



UNIVERSITI PUTRA MALAYSIA

***MEASUREMENTS OF MULTIDIMENSIONAL POVERTY AND
INEQUALITY IN MALAYSIA***

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**DOCTOR OF PHILOSOPHY
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By

ZUNIKA MOHAMED

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

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DEDICATION

This thesis is dedicated to my family, especially to my husband Suhaimi, my son Muhammad Haziq, my daughters Nur Hazirah and Nur Hanis, my mother and my parents-in-law. Their patient and unbounded loves are sources of my perseverance to finish what I have dreamt for.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of
the requirements for the degree of Doctor of Philosophy

**MEASUREMENTS OF MULTIDIMENSIONAL POVERTY AND
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By

ZUNIKA MOHAMED

August 2013

Chairman: Associate Professor Rusmawati Said, PhD

Faculty: Economics and Management

Malaysia has become one of the role models for economic development, particularly in achieving remarkable economic growth and handling distributional issues related to addressing poverty, income inequality and the regional gap. Of late, the country is facing a middle income trap while having unsatisfied performance in certain areas such as crime, corruption, education and income distribution that imposed challenges for the country's aim towards achieving a developed nation status by 2020. The inclusive development framework was introduced in 2010 with the objective to ensure equitable access to economic participation among all Malaysians. The current measurements of

poverty and inequality which are based on income alone within the inclusive development framework are argued as inadequate, neither from theoretical nor the practical perspectives.

Thus, this study attempts to propose a suitable measurement tools that can be used for evaluation and monitoring in a cohesive way. Specifically, the aims of this study are threefold. First, this study attempt to develop a Multidimensional Index of Poverty (MPI) for Malaysia by applying a multidimensional framework based on the “capability and functionings” approach developed by Sen (1976). Second, this study will develop a Multidimensional Index of Inequality (MII) in analyzing the various socio-economic disparities in Malaysia. Third, this study examines stability and consistency issues with respect to the proposed measurements of multidimensional poverty and inequality. The consistencies of the measures are critical to ensure that the measures proposed are technically sound enough to meet the objectives set forth.

The measurement of multidimensional poverty among households in Malaysia is based on method by Alkire and Foster (2007 and 2011) for five dimensions of wellbeing, with two indicators each. These dimensions are finance, education, health, standard of living and environment. The multidimensional index of inequality for Malaysia is constructed by utilizing method developed by Decancq and Lugo (2009). Data from the Household Income Survey and Basic Amenities Survey (HISBA) for 2009 is used for these purposes. The stability and consistency checks on the two proposed indices of poverty and inequality are undertaken by checking for sensitivity and consistency in rankings of the indices under different scenarios, which include testing different weights and correlations using the same dataset as well as testing the same parameters using different dataset. Data from the HISBA for the year 2009, 2004 and the *eKasih* database are used here.

Results from the construction of the MPI and MII for the year 2009 provide additional insight into poverty and inequality phenomena in Malaysia. The MPI calculation uncovers that the contribution of income to poverty in Malaysia is only marginal, with income contribute about 3.5 per cent. The households are actually deprived more in the standard of living, health, education and environment. Most importantly, the magnitude of the contribution of the dimensions differs when the households are evaluated according to sub-groups such as strata and ethnic groups. Consistent with the existing literature on regional economic progress, the standard of living deprivation is more

prominent in the rural areas, as well as in the regions of Sabah and Sarawak. Notwithstanding that, heads of households' educational achievement under education dimension single outs as fairly equal among the strata and region.

Overall, the MII for Malaysia in 2009 is lower than the standard Gini income index to measure inequality, at 0.28 as compared to 0.44, respectively. Regional disparity also favors Peninsular Malaysia. Disparity in the rural areas continues to be higher than that of the urban area. It is striking to find that while the ethnic inequality under the standard income measure (Gini) shows a converging trend, the inequality among Bumiputera is higher compared to two other main groups of Chinese and India under the multidimensional framework.

The two indices of MPI and MII that are proposed under this study are stable and consistent under various conditions tested. In short, consistent rankings of MPI and MII are produced when different weighting systems and parameters are used. Additionally, the methods that are employed are also stable when different datasets are used.

This study concludes that the MPI and MII constructed under the multidimensional framework are suitable tools to supplement other standard measures of wellbeing in Malaysia. We propose that policy makers take into consideration the insights from these multidimensional phenomena in the endeavor to achieve inclusive growth in Malaysia. The decomposition of poverty by dimensions and by sub-groups can help in identifying resources allocation efficiently.

This study makes significant contributions to the study of poverty and inequality in two ways. First, it proposes new measurement tools under the multidimensional framework that are suited for the need of middle-income country like Malaysia. This study shows that poverty in Malaysia is not just about income. The policy implication from this finding is that focus should be shifted to non-income dimensions such as the standard of living, education and health, to improve the wellbeing of the population. The results from the in-depth decomposition of poverty by spatial and groups suggested that identification of target groups for policy intervention has to take a different approach, beyond strata, region and main ethnic groups. In this case, efforts to improve capabilities of households should be set from the perspective of outcome-based and not just on output produced. Second, the analysis undertaken for the case of Malaysia added to growing literature on multidimensional poverty and inequality. The main limitation of

this study is the unavailability of suitable data from similar sources. Thus, the scope of study is limited to five dimensions with a total of ten indicators.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PENGUKURAN KEMISKINAN DAN KETIDAKSEIMBANGAN DALAM
PELBAGAI DIMENSI DI MALAYSIA**

Oleh

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Malaysia menjadi salah satu model contoh dalam pembangunan ekonomi, terutama dalam mencapai pertumbuhan ekonomi yang membanggakan, dan menangani isu pengagihan berkaitan kemiskinan, ketidakseimbangan pendapatan dan jurang antara wilayah. Kebelakangan ini, Malaysia berdepan dengan perangkap pendapatan pertengahan dan pada masa yang sama terdapat prestasi beberapa aspek yang tidak memuaskan seperti jenayah, rasuah, pendidikan dan pengagihan pendapatan. Situasi ini memberi cabaran kepada Malaysia dalam menuju ke arah pencapaian status negara berpendapatan tinggi menjelang tahun 2020. Kerangka kerja pembangunan inklusif telah diperkenalkan pada tahun 2010 bermatlamat memastikan rakyat mendapat akses kepada penyertaan ekonomi yang saksama. Pengukuran kemiskinan dan ketidaksimbangan menggunakan pendapatan semata-mata sebagai kayu ukur dalam kerangka pembangunan inklusif difikirkan sebagai tidak mencukupi samada dalam perpektif teori mahupun praktikaliti.

Sehubungan itu, kajian ini bertujuan untuk mencadangkan kaedah pengukuran yang sesuai yang boleh digunakan untuk membuat penilaian dan pemantauan secara tersusun. Secara khusus, kajian ini mengandungi tiga objektif. Pertama, kajian ini bertujuan untuk membangunkan Indeks Kemiskinan Pelbagai Dimensi (MPI) untuk Malaysia dengan menggunakan rangka kerja pelbagai dimensi berdasarkan pendekatan “keupayaan dan fungsian” yang diilhamkan oleh Sen(1976). Kedua, Kajian ini akan membangunkan Indeks Ketidakseimbangan Pelbagai Dimensi (MII) bagi menganalisa pelbagai ketidakseimbangan sosio-ekonomi aspek di Malaysia. Ketiga, kajian ini akan menilai isu kestabilan dan konsistensi bagi kedua-dua pengukuran yang dicadangkan di atas. Penilaian ke atas konsistensi pengukuran ini adalah kritikal untuk memastikan pengukuran yang dicadangkan adalah stabil secara teknikal untuk memenuhi objektif yang ditetapkan.

Pengukuran kemiskinan pelbagai dimensi dalam kalangan isirumah di Malaysia adalah berasaskan kaedah yang diperkenalkan oleh Alkire dan Foster (2007 dan 2011) untuk lima dimensi kesejahteraan dengan masing-masing mempunyai dua indikator. Dimensi tersebut ialah kewangan, pendidikan, kesihatan, taraf hidup dan alam sekitar. Indeks ketidakseimbangan pelbagai dimensi untuk Malaysia pula dibangunkan menggunakan kaedah oleh Lugo dan Decancq (2009). Data daripada Penyiasatan Pendapatan Isirumah dan Kemudahan Asas (HISBA) tahun 2009 digunakan untuk objektif satu dan dua. Analisa kestabilan dan konsistensi bagi kedua-dua indeks adalah melalui penilaian sensitiviti dan konsistensi ke atas kedudukan indeks dalam senario yang berbeza. Senario ini termasuk apabila menggunakan wajaran dan korelasi yang berbeza bagi dimensi dan apabila menggunakan data yang berbeza. Data daripada HISBA tahun 2009, 2004 dan pengkalan data eKasih digunakan untuk tujuan ini.

Penemuan kajian daripada pembangunan MPI dan MII bagi tahun 2009 memberi maklumat baru mengenai fenomena kemiskinan dan ketidakseimbangan di Malaysia. Pengiraan MPI membawa penemuan bahawa sumbangan dimensi kewangan kepada kemiskinan hanyalah marginal, dimana dimensi kewangan hanya memberi sumbangan sebanyak 3.5 peratus kepada kemiskinan. Isirumah di Malaysia sebenarnya mengalami deprivasi lebih tinggi dalam aspek taraf hidup, kesihatan, pendidikan dan alam sekitar. Penemuan lebih penting lagi ialah magnitud sumbangan setiap dimensi berbeza apabila isirumah dibahagikan mengikut kumpulan tertentu seperti strata dan kumpulan ethnik. Selaras dengan literatur sedia ada mengenai pembangunan ekonomi wilayah, deprivasi dalam dimensi taraf hidup adalah lebih terserlah di kawasan luar bandar serta di wilayah

Sabah dan Sarawak. Sebaliknya, pencapaian pendidikan bagi ketua isirumah adalah lebih serata di peringkat strata dan wilayah.

Pada keseluruhannya, MII bagi Malaysia pada tahun 2009 adalah lebih rendah berbanding Gini indeks yang berdasarkan pendapatan untuk mengukur ketidakseimbangan, iaitu pada tahap 0.28 berbanding 0.44. Ketidakseimbangan wilayah juga menyebelahi Semenanjung Malaysia. Kawasan luar bandar terus tertinggal dengan indeks ketidaksamaan yang lebih tinggi berbanding kawasan bandar. Amat teruja untuk diketahui bahawa ketidakseimbangan di kalangan etnik Bumiputera adalah lebih tinggi berbanding dua kumpulan utama lain, iaitu Cina dan India, di bawah kerangka perbagai dimensi. Situasi ini berlawanan dengan ketidakseimbangan yang semakin hampir sama apabila diukur menggunakan pendekatan sedia ada berdasarkan pendapatan (Gini).

Kedua-dua indeks MPI dan MII yang dicadangkan dalam kajian ini adalah stabil dan konsisten di dalam pelbagai keadaan yang diuji. Secara ringkas, kedudukan yang dihasilkan oleh MPI dan MII adalah konsisten apabila wajaran dan parameters yang berbeza digunakan. Selain itu, kaedah pengukuran ini juga adalah stabil dalam keadaan di mana set data yang berbeza digunakan.

Dapatan kajian ini ialah MPI dan MII yang dibangunkan berdasarkan rangka kerja pelbagai dimensi adalah sesuai untuk menyokong pengukur kesejahteraan lain yang standard di Malaysia. Adalah dicadangkan supaya pembuat dasar mengambil kira penemuan kajian ini yang berdasarkan pelbagai dimensi dalam usaha mencapai pembangunan inklusif. Peleraian kemiskinan mengikut dimensi dan kumpulan boleh membantu mengenalpasti pengalihan sumber secara cekap.

Kajian ini memberi sumbangan yang penting dalam kajian mengenai kemiskinan dan ketidakseimbangan dalam dua aspek. Pertama, kajian ini mencadangkan alat pengukuran baru di bawah rangka kerja pelbagai dimensi yang lebih sesuai kepada kehendak negara berpendapatan pertengahan seperti Malaysia. Hasil kajian ini menunjukkan bahawa kemiskinan di Malaysia bukanlah semata-mata mengenai pendapatan. Implikasi dasar daripada penemuan ini ialah fokus perlu dialihkan kepada dimensi bukan-pendapatan seperti taraf hidup, pendidikan dan kesihatan untuk meningkatkan kesejahteraan rakyat. Hasil daripada analisa peleraian terperinci kemiskinan dari aspek spatial dan kumpulan mencadangkan usaha mengenalpasti kumpulan sasaran untuk campur tangan dasar perlu

mengambil pendekatan yang berbeza melangkaui strata, kawasan dan kumpulan etnik utama. Dalam kes ini, usaha untuk meningkatkan keupayaan isirumah perlu dilihat dari perspektif asas-keberhasilan dan bukan berdasarkan output sahaja. Kedua, analisa yang dijalankan untuk Malaysia adalah sebagai tambahan kepada literatur mengenai kemiskinan dan ketidakseimbangan dalam aspek pelbagai dimensi. Kekangan utama kajian ini ialah ketiadaan data yang sesuai daripada sumber yang sama. Sehubungan itu, skop kajian ini dihadkan kepada lima dimensi dengan sejumlah 10 indikator.



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I certify that a Thesis Examination Committee has met on 20 August 2013 to conduct the final examination of Zunika binti Mohamed on her thesis entitled "Measurements of Multidimensional Poverty and Inequality in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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LIST OF ABBREVIATIONS

AIR	members of household
BHPS	British Household Panel Survey
DHS	Demographic and Health Survey
DOS	Department of Statistic Malaysia
EPU	Economic Planning Unit
ETP	Economic Transformation Programmes
EU	European countries
FAC	Factorial Analysis of Correspondences
GTP	Government transformation Programmes
HDI	Human Development Index
HEI	higher education institution
HISBA	Household Income and Basic Amenities Survey
HPI	Human Poverty Index
ICT	information and communication
ICU	Implementation and Coordination Unit
KIR	head of household
KKLW	Ministry of Rural and Regional Development
LFA	Logical Framework Approach
MFLS	Malaysian Family Life Survey
MII	Multidimensional Index of Inequality
MOH	Ministry of Health Malaysia
MPI	Multidimensional Index of Poverty

MQLI	Malaysia Quality of Life Index
NEM	New Economic Model
NKRAs	National Key Result Areas
PLI	poverty line income
PMR	<i>Peperiksaan Menengah Rendah</i>
PR1MA	<i>Projek Perumahan Rakyat 1Malaysia</i>
PSBH	Panel Study on Belgian Households
SRP	<i>Sijil Rendah Pelajaran</i>
TFA	Totally Fuzzy Analysis
TPR	teacher-pupil ratio
UNDP	United Nation Development Programme
US	United States
WHO	World Health Organization
YS	year of schooling

CHAPTER 1

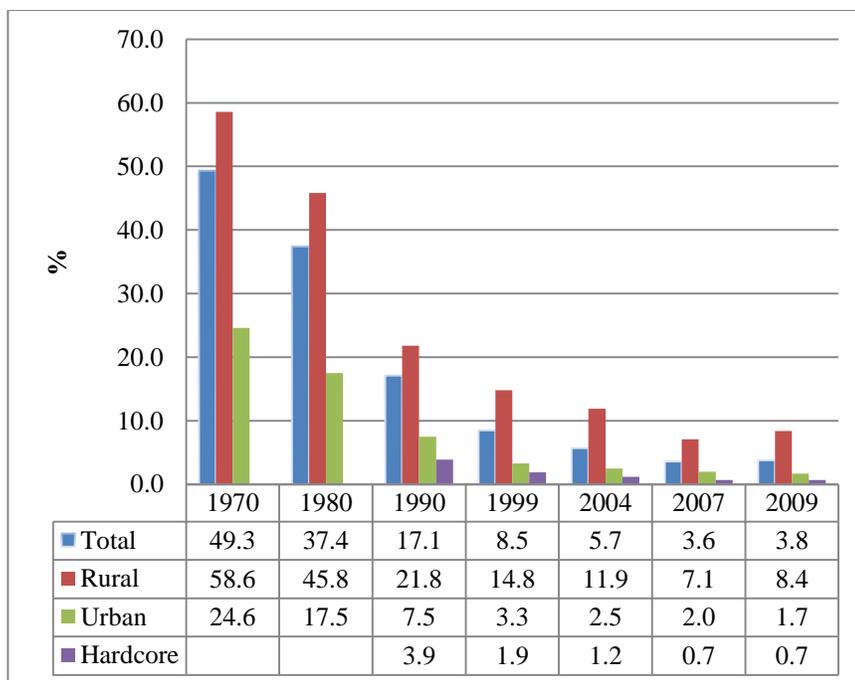
INTRODUCTION

1.1 Introduction

For the last four decades, Malaysia has been recognized as one of the role models for economic development among the developing countries for her success story not only in achieving remarkable economic growth but also in handling distributional issues, particularly in eradicating poverty and addressing income inequality and the regional gap (Leete, 2008; Ragayah & Krongkaew, 2008). This success story came about through a strong policy focus, good governance and cooperative citizens. Throughout the four decades from the 1970s to the 2000s, the policy planning in Malaysia has undergone an evolutionary process, closely following the general trend of the world's economies, as described by Thorbecke (2007). Even though the strategies and implementation policies have changed considerably, the agenda for addressing the distributional issues of poverty and inequality continues to be part of the strategic focuses in the country's doctrines.

The strategies to reduce poverty and disparities between rural and urban populations and among states and regions include the provision of sustainable income-generating avenues improvement in access to basic needs such as housing, education, healthcare, utilities and transportation and development of less-developed regions through regional growth centres and by bridging the digital divide. In addition, ethnic disparities are being addressed by the raising of incomes through the enhancement of skills and capabilities and by promoting equal employment opportunities.

In terms of performance, the overall incidence of income poverty reduced tremendously from almost 50 per cent in 1970 to less than 4 per cent in 2009, as shown in Figure 1.1. In line with the overall poverty situation, the incidence of poverty in rural areas, which comprised almost two thirds of the population in 1970, had been reduced to less than one tenth by 2009. Poverty in the urban areas, which had affected about a quarter of the urban population, was reduced to less than two per cent in the same period.



Source: Economic Planning Unit

Figure 1.1: Malaysia: Incidence of Poverty, 1970-2009

Inequality in terms of Gini coefficient and disparity in mean income between selected groups of population also declined. The status in the Gini coefficient is depicted in Table 1.1 and that for income disparity in Table 1.2. Overall, the income gap between rural and urban areas continued to be dominated by urban income, which was about double that of rural areas for the period of 1999-2007.

Table 1.1: Malaysia: Gini Income, 1999-2009

Year	1999	2002	2004	2007	2009
Overall	0.433	0.461	0.462	0.441	0.441
urban	0.416	0.439	0.444	0.427	0.423
rural	0.418	0.405	0.397	0.388	0.407
Bumiputera	0.433	0.434	0.452	0.430	0.440
Chinese	0.434	0.455	0.446	0.432	0.425
Indian	0.413	0.399	0.425	0.414	0.424

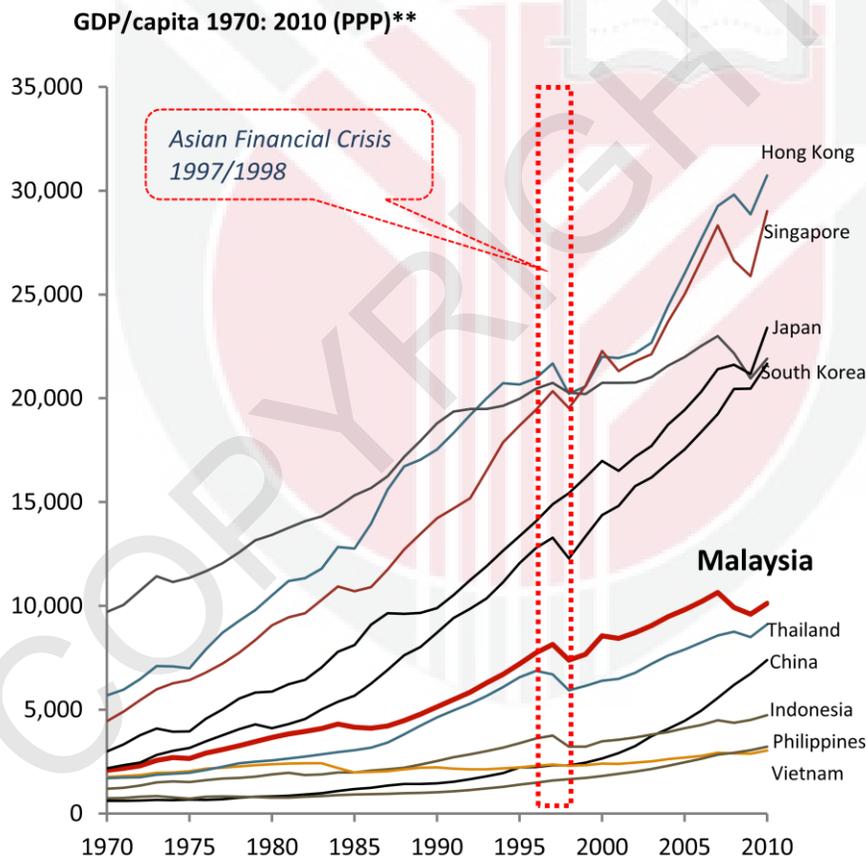
Table 1.2: Disparity in Mean Income, Malaysia 1999-2009

	1999	2004	2007	2009
Rural : Urban	1 : 1.81	1 : 2.11	1 : 1.93	1:1.85
Bumi : Chinese	1 : 1.74	1 : 1.64	1 : 1.56	1:1.38
Bumi : Indians	1 : 1.36	1 : 1.27	1 : 1.21	1:1.10
Indian : Chinese	1 : 1.28	1 : 1.28	1 : 1.29	1:25

Source: Economic Planning Unit (2008 and 2010)

According to Ali and Ahmad (2009), regional development reforms in Malaysia from 1971 up to 2000 failed to contribute significantly to convergence in real per capita income and output across the country. This is evidence based on income to show that development gaps are still wide between regions, states and rural-urban areas. In another study on regional development in Malaysia, Krimi, Yusop, and Hook (2010) found that regional gaps between states continue to exist based on the ranking of states even though regional development policies implemented up to the Eighth Malaysia Plan (2001-2005) resulted into some improvement in terms of GDP growth and household mean income. Other than the standard income indicators, we have no clear evidence on the status of these disparities in Malaysia.

Despite the overall achievement, the country is facing a middle-income trap that poses challenges for the country in its aim of achieving a developed nation status by 2020. The GDP per capita for Malaysia in 2010 was still below USD10,000 as compared to other neighboring countries like Singapore, South Korea and Taiwan which have advanced to the developed country status, as shown in Figure 1.2.



Note: ** The Conference Board Total Economy Database™, January 2012, <http://www.conference-board.org/data/economydatabase/>

Source: Economic Planning Unit (2013)

Figure 1.2: GDP per capita for Selected Countries, 1970-2010

At the same time, social performance in certain areas is not at a satisfactory level (PEMANDU, 2010). These areas are crime, corruption, education and income distribution. The government introduced the New Economic Model (NEM) in 2010 as a catalyst for transforming the country's economy to a high-income economy (NEAC, 2010). The NEM is a comprehensive socio-economic blueprint that consists of four pillars; the national aspiration of '1Malaysia: People First, Performance Now'; Economic Transformation Programmes (ETP); Government Transformation Programmes (GTP); and the Tenth Malaysia Plan. While the 1Malaysia serves to strengthen nation-building among the multi-ethnic society, the ETP focuses on strategic reform initiatives to drive the economy. Concurrently, the GTP initiates administrative reforms to improve the delivery system. The Tenth Malaysia Plan rolls out the implementation of the NEM for the period of 2011-2015.

In relation to distribution, under the NEM, the socio-economic planning of the country is tailored within the 'inclusive development' framework. According to the Economic Planning Unit, the "inclusive development" framework is intended to ensure "equitable access to economic participation among all Malaysians in moving towards a fair and socially just society" (EPU, 2010d). In line with the inclusive development, human development and well-being are given greater emphasis. As the first step towards transformation, specific focus is placed on the six critical areas for well-being improvement, each of which is assigned as a National Key Result Areas (NKRAs). These NKRAs are reducing crime, fighting corruption, improving student outcomes, raising living standards of low-income households, improving rural basic infrastructure and improving urban public transport.

The policy framework for inclusive development mentioned above is directly linked to the issues of poverty and inequality that are faced by the population in Malaysia. Specifically, three areas of the NKRAs - student outcomes, the living standards of low income households and rural basic infrastructure - are closely linked to the rising incidence of poverty and widening of inequality in the world according to the majority of literature on poverty and inequality. In this regard, the measurement of poverty and inequality based on a multidimensional framework takes into account these three areas as part of important dimensions that contribute to either poverty or inequality.

The introduction of NEM with the underlying pillars brings about new challenges, not only in the delivery system but also in the monitoring and evaluation of all the targeted areas of focus. In particular, the NEM framework, which is comprehensive in nature, requires a cohesive synergy between measurement tools for evaluation, policy design and monitoring.

Thus, this study attempts to propose suitable measurement tools that can strengthen the linkages among evaluation, policy design and targeting, and monitoring in a cohesive way. Specifically, the aims of this study are threefold. Firstly, this study attempts to develop a Multidimensional Index of Poverty (MIP), as a measurement of poverty in Malaysia, by applying a multidimensional framework based on the "capability and functionings" approach developed by Sen (1976). The purpose of this measure is to fill a significant gap that arises from theoretical and practical aspects in evaluating poverty

and well-being in Malaysia. Secondly, this study will develop a Multidimensional Index of Inequality to analyze the various socio-economic disparities in Malaysia, applying the multidimensional framework. This serves to demonstrate the practical usefulness of the framework in line with the evaluation requirement of NEM as well as to improve the inadequacy in the existing literature on evaluating disparity issues in the country. Thirdly, special attention will be given to the consistency check of the proposed measurements of multidimensional poverty and inequality. The consistency check of the measures is critical for ensuring that the measures proposed are technically sound enough to meet the objectives set.

This chapter provides an overview of this study. The background of the study will be provided next. It will be followed in Section 1.3 by a description of issues and problem statements identified for this study. Section 1.4 discusses the objectives of this research. Section 1.5 sets out the significances of the study and Section 1.6 presents the organization of the thesis.

1.2 Research Background

The research background of this study is divided into two parts. The first part discusses the measurement of poverty. This part focuses on the definition of poverty and the evolution in the underlying assumption that forms the basis of measurement. The application of measurement in Malaysia is also discussed. The second part deals briefly with the inequality that relates to the distribution of wealth.

1.2.1. Definition and Measurement of Poverty

Regardless of how poverty is defined, addressing the abject of poverty has always been one of the ultimate objectives of the economic development of developing countries and developed countries alike. Being poor is usually defined as being deprived of what is required to live a meaningful life. The exact definition of poverty has long been debated in the literature (Jenkins & Micklewright, 2007; Moio, 2004; Ravallion, 1996). While developed countries are moving ahead with relative¹ concept, mostly based on median equivalent income, less-developed countries and developing countries are still favouring the absolute measurement, normally using income or consumption level as a cut-off point based on calculation of basic needs.

As development progresses, the definition of poverty has been subjected to many questions. The questions raised include whether it should be defined as an 'absolute', 'relative' or 'subjective' concept or considered from a single or multidimensional perspective (Ravallion, 1996; Wagle, 2008). In the early twentieth century, work on poverty is based on an absolute income threshold for buying food of minimum nutrition.

¹ The relative concept of poverty means that the poverty line is set relative to average standards in that society while an absolute concept refers to a poverty line that is set in terms of minimal requirements in the dimension of interest identified in absolute terms, such as on the basis of some needs of the individual deemed as essential for survival (Laderchi, Saith, & Stewart, 2003).

The work by Seebom Rowntree, which identifies household conditions in York, England, in 1889, dominated the measurement of poverty for almost a century. Rowntree's definition of poverty is based on minimum subsistence with the food-basket method as a measure. Townsend's (1979) pioneering work in the United Kingdom examines poverty in terms of lack of access to a number of goods or services and has become the basis for "relative" poverty. Amartya Sen (1985) proposed a new paradigm in evaluating well-being and poverty. In Sen's framework of evaluation, people's well-being is based on the extent of their freedom to achieve the functionings they value. This is termed the 'functionings and capability' approach. Under this approach poverty is regarded as the deprivation of this valuable freedom and multidimensional poverty is evaluated in the space of capabilities and functionings. For example, an individual can be regarded as poor if he/she is being deprived of basic education, and that such education might give him/her the options to lead the life that he/she chooses. Nowadays, the concept of multidimensional poverty based on Sen's work on the capability and functionings approach is well recognized in the literature (Sabina Alkire, 2005; S. Alkire, 2007; Asselin, 2009b; Jenkins & Micklewright, 2007; Kakwani & Silber, 2008; Robeyns, 2006).

Measurement of poverty in Malaysia is based on the absolute notion using the 'basic need' approach. Income is used as a benchmark in constructing a poverty threshold. This approach identifies the consumption bundle deemed to be sufficient for meeting the household needs. The amount of income needed to purchase this bundle is set as a benchmark to determine the status of a household; this is known as the poverty line income (PLI). In other words, PLI is defined as the minimum monthly household income that enables a household to achieve an adequate standard of living. In brief, the use of income has certain weaknesses that are related to its inadequacy in capturing well-being due its poor correlations with other dimensions (Laderchi, 1997), and it is deemed inappropriate in the case of a non-existence or imperfect market for non-monetary attributes (Bourguignon & Chakravarty, 2003). These points will be elaborated in detail later in this chapter.

Based on the above definitions, this study follows the definition proposed in Sen's work. The functioning and capability approach allows us to look at a multidimensional framework rather than a more restrictive utility concept based on a single dimension where income or consumption is used to measure poverty. Justification of the concept of capability and functioning is presented partly in section 1.3 below and in Chapter 2 section 2.2. In brief, by using the functioning and capability approach, we can direct the evaluation of well-being in Malaysia to various non-income dimensions that are relevant for inclusive development. Most importantly, the multidimensional framework allows us to create the needed cohesive synergy by establishing direct and transparent linkages between measurement tool, policy targeting and monitoring, and evaluation of performance.

1.2.2. Inequality in Distribution

Another issue that is closely linked with poverty is inequality. Even though both poverty and inequality are concerned with the well-being of the people, they are conceptually

different, and they require different approaches to address the issues. When income is used as a measurement of welfare, inequality deals with the overall distribution of income among the total population, looking from the top to the bottom of the distribution curve. Poverty on the other hand, focuses specifically on the bottom end of the curve. Both poverty and inequality are regarded as socio-economic issues that arise out of imbalanced economic growth and also influence future growth (Stiglitz, 2012). Economic growth will not contribute to improving human well-being if it is achieved through unequal distribution of the fruits of development. Despite criticism of the active role of government in implementing policy directives and incentives that hinder the free market, developing countries continue to do so to solve distribution issues.

The government of Malaysia recognized that part of the problem in realizing policy reforms to achieve the distributional objective, particularly inequality, lies in inefficiency issues that are termed leakages (EPU, 2006). “The progress in moving towards the distributional targets set earlier has been slower than projected due to the general economic slowdown arising from external shocks as well as some leakages”. Subsequently, a series of measure was proposed. For example, the planning focus for 2006 to 2010 was directed to implement measures to reduce leakages in order to “increase the full impact of development programmes and projects supporting economic growth and inequality reduction”.

One of the measures identified is to place greater emphasis on good governance practices that require more effective and accountable distribution programmes and implementation processes. Along the same lines, the government has also emphasized the need to carefully design distribution policies, programmes and projects to ensure that they complement and enhance both growth and distribution aspects simultaneously, as well as meeting good-governance standards.

There is a wealth of literature on distribution issues focusing on wealth such as income or assets. The growing body of literature on non-wealth aspects such as education and health provides a greater scope to analyze the distribution issues. Expanding the scope further to include the multidimensional perspective will provide a more comprehensive picture of the impact of the policy directives and initiatives on distributional issues.

1.3. Problem Statements

The first issue that this study tries to address is related to an inadequacy in the measurement of poverty in Malaysia from both theoretical and practical perspectives. The theoretical inadequacy arises from criticism of the application of the utilitarian concept in measuring well-being; meanwhile, the income approach is considered inadequate for measuring poverty. This is based on the work of Sen (1985), who argues that the utility concept involves a maximand in choice of behaviour and is only concerned with one simple measure of the individual’s interest and fulfillment. To equate maximization of choices with welfare will create problems. Not everyone maximizes their own welfare regardless of the situation they are in. The problem here is that people have different values, interest, preferences and needs (Sen, 1992, 1999). Sen argues that assessment of well-being should be undertaken from the perspective of

functionings - what a person succeeds in doing with the commodities and the characteristics of those commodities that he or she has actually acquired.

In relation to the inadequacy of income, one supporting view is that “poverty is not only about not having enough money, and that inequality is not just about differences in money income” (Jenkins & Micklewright, 2007). Earlier on, Laderchi (1997) argued that income does not provide all the necessary information for a comprehensive picture of poverty, with poor correlations between income and other indicators. Additionally, Dercon (2005) highlights the fact that measuring these additional dimensions enriches and provides additional information for the poverty picture. Bourguignon and Chakravarty (2003) point out that, in non-existent or imperfect markets for non-monetary attributes, income as the sole indicator of well-being is inappropriate and should be supplemented by other attributes or variables. They argue that a genuine measure of poverty should have income as well as non-income indicators to identify aspects of welfare.

For a better alternative, Sen (1985) conceptualized poverty as a lack of various capabilities required by individuals to achieve their functionings in life. Thus, multidimensional aspects of poverty arise from Sen’s capability approach based on the argument that poverty should be measured in other dimensions that access capabilities more directly while maintaining income as important instrumentally since some of these capabilities can be bought (Maltzahn & Durrheim, 2008; Tsui, 2002). Further elaboration of this concept is provided in Chapter 2, section 2.2.

From a practical perspective, the inadequacy of measurement creates two problems in Malaysia. The first problem relates to evaluating the real state of welfare of the citizens, while the second problem is linked to the inappropriateness of the income indicator as a cut-off point to provide non-income types of assistance. These problems are explained below. Firstly, the status of overall deprivation inclusive of other social indicators such as education, health and standard of living at household level has never been clearly determined in Malaysia. So far, the measurement of well-being has taken an item-by-item approach. It is clear that income poverty had been successfully reduced to less than four per cent by 2009 (EPU, 2010d) while other areas such as health, education and access to basic infrastructure showed improvements based on the overall distribution. However, the more critical question is how to assess the overall welfare and standard of living, inclusive of income and non-income attributes, of the individual household in the country. The NEM has laid out a holistic approach to socio-economic development and thus, a holistic approach to evaluation is also needed.

A broad estimate for individual non-income indicators shows that deprivation in these indicators is still rampant even among the non-poor households. For example, information from the Household Income and Basic Amenities Survey (HISBA) for the year 2009 reveals that 88.3 per cent of households that did not have proper garbage disposal facilities are categorized as non-poor; about 77 per cent of the households that did not have a 24-hour supply of electricity came from the non-poor group and close to 92 per cent of those still living in dwellings with two rooms or fewer were among the non-poor. In addition, about three per cent of the non-poor who have school-aged

children reported that they cannot send their children to school because they require the children to work.

Concerning the inappropriateness of the cut-off point, the one-dimensional poverty indicator based on poverty line income has been solely used by the Government as a reference point to identify the target groups for programmes that are multidimensional in nature to improve the well-being of the population. These various programmes to eradicate poverty include income improvement (eg. welfare and direct transfer, credit facilities and support for agricultural projects) as well as basic amenities (eg. housing, electricity and water supply) and social services (eg. provision of education, training and health services). The inappropriateness of the indicators leads to an overestimation or underestimation of allocation for the programmes, thus resulting in inefficiency. To illustrate the point, those 92 per cent suffering deprivation in terms of not having sufficient dwelling space would not be eligible for housing programmes under the Ministry of Rural and Regional Development (KKLW), since this programme only targets the hardcore poor (a detailed explanation of this programme is given below). Hence, by deriving a multidimensional poverty index, this study contributes by providing a greater scope of targeting and analysis of poverty and it runs parallel with the initial proposal by the Economic Planning Unit (EPU) and United Nation Development Programme (UNDP) Malaysia to create a multidimensional index for poverty in Malaysia.

The second issue for this study follows on through from the first issue and deals with inequality in distribution. The importance of having a comprehensive picture of inequality is linked to the dangers that might arise from it. Heterogeneity issues that arise from both inequality and polarization, if not properly addressed, will lead to tension and conflicts and ultimately rebellion and riot (Esteban & Ray, 1994; Stewart, 2008). Economic inequality in Malaysia was the precise factor that started the ethnic riots in May 1969. A single measurement based on income may not provide a comprehensive picture of disparities. There are different types and sources of inequality that are important but they have not been given enough attention in economic planning. In this regard, Stewart (2000) spoke of inequality as being multidimensional and contained within political, economic and social spheres. According to Ikemoto (1999), evidence about the true picture of well-being in Malaysian society should be based on the capability approach. In empirical analysis, the usefulness of the functionings and capability approach has also been extended for the assessment of the equality aspects. For instance, Robeyns (2006) supports the application of functioning and capability in measuring inequality to overcome the limitation of income as a measure of inequality. Thus, this issue motivates us to analyze inequality problems in the context of a multidimensional framework.

1.4. Objectives of the Study

The overall objective of this study is to address the above issues which are related to the measurement of poverty and inequality from a multidimensional perspective. Specific objectives of this study are as follows:

- i. To develop a poverty index for Malaysia by taking into account the multidimensional nature of poverty and deprivation based on the concept of the capability approach in measuring well-being;
- ii. To develop a multidimensional inequality index in analyzing disparity with respect to regional and ethnic balances; and
- iii. To examine the stability and consistency of the proposed multidimensional measures by testing the consistency in the rankings of the indices under different scenarios.

1.5. Significances of the Study

The first objective of this study is to contribute by providing a comprehensive piece of work from the theoretical and practical evidence in the area of poverty measurement. The measurement of multidimensional poverty based on the capability and functionings approach allows us to evaluate the status of poverty in a more comprehensive way to complement the existing income approach. The multidimensional poverty index that is based on the socio-economic conditions unique to Malaysia will be more practical for policy consideration, particularly within the framework of NEM. The decomposition of the status of poverty according to the various dimensions will better guide policy makers in channeling adequate resources to where they are most needed. It can also serve to provide clear linkages between indicators and strategies for better monitoring by the implementing agents.

Secondly, this study is among the pioneering works in the country that propose to construct a multidimensional inequality index and analyze the disparity in the contexts of the multidimensional framework. Through objective two, it also fills the gap in the analysis of disparity in Malaysia by providing a comprehensive analysis of inequality with respect to regional and ethnic balances using multidimensional factors. The analysis in terms of inequality is very important, particularly in tracking possible causes of heterogeneity to safeguard the nation against any sort of tension and conflicts. More importantly, the analysis based on multidimensional factors provides a new in-depth understanding of the multifaceted dimensions of inequality that are faced by Malaysians. This runs parallel with the government strategy in the Tenth Malaysia Plan in addressing inequality issues. In particular, the government aims to elevate the livelihoods of the bottom 40 per cent of the population through a three-pronged strategy: providing support to build capabilities through education and entrepreneurship; addressing immediate living standards issues, especially access to basic amenities; and tailoring programmes to target groups with specific needs (EPU, 2010d).

Lastly, since no multidimensional indices have previously been developed specifically for Malaysia before, the consistency check of the proposed poverty and inequality indices will provide assurance that the tools are valid for operationalization in the country. This is very important in order to give confidence to policy makers in considering these tools for policy evaluation purposes.

1.6 Scope of the Study

This study covers Malaysia as the country of analysis. The coverage of the dimensions will only focus on those that are relevant for socio-economic policy analysis, subject to availability of secondary sources of data. Thus, the measures proposed for construction will not comprehensively cover all the subjects of well-being. The focus of analysis for poverty and inequality phenomena will be concentrated based on results produced utilizing a dataset for the year 2009, while other datasets will be used for the consistency test only. As such, analysis of changes in trends will not be covered in this study. This coverage is valid based on similar studies elsewhere that mostly focused on socio-economic indicators supported by data availability and measurement objectives. The data from the year 2009 are regarded as valid as these are the latest data from a nationwide survey and they have been published by the government in monitoring the socioeconomic development in 2009, such as in the Tenth Malaysia Plan (EPU, 2010d) and the Malaysian Economy in Figures (EPU, 2012b) and Malaysia Quality of Life (EPU, 2010c).

1.7 Organization of the Study

This study is organized as follows. The next chapter presents the theoretical framework for the subjects of this study. Specifically, chapter 2 starts with a discussion on the definition of poverty and its development in the multidimensional context. As poverty and inequality are closely related under the evaluation of well-being, this chapter addresses issues about the weaknesses of the traditional approach to measuring poverty as well as inequality under the utilitarian perspective and discusses the capability and functionings approach as a better alternative. Following that, the chapter discusses several issues in measuring multidimensional poverty and inequality. The last part of the chapter provides a discussion on the processes involved in checking the sensitivity and consistency of the measurement of poverty and inequality.

Chapter 3 reviews the various empirical works from the literature concerning the issues in multidimensional poverty and inequality as well as the consistency test of poverty and inequality measures. The first part discusses empirical works undertaken on poverty and inequality, particularly in selecting the right approach and determining dimensions and weight, as well as identification and aggregation processes. Lastly this chapter reviews previous works undertaken on the consistency testing of the measures.

In chapter 4, a detailed explanation of the methods chosen to accomplish the objectives of this study is presented. The chapter starts with a description of the method of measuring multidimensional poverty for objective number one based on S. Alkire and Foster (2009) . The second part of chapter 4 presents the method of estimating inequality in distribution for selected dimensions from the multidimensional framework. This is based on the work of Decancq and Lugo (2009). The last part of this chapter discusses methods of checking the sensitivity and reliability of both measurements, which are subjected to choices of variable inputs. These tests will be in the form of consistency

checks using appropriate statistical techniques such as correlation tests and concordance test of ranking.

Chapter 5 is dedicated to explaining the data and their sources that are utilized in this study. Firstly this chapter presents the sources of data. Three different datasets are employed; two of them are from the Department of Statistics, Malaysia while the other is from the Implementation and Coordination Unit of the Prime Minister's Department. The two datasets from the Department of Statistics are from the Household Income and Basic Amenities Survey (HISBA) for the years 2004 and 2009. They are nationally-based surveys undertaken by the Department at the interval of twice every five years. The third dataset from the Implementation and Coordination Unit of the Prime Minister's Department is part of the exercise undertaken by the government to gather information on low-income groups, captured by the poverty census and the on-going registration at the grassroots level throughout the country. Since the data are given in raw form, we also explain the steps taken in transforming the raw data into the indicators of poverty. This is followed by a discussion on the dimensions that have been chosen for the analysis of multidimensional poverty, together with the indicators, cut-off and weight. The justifications for each of the chosen dimensions are thoroughly discussed in this segment. The explanation of the multidimensional inequality in terms of the dimensions, indicators, weight and the relevant parameters of beta and delta is presented in the last part of this chapter. The constraint arising from lack of suitable nominal data from the same source leaves us to with fewer indicators with which to measure the inequality phenomena.

Results and discussion of the findings are presented in Chapter 6. This chapter starts with a presentation of the results from the construction of the multidimensional poverty indices, followed by some discussion. The multidimensional index of poverty (MPI) proposed in this study comprises a combination of the headcount ratio of poverty (H) and the average intensity of poverty (A). By the nature of this formulation, the degree of poverty in Malaysia depends on the value of cut-off points both at the indicator's 'level and at the dimensional level in deciding when to consider the household as deprived or poor. We mention some of the main findings from this exercise here.

If we consider the extreme case where being poor means being deprived of at least one 10 dimensions, based on the H about 72 per cent of households in Malaysia were poor in 2009. If we want to consider the other end of the extreme where being poor means being deprived in all 10 dimensions, no households are categorized as poor in Malaysia. After taking into account the A, the MPI is only 15 per cent for the first extreme case and zero for the later. A comparison between the H and income-poor based on the Government Poverty Line Income (PLI) shows that not all income-poor households are also multidimensionally poor.

An important aspect of the multidimensional poverty measure proposed in this study is that it enables us to calculate the contribution of each indicator in the MPI. This will give a further insight into what actually constitutes poverty in Malaysia. In short, it is found that income, measured in terms of shortage of money and as a factor that hinders the pursuit of other capabilities, i.e education, is only a small component of poverty. For

instance, in the case where the dimensional cut-off point is set at 20 per cent, the financial dimension contributes the least at 3.5 per cent in total. The MPI for Malaysia contributes the most by the standard of living, education and health dimensions. The above finding is similar to the results of the study by S. Alkire and Santos (2010) for 104 developing countries whereby the deprivation in the standard of living contributes the highest followed by education and health dimensions for most of the countries studied.

The construction of the index by strata shows that the rural area has higher figures than the urban area. The result shows that almost 90 per cent of rural households are deprived in at least one dimension, while the urban area is better off with 65 per cent. The above findings are consistent with studies on rural-urban gaps in the country. In the urban area, poverty is contributed to more by the standard of living and education, while in the rural area, health and finance are more significant. The regional perspective of multidimensional poverty shows that Peninsular Malaysia is better off compared to Sabah which includes Labuan territory, and Sarawak. We also construct the measurement of poverty by three ethnic compositions. The results indicate that the headcount ratio is the highest among the Bumiputera, followed by Indians and Chinese.

Afterwards, the discussion concentrates on the results and findings from the multidimensional inequality indices produced. The MII for Malaysia in the year 2009 is 0.28 lower than the standard Gini income coefficient of 0.44. This lower value is contributed by the presence of other dimensions that on average pull the level down. The inequality for individual dimensions of finance, education, housing and the standard of living is also constructed to investigate further the multidimensional inequality in Malaysia. The inequality is higher in the rural area compared to in the urban area and more obvious compared to when inequality is measured by the standard Gini income. The results indicate that there is a slight difference in the MII figures between the three regions of Peninsular Malaysia, Sabah and Labuan, and Sarawak. The last step in our construction of the MII is to estimate the index based on ethnicity. We observe that the MII levels off below 0.30 for all the ethnic groups, where the Indians and Chinese have the same level of MII at 0.25 while the Bumiputera score a higher figure of 0.29.

In the last part, this chapter provides the results and analysis of the consistency tests of the two proposed measures MPI and MII. In doing so, two approaches are undertaken. The first approach is to perform a consistency check based on the same dataset but setting different parameter values of the MPI and MII. We use the data from HISBA 2009 for this purpose. The second approach is to perform a consistency check based on setting different parameter values of the MPI and MII but using different datasets, HISBA 2004 and the *eKasih*. Overall, the results from the tests employed provide a clear indication that the two measures proposed in this study are consistent with respect to changes in the parameters. Specifically, the results of the three correlation tests of Pearson, Spearman and Kendall's tau-b between the pairs compared are very strong. This indicates that the ranking of the MPI and MII by national level and sub-levels of strata, region and ethnic remain quite stable. The values from the concordance tests for all the different rankings after adjusting for weights and parameter values are also high showing the evidence of stability in the rankings produced.

Chapter 7 provides the conclusion of the study and some policy considerations that can be put forward to the Government. This covers the recommendations for utilization of the proposed indices as well as some strategies that could be considered to improve the well-being of household in Malaysia. This chapter concludes with some proposals for future research.

1.8 Limitations of the Study

A major limitation faced in this study is the lack of availability of data to cover a more precise definition of functionings and capability. Previous studies on the construction of multidimensional poverty and inequality have employed a wider coverage of dimensions and indicators. For examples, S. Alkire and Santos (2010) make use of the Demographic and Health Survey (DHS), which provides better health indicators especially about nutrition and maternity, and produces more comprehensive information about the standard of living. In a study of Belgium and the United Kingdom, Dewilde (2004) utilized data from the Panel Study on Belgian Households (PSBH), which covers waves 3 to 8 (1994–1999), and data from the British Household Panel Survey (BHPS), which covers waves 6 to 10 (1996–2000). These two panel datasets allow researchers to examine the many aspects of deprivation for the same individual across time. Despite the limitation, we do not believe that it seriously handicaps our research or prevent us from meeting the set objectives.

Another limitation of this study is that it only covers the household as a unit of analysis. As such, the poverty and inequality analysis undertaken in this study only focus on the household characteristics even though information about members is utilized in developing the dimensions and indicators. Despite this limitation, the analysis based on household is still valid and relevant. The individual analysis will be critical when the objective of the measure is set to specifically identify individual as the target group for poverty eradication. Additionally, unavailability of data at a more disaggregate level has limited this study's capability to venture into more in-depth analysis. For example, within the Bumiputera ethnic group there are several main ethnic groups such as the Malay, The Orang Asli, Kadazan, Iban and Murut. These groups differ in their level of development; however, further decomposition cannot be done based on the existing data.

Related to the above, this study also faces a limitation in the methods employed, which require all the data to be from the same source for all the variables to construct a good index. The present study works with the limited scope of dimensions based on the same data source from the household income and basic amenities survey conducted by the Department of Statistics. Even though there are better health indicators and subjective indicators available from other surveys, they cannot be employed in this study. Again, this limitation does not critically affect the objectives of this study.

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