Robin Hood index is closely related to the Gini coefficient which is based on the Lorenz Curve. It is also known as the Hoover index. It is basically transferring money in proportion from the rich to the poor to achieve equality. The value of the index implies the share of the total income above the mean that needs to be transferred to the income that is below the mean to achieve equality. Next, the Theil index, which is used to measure economic inequality and also a measure the lack of racial diversity. It is similar to the redundancy in information theory, whereby the

observed entropy will be deducted of from the maximum possible entropy, it is denoted as T_T . It was first proposed by an econometrician Henri Theil. On the other hand, the Palma ratio emphasizes on distributional politics, whereby the conflict between the rich and poor for the other half of national income, and who the middle class side with. The ratio is defined as the ratio that captures the richest 10 percent of population share of gross national income and divided by the poorest 40 percent of the population share. To narrow the gap under Palma ratio, it is by raising the share of national income of the poorest 40 percent or by reducing the share of the top 10 percent.

In Malaysia, there is a trend of inequality in the income distribution and has not improved significantly over the past three decades (1968 to 2010). The inconsistency of the trend warrants probing into its cause and consequences. According to Feiveson (2012), there are several causes of the income inequality, skill based technology being the leading cause in advanced economies since. Globalization is also part of the contributor to the increasing trend of inequality, especially in developed nations in terms of middle income jobs that have been moved off-shore. Higher education must be attained by those replaced workers to obtain higher pay jobs or either remain or confine themselves in their own comfort zone and to also remain the same. According to Autor, Dorn, and Hansen (2011), this effect took place more prominently in the past one decade. In advanced economies, the reduced number of unions and real minimum wage has also contributed to the income equality. Back in time, the wage structure of the lower middle class workers was boosted by the labour unions. (Card, 2001). The nominal minimum wage has not also been corrected for inflation. Finally, the most important factor in the rise of

income inequality is due to the emergence of the financial sector. Atkinson, Piketty, and Saez (2011) mentioned that, a substantial portion of the rise in income inequality has been due to the increase in the share of income accruing to the top one percent of the income distribution. On the contrary, due to the increase in salaries in the financial sector this in turn can be attributed to the structure of the financial system and its incentives.

The effects of income distribution can be observed from a research by Berg and Ostry (2011). It claims that a country with high income inequality tend to adopt policies that can hinder long term growth potential, due to the tension between the possessor of economic power and political power. This means that, it solely looks into the short term growths which may not have stabilized influences. Competition between income earners will occur at high levels when inequality occurs. Social pressure may arise among lower earners in terms of borrowing or if possible, in attempts to maintain consumption level similar of their wealthier neighbours. According to Rajan (2010), this leads to macroeconomic instability and is believed to be one of the causes of the recent economic recession. This is because higher inequality exits the effect on growth and macroeconomic stability. Another negative impact to be considered is the increased stratification within the society. With different living standards, people face various kinds of pressures due to the emergence of a class society, which depraved social and health outcomes. (Pickett and Wilkinson, 2009). These negative consequences may have lasting effects on future generations where higher inequality tends to be linked with lower intergenerational mobility.

On the perspective of well-organized equal income distribution, the state is able to provide all the basic needs to the public, such as, providing free education, public transport and medical treatment. Apart from that, sufficient wages to obtain the necessity of life can be provided for the unemployed and as well for the retirees. Hence, this ensures the welfare of the public is well taken care of. This can be observed in countries like Norway and Australia. These two countries are well known in ensuring the welfare of the public is met. This is also supported by the Central of Intelligence Agency (CIA, 2013). If these issue has not been addressed properly, not only the gap between the rich and poor widens but other economic and non-economic factors will escalate. As Adam Smith (1776) mentioned “No society can surely be flourishing and happy, of which by far the greater part of the numbers are poor and miserable”.

Mortality

Generally, mortality relates to the study of epidemiology which is highly related to health related issues. The key feature of epidemiology is the measurement of disease outcomes in relation to a population at risk. A group of people, healthy or sick, or if they had a disease is known as the population at risk². The definition of mortality is, people do not live forever or they have a limited life span. Mortality may have a possible effect towards the GDP per capita because as Berg (2012)

² Definition is obtained from <http://www.bmj.com/about-bmj/resources-readers/publications/epidemiology-uninitiated/1-what-epidemiology>

mentioned, the most direct approach to deriving a measure of lifetime individual welfare is to proxy it towards the product of annual GDP per capita. However, income inequality and mortality are likely to have common causes that cannot all be measured. This is because the determinant or cause of death of mortality varies. For instance, Inagaki (2010), initiated a study on suicide as mortality, in relation to income inequality. Apart from suicide, other factors include the way individuals live and their health, diseases, accidents, violent crime and old age. All these determinants as mentioned, were obtained from numerous research such as Wolfson *et al*, (1999); Kennedy *et al*, (1996); Smith (1996); Lobmayer and Wilkinson (2000); and Fajnzylber *et al*, (2002). Income equality is an important determinant of population mortality. According to Lynch and Kaplan (1997); Kawachi *et al*, (1999); and Wilkinson (1999), the scale of income equality serves as a measure of the weight of the burden of relative deprivation on mortality. In short, the greater the relative deprivation is caused, the greater the gap between the rich and poor. On the whole, income distribution can lead to changes in mortality rates severely. This research therefore includes income distribution as a proxy to identify relationship with mortality.

This study intends to investigate the relationship between income distribution and mortality and their possibility effects on the GDP per capita in Malaysia from year 1968 to 2010.

1.1 Background of the Study

1.11 Gross Domestic Product (GDP) Per-Capita in Malaysia

The GDP per-capita of Malaysia have enhanced from year to year, mainly due to the increased in the GDP as a whole. GDP per-capita is aligned to the size of population. However, GDP per capita does not always aligned to the size of the population even though there is an increased in the GDP. Moreover, some researchers conclude that population growth has a negative influence on the per capita growth (Klasen and Lawson, 2007). In other words, countries with low population the per capita income was higher while high population the per capita income was lower. (Furuoka and Munir, 2011).

Figure 1: GDP per-capita for Malaysia from year 1968 to year 2010.

