MALAYSIA'S ECONOMIC GROWTH AND INCOME DISTRIBUTION BASED ON ETHNICITY

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ABSTRACT

Simon Kuznets in 1955 had revealed his Inverted-U Hypothesis which looked at the relationship between stage of economic growth and income distribution and argued that the relationship followed an Inverted-U shape. The Inverted-U Hypothesis shows that income distribution becomes more unequal at the early stage of economic growth while more equal when the stage of development was higher. The Malaysian economic growth was very promising between 1970 and 2010. Even before the Asian financial crisis in 1997 Malaysia experiencing a rapid economic growth and managed to overcome poverty but when we viewed from the other side, ethnicity's poverty is still an issue that must be addressed. Therefore, the main objectives of this study is; first, to obtain the income distribution scenario among various ethnic groups namely the Gini coefficient reflects the imbalance of income distribution and economic growth; and the second is to determine whether there was another round of Kuznets Inverted-U in Malaysia. This study tried to analyze the Kuznets Inverted-U Hypothesis by using a time series data from 1970 to 2009. There are two parts of analysis which is the data from 1970 to 1989 for the first analysis that proven by the previous study saying that Malaysia experienced the first round of Kuznets hypothesis, and the second analysis using the remaining data. The analysis found that Malaysia has experienced two rounds of Kuznets Inverted-U with the value of β_1 was positive (positive relationship between GDP per capita and Gini coefficient) and the value of β_2 was negative. For the first analysis based on ethnicity also support the Kuznets hypothesis while the second; only Bumiputera and Chinese ethnic that support the hypothesis, the other ethnic group have a negative value of β_1 while the β_2 was positive and for the Indian ethnic both variables was positive. This study can be used to improve the existing economic system so that the income distribution will be more equal among various ethnic groups in Malaysia, thus ensure the higher economic development will be translated to enhanced prosperity and standard of living equally shared by all.

Keywords: Economic growth, income distribution, Inverted-U Hypothesis, Gini coefficient

INTRODUCTION

Malaysia is an industrial country that is still moving towards to be a high-income country. Not only the United Nations Development Programme (UNDP) even the World Bank's Country Chairman, Ulrich Zachau admitted that Malaysia could achieve the developed country status after looking at the various ways that have been successful in bringing prosperity and at the same time reducing the inequalities especially in poverty eradication. This is due to an imbalance of income distribution is a factor of ethnic poverty.

Simon Kuznets in 1955 had revealed his Inverted-U Hypothesis which looked at the relationship between stage of economic growth and income distribution and argued that the relationship followed an Inverted-U shape. The Inverted-U Hypothesis shows that income distribution becomes more unequal at the early stage of economic growth while more equal when the stage of development was higher. The Malaysian economic growth was very promising between 1970 and 2010. Even before the Asian financial crisis in 1997, Malaysia experiencing a rapid economic growth. In short, economic growth can be seen in Table 1.

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Table 1: Annual Growth Rate of GDP, 1971 to 2010 (Percent)

Year	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
First	6.5	11.6	6.9	1.2	8.7	8.6	0.5	5.8
Second	9.4	7.8	5.6	5.2	7.8	7.7	5.4	6.5
Third	11.7	6.7	6.3	8.9	8.3	-7.5	5.8	4.8
Fourth	8.3	9.3	7.6	9.2	9.2	5.8	6.8	-1.6
Fifth	0.8	7.8	1.0	9.7	9.6	7.5	5.3	7.2
Average	7.3	8.6	5.5	6.8	8.7	4.4	4.8	4.5

Source: Malaysia, Ministry of Finance, Economic Report of the year

Encouraging economic growth together with macroeconomic policies had effectively showed a reduction in the incidence of poverty. The poverty rate has been reduced significantly from 52.4% in 1970 to 17.1% in the next 20 years and 6.1% in 1997. However, the financial crisis in 1997 has seen the incidence of poverty increased from 6.1% in 1997 to 7.5% in 1999. After the turnaround plan implemented, the incidence of poverty has declined again to 5.1% in 2002 and 3.8% in 2009. Although GDP measurement has a weakness, but this method is acceptable in the context of long-term planning of economic growth and generally accepted as the most important indicators (Meier, 2004). However, many economists believe that economic growth alone does not necessarily guarantee an improvement in well-being, especially if growth is not accompanied by a trickle down effect. In other words, the development cannot be felt by all residents. Malaysia's success in eradicating poverty praised by UNDP due to significant decline in the poverty rate in Malaysia from 1990 to 2012. While the overall poverty reduction shows the country has managed to overcome poverty, but when viewed from the other side, ethnicity's poverty is still an issue that must be addressed.

Malaysia's main ethnic groups are the Malays, Chinese and Indians. Malays in Peninsular Malaysia, along with the natives in Sabah and Sarawak (translated to mean indigenous) grouped as Bumiputera and the term "Malay" and "Bumiputera" are used alternately to each other when necessary (Faaland. J et al, 2005). Ethnics imbalance income distribution can becomes a major challenges to the country in the long run which will affect the country's potential to achieve a high-income status. The bitter experience of 13 May 1969 has shown that economic growth is not shared equally by the various ethnic groups living in the country could plunge the country into a deep disunity and discord. Income inequality could affect the government's goal to increase the prosperity of the country. Imbalance of income distribution in Malaysia in 1970 as indicated by the Gini coefficient is 0.502 and rose to 0.529 in 1976, then decreased to 0.446 in 1990. The Gini coefficient increased again to 0.456 in 1995 and 0.459 in 1997. In 2004, Gini coefficient rose again to 0.462 and then fell back to 0.441 in 2007.

This study argues about the imbalance of income distribution in Malaysia by ethnicity, by using the Gini coefficient, which analyzes the relationship between economic growth and income distribution as hypothesized by Kuznets. In the early stages of the low level of GDP per capita, the Gini coefficient is also low. When there is economic growth and rising GDP per capita, the Gini coefficient value is also growing, which shows that income distribution is becoming more unequal. After a peak in growth, the Gini coefficient would decrease up to the end of growth in GDP per capita levels are higher. This will generate Kuznets Inverted U-shape. Therefore, the main objectives of this study is; first, to

obtain the income distribution scenario among various ethnic groups namely the Gini coefficient reflects the imbalance of income distribution and economic growth; and the second is to determine whether there was another round of Kuznets Inverted-U in Malaysia.

LITERATURE REVIEW

Gini coefficient has been widely used in studies on population inequality income distribution. Among the most frequently mentioned is the study by Kuznets (1955,1963) famous Inverted-U hypothesis in terms of the relationship between inequality income distribution and economic growth. The study concludes that income distribution situation in the early stages of economic growth is very uneven. But when the economy is growing, the state of this imbalance is shrinking due to the transition of traditional sectors to modern sectors, increasing access to education, health and the basic needs of low income earners are increased.

Many studies have been conducted to test this hypothesis, some studies support and there are also studies that do not support this Kuznets hypothesis. Due to less of the time series data for the least developed country, some researchers have used cross-sectional data within a certain period. Variations in GDP per capita in the country was used as a proxy for the level of growth. Studies that have been done on some of the least developed countries (LDC) and developing countries such as Taiwan, South Korea, China, Costa Rica, Sri Lanka and Hong Kong found that growth occurs at an early stage can reduce income distribution gap among the population. This discovery has rejected the hypothesis of Kuznets Inverted U-stating the income distribution is more unequal in the early stages of development (Todaro, 1989).

Studies done by Kuznets (1963) showed different results for both developed and developing countries. For developed countries like the United States, Britain and Germany, economic growth is not extending the gap in income distribution among the population. However, for developing countries like India, Sri Lanka and Puerto Rico, the income distribution is unequally increased in the event of the industrialization process.

Ahluwalia (1976) found that in principle, the cross-sectional data dynamically raises some issues, but time series data on income distribution are difficult to obtain for many developing countries. This study used a cross-sectional data with a total of 60 countries and proves that the Kuznets hypothesis is true for the entire exception percentile except top percentile of 20 percent and also a turning point (optimum point) was differs for each percentile which is at the different level of GNP per capita.

Meanwhile, Hassan and Rahmah (1996) have used time series data to test the Inverted-U hypothesis in Malaysia and found that this hypothesis is true. To carry out the study, data was used from the year 1956/1957 up to 1990. Based on the study also found that income distribution in Malaysia increased at the early stage of economic growth from 1956/1957 to 1976 which shows that income distribution is not balanced in the period. However,between 1976 and 1990, the Gini coefficient has declined means the income distribution is more balanced but once again the income distribution was imbalanced after 1990. This means that Malaysia has completed a round of Kuznets Inverted-U hypothesis.

Most studies that using the cross-sectional data support the Kuznets hypothesis, for example, a study conducted by Gillis et al (1996) examined the relationship between the Gini coefficient and GDP per capita while in the same time examined the relationship between the lowest-income groups with GDP per capita. This study categorizes the countries into four income groups. The results showed a sign of coefficients corresponding to the Kuznets Inverted-U hypothesis that a positive relationship between the Gini coefficient and GDP per capita, while a negative relationship between the Gini coefficient and squared GDP per capita.

In Indonesia, a study was carried out based on the suitability of the Kuznets hypothesis for urban and rural areas. The study conducted by Pardamean (1993) found that Kuznets hypothesis is valid only in urban areas. Similarly, the study by Fallah and Partridge (2007) shows that the positive relationship between inequality and economic growth in metropolitan areas compared to a negative relationship between inequality and economic growth in non-metropolitan areas in the United States. Barro (2000) also found an inverse correlation between income inequality and economic growth in poor countries but the positive relationship for the rich countries.

Time series data also suggest that income inequality is declining at a higher GDP where some countries reach a maximum level after the mid-1990s. Furquim and Garcia (2002) looked at the relationship between income inequality and economic growth based on the neoclassical approach. The study includes 17 Latin American countries for the period of 1970 to 1995. Based on the study found that there is a positive relationship that also supports the Kuznets hypothesis.

METHODOLOGY

In this study, researchers used a secondary source. Data were obtained through the published and unpublished manuscript. GDP per capita and the Gini coefficient data is covering the years from 1970 to 2009, includes the Gini coefficient for Malaysia and also by the ethnicity in this country which is Bumiputera, Chinese, Indians and other ethnic groups. This analysis will then show the relationship between variables that describe a scenario of income distribution between ethnic and prove the Kuznets hypothesis.

This study tried to analyse the Kuznets Inverted-U hypothesis by using a time series data from 1970 to 2009. As the study was carried out by Hassan and Rahmah in 1996, Malaysia has completed a round of Kuznets Inverted-U hypothesis but based on the experience of Malaysia, the country proved that Kuznets hypothesis is not stable and the country could experience up to a few rounds. The study also assumes that Malaysia will enter the second round. Therefore, in addition to running regression tests based on ethnicity, the researchers will also carry out tests on the Gini coefficient. There are two parts of analysis which is the data from 1970 to 1989 for the first analysis, proven by the previous study saying that Malaysia experienced the first round of Kuznets hypothesis, and the second analysis using the remaining data.

The Gini coefficient is a dependent variable and Gross Domestic Product (GDP) per capita as the independent variables. Due to non linear relationship between these two variables, GDP per capita measured in terms of natural logarithms or semi log model. Equations or models that are commonly used to test the Kuznets Inverted-U hypothesis is as follows:

$$G = \beta_0 + \beta_1 \log Y/P + \beta_2 (\log Y/P)^2 + \mu$$

where,

G = Gini coefficient (income distribution)
Y/P = GDP per capita
μ = error

Based on this model, if the Kuznets hypothesis is correct, then the sign of β_1 is positive while the sign of β_2 is negative. This means that when the GDP per capita first increased, the Gini coefficient also be increased where the situation indicates that income distribution is not balanced. Next, when the GDP per capita increased again and is indicated by (GDP per capita)^2, then the Gini coefficient falls shows a more balanced income distribution.

RESEARCH FINDINGS

To distinguish this study with previous studies, more recent data are used. There are two sub analysis, namely:
    1) Data Regression Results 1970 to 1989.
    2) Data Regression Results 1990 to 2009.

Even each regression run is as follows:
    1) Gini coefficient of Malaysia with GDP per capita and (GDP per capita)^2.
    2) Gini coefficient of Bumiputera ethnic with GDP per capita and (GDP per capita)^2.
    3) Gini coefficient of Chinese ethnic with GDP per capita and (GDP per capita)^2.
    4) Gini coefficient of Indians ethnic with GDP per capita and (GDP per capita)^2.
    5) Gini coefficient of other ethnics with GDP per capita and (GDP per capita)^2.

1) Data Regression Results 1970 to 1989.

Table 2 : Correlation Table

		Malaysia	Ethnic			
			Bumiputera	Chinese	Indian	Others
r	lnKDNKpk	-0.755** (0.000)	-0.527** (0.008)	-0.587** (0.003)	-0.806** (0.000)	-0.711** (0.000)
R^2		0.57	0.28	0.35	0.65	0.51

** correlation was significant at the 0.01 level

Table 2 shows the correlation coefficient, r for Malaysia is generally -0.755 for GDP per capita, which shows the negative correlation between GDP per capita and the Gini coefficient. This means when the GDP per capita is increase, the Gini coefficient will decrease. The r values also showed a high correlation of the existence of a clear negative correlation between the two variables is strong with a significant degree of zero. The best way to explain the strength of the relationship between variable is by squaring the value of the coefficient r, so if r = -0.755 squared then r^2 = 0.57. It explained that the 57% variation in the Gini coefficient can be explained by GDP per capita. An analysis of the ethnic groups found low but there is little correlation between GDP per capita and the Gini coefficient for Bumiputera and Chinese ethnic respectively only 28% and 35% in the Gini coefficient of variation can be explained by GDP per capita, as opposed to Indian and other ethnics indicate a moderate correlation between variables. Respectively 65% and 51% of the variation in the Gini coefficient for the Indians and other ethnic groups can be explained by GDP per capita, while the rest is explained by other variables. However, each ethnic correlation coefficient obtained explain a significant negative correlation between the variables used in this study which is less than 0.05 level of significance (p <0.05).

Table 3: Regression Result

		Malaysia	Ethnic			
			Bumiputera	Chinese	Indian	Others
R^2		0.900	0.767	0.799	0.869	0.579
ANOVA (F)		76.546 (0.000)	27.946 (0.000)	33.802 (0.000)	56.442 (0.000)	11.680 (0.001)
Coefficient (t)	lnKDNKpk	7.230 (0.000)	5.845 (0.000)	6.056 (0.000)	5.089 (0.000)	1.599 (0.128)
	lnKDNKpk2	-7.497 (0.000)	-5.968 (0.000)	-6.203 (0.000)	-5.338 (0.000)	-1.721 (0.103)

Meanwhile, Table 3 shows the results of regression conducted for the data from 1970 to 1989. The R^2 for all Gini coefficient including Malaysia in general and also by ethnics shows a high value which is in the range of 58% and 90%. This percentage explains that the Gini coefficient can be explained by the studied while the rest is explained by other variables. ANOVA test, F also showed the effect of GDP per capita and (GDP per capita)^2 was high for Malaysia's Gini coefficient, but the effect was quite weak for the Gini coefficient based on ethnicity. Significant value was 0.000 which is less than 0.05, means that both independent variable has an effect on the dependent variable significantly. This situation clearly shows that the variables used in this study is suitable for having influence to each other.

The tests also showed that the β_1 namely GDP per capita is positively related to the Gini coefficient, while the β_2 namely (GDP per capita)^2 is negatively related. This clearly proves that the Kuznets Inverted-U hypothesis is true for analysis from 1970 to year 1989 where in the early stages of economic growth, the Gini coefficient is increased (positive relationship) until the optimum point and the Gini coefficient is decreased (negative) when the GDP per capita increased continuously. Using the data of Malaysia as well proves that this country has perfectly experience a round of Kuznets Inverted-U shape an also for ethnics analysis except the other ethnic groups showing a significant degree, p is greater than 0.05.

2) Data Regression Results 1990 to 2009.

Table 4 : Correlation Table

		Malaysia	Ethnic			
			Bumiputera	Chinese	Indian	Others
r	lnKDNKpk	-0.335 (0.074)	-0.064 (0.395)	0.502* (0.012)	0.834** (0.000)	0.133 (0.288)
R^2		0.11	0.004	0.25	0.7	0.02

* correlation was significant at the 0.05 level
** correlation was significant at the 0.01 level

Table 4 above shows the correlation coefficient, r for Malaysia is generally -0.335 for GDP per capita, which shows the negative correlation between GDP per capita and the Gini coefficient of Malaysia. As the first anlysis, this means increasing in GDP per capita, the Gini coefficient will decreasing. However, the value of r indicates the correlation is low and there is little correlation between the two variables studied but not significant in explaining the relationship. The $r^2 = 0.11$ explained that only 11% of the variation in Malaysia Gini coefficient can be explained by GDP per capita while the other 89% explained by other variables.

An analysis of the ethnic groups found that a vague correlation virtually no correlation between GDP per capita and the Gini coefficient for Bumiputera ethnic groups. Furthermore, the correlation is not significant in explaining the relationship between the variables and the r^2 shows only 0.04% variation can be explained by the independent variable where this value is very low and not appropriate in an investigation. However, a negative correlation can be shown between GDP per capita and the Gini coefficient. The remaining three ethnic; Chinese, Indians and other ethnic groups show a positive relationship between GDP per capita and the Gini coefficient, but only the Chinese and Indian ethnic can prove the existence of a simple correlation and the correlation significance for the two ethnic groups was high. Chinese r^2 value however showed only a 25% variation in the Gini coefficient can be explained by GDP per capita compared to 70% that can be explained for the Indians. For other ethnic groups, there is no significant correlation to describe the relationship between variables and only by 2% to explain the variation in the Gini coefficient. This situation clearly shows that the GDP per capita did not play a big role in the changes in the Gini coefficient for the period from 1990 to 2009.

Table 5 : Regression Result

		Malaysia	Ethnic			
			Bumiputera	Chinese	Indian	Others
R^2		0.405	0.107	0.435	0.696	0.234
ANOVA (F)		5.797 (0.012)	1.020 (0.382)	6.546 (0.008)	19.438 (0.000)	2.589 (0.104)
Coefficient (t)	lnKDNKpk	2.854 (0.011)	1.394 (0.181)	2.406 (0.028)	0.046 (0.964)	-2.173 (0.044)
	lnKDNKpk2	-2.894 (0.010)	-1.401 (0.179)	-2.345 (0.031)	0.092 (0.928)	2.188 (0.043)

In the other hand, Table 5 shows the regression test results for the year 1990 to 2009, which explains that the test results R^2, ANOVA and coefficients are different. R^2 is very low for such Bumiputera ethnic and other ethnics group who also showed almost no relationship between the variables, while a little relationship for the other ethnics group including Malaysia in general. Only Indians who showed the better R^2 of 69.6 ≈ 70% Gini coefficient can be explained by the studied variables, while the rest can be explained by other variables. ANOVA test was only significant for the Malaysia regression, Chinese and Indian, while it is not significant for Bumiputera ethnic and other ethnic groups who have significantly exceeded the 0.05 level of significance ($p > 0.05$). Furthermore, the F obtained is very low to explain the effect of GDP per capita and (GDP per capita)^2 against Malaysia and ethnic Gini coefficient as a whole. This situation explains that the GDP per capita is not the main factors in influencing the Gini coefficient, but is influenced by other factors.

However, the test may show a positive correlation between the Gini coefficient and GDP per capita while a negative relationship with (GDP per capita)^2 for an analysis of Malaysia, Bumiputera and Chinese ethnic instead other ethnics group show the opposite relationship. Indian ethnic have a positive relationship for both variables with the Gini coefficient. Although not significant, Bumiputera and Chinese ethnic have been able to prove the hypothesis of Kuznets was true while Malaysia Gini coefficient analysis proved that this country has completed another round of Kuznets Inverted-U in the period from 1990 to 2009. However, the opposite relationship was obtained for the other ethnics group where β_1 is negative and β_2 is positive. Thats mean, it is a U-shaped for this ethnic instead of Inverted-U shape in Kuznets hypothesis. Other than that, Indian ethnic group shows that both variables was in positive sign explain that the higher GDP per capita and (GDP per capita)^2, then higher value of the Gini coefficient as well.

The study results were reliable affected by the implemented policies. Viewed from a historical perspective of the Malaysian economy, the British have encouraged the development of society through the practice of divide and rule which was a division of the groups in the economic sector. The system used has also encouraged the labor force coming from China and India for the benefit of the colonial economy. The migrants flooding in mining and plantation sector has led to a huge income gap between the Malays that was more in the traditional agricultural sector. This persistent problem eventually trigger the unforgettable 13 May 1969. The Malaysian New Economic Policy (NEP) was introduced and catalyst for eradicating poverty and restructuring the society. This has been proved by the first round of the Kuznets hypothesis obtained for the NEP was implemented where income distribution is more balanced between ethnic seen in line with economic growth.

National Vision Policy (NVP) in practice still regard the NEP and National Development Policy (NDP) strategy is to create a united and fair society. Implementation focused on the development and growth of all sectors of the knowledge-based economy (K-Economy) has changed the pattern of the former community work to the public by the

resilient and competitive to freely choose their areas of expertise but also competition in education particularly to achieve the standard of better living. These changes affect the second round of Kuznets hypothesis for this country, where the prevailing diversity of income distribution results based on ethnicity. In fact, previous research has also shown that the use of time series data shows a variety results.

A previous study for this same topic using the data from 1970 to 2010 have a quite similar results especially for the first regression which is the regression of data from the year 1970 to 1990. It shows that R^2 for all the Gini coefficient studied have values that is high between 66% to 88% whereby the high percentage in explains that the Gini coefficient studied can be explained by the variables. The ANOVA test also shows that there is significantly high influence of the independent variables towards the dependent variable. While the coefficient tests found that GDP per capita has a positive relationship with the Gini coefficient, the other way for (GDP per capita)^2. The test also showed that Malaysia in general has proved the Kuznets Inverted-U shape which means the income distribution become more equal until 1990. The other regression using the remaining data also showed varying results. The R^2 value is very low for Malay, other ethnics group and Malaysia in general. ANOVA test is also only significant for Malaysia, Chinese and others regression while the rest are insignificant to explain the independent variables relationship towards the dependent variable. The coefficient test also found that Kuznets hypothesis also only proven by Malaysia, Malays and Chinese ethnic group while opposite relationship for Indian and others ethnic group. In contrast to recent study found that for Indian ethnic is not only faced imbalance income distribution but also increased consistently.

CONCLUSION

The analysis found that Malaysia has experienced two rounds of Kuznets Inverted-U with the value of β_1 was positive (positive relationship between GDP per capita and Gini coefficient) and the value of β_2 was negative. For the first analysis based on ethnicity also support the Kuznets hypothesis while the second; only Bumiputera and Chinese ethnic that support the hypothesis, the other ethnic group have a negative value of β_1 while the β_2 was positive and for the Indian ethnic both variables was positive.

In summary, this study has reached the objectives of the first and second scenarios which able to show the imbalance income distribution between ethnic shown by the occurrence of another round of Kuznets Inverted-U for the country. Shown that balance income distribution was only be achieved in the first regression while a variety results for the second regression due to the Indian and the other ethnics group suffered an imbalance income distribution. This situation shows that rapid economic growth is not the only factor that ensures a balance between income distribution mainly ethnic available in the country but also influenced by other factors such as the type of work performed, the level of education and household consumption. Other asessments of the poverty issue is important because a country is no longer judged only by economic growth alone, but also includes a balance of social and poverty issues are one of the problems not only faced by the developing countries but also the developed countries. Therefore, it is important to assess the growth and economic development in overall.

This study can be used to improve the existing economic system so that the income distribution will be more equal among various ethnic groups in Malaysia, thus ensure the higher economic development will be translated to enhanced prosperity and standard of living equally shared by all. The study found that there are some improvements that could be made in future studies. This is because the Gini coefficient alone cannot reflect the overall ethnic distribution of income, thus other aspects should be taken into account such as ethnic participation in the formal or informal economic sector and also the property ownership by ethnicity. In addition, other methods can also be performed using primary sources such as through questionnaires and interviews to get a true picture of poverty experienced by respondents. This method can also be done for example to examine poverty among ethnic groups in urban and rural areas. To investigate in more detail of the ethnic income, it is better if these studies can categorize the ethnic itself as separate the natives of Sabah and Sarawak from Bumiputera groups.

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