THE CONVERGENCE CLUB OF MALAYSIA

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Abstract
Issues in regional disparity have gained vast interest among the policy makers and the academician. Despite various efforts by the government, the income disparity between states in Malaysia has continued to promote inequality and imbalance growth within Malaysia. Being recorded to have the highest poverty rate in Malaysia (World Bank Malaysia Economic Monitor 2010) Sabah has continuously attracted the concern of the state and federal authority in promoting the inequality of growth in Malaysia. Thus, the objective of this paper is to address the question whether Sabah has been converging, diverging or catching up with the other states in Malaysia. Using annual data for the period 1965 to 2010, panel of full convergence result suggests that states in Malaysia shows divergence. Therefore the null hypothesis of convergence is rejected. However, as Phillip and Sul (2007) suggest that there is possibility of subgroups convergence via adapting non linear time varying factor model. The result suggests that the states are divided into five clubs. The core group consists of Selangor, Wilayah Persekutuan, Johor, Sarawak and Penang. The second club consists of Sabah and Perak which also shows convergence while the third club only consists of Pahang that diverge from the rest. The fourth club is Negeri Sembilan, Kedah, Melaka, Terengganu and Kelantan which converge in slow speed. The last club consists of Perlis which shows divergence with the other states. These findings should help policy makers for both target groups in designing appropriate growth-oriented programme as well as in setting priorities in their implementation.

Keywords *Income disparity, convergence, inequality*

INTRODUCTION

Regional disparity in Malaysia has now become a serious matter of concern. since Malaysia has transformed itself from a producer of raw materials into an emerging multi-sector economy. With the help of the country's 5-year Malaysia Plan, the country has seemingly grown faster than the other ASEAN nations. However, despite the overall rapid growth in Malaysia, the income disparity among the states has hinder the equal growth among them. The government has shown its sincerity in tackling this issue by launching five-year plans. For instance, Malaysian government has launched the most aspiring development project in the region namely South Johor Economic Region (SJER) which has not only created many employment opportunities, but also increased income of the region.

Besides that, the concern of the government towards regional income disparities among states has shown clearly when they launched five year Malaysia plan which mostly focus on reducing the gap between the states in the country. In the Second Malaysia Plan 1971-1975 (Government of Malaysia, 1971), the government has established the State Planning Units in order to specialize in formulating projects to coordinate development activities at their state level. The government has realized that there is a great discrepancy between the richest states

of the south and central west coast and the poorest states of the east coast of Peninsular Malaysia. Upon this realization, the government thus adjust the Third Malaysia Plan's 1976-1980 (Government of Malaysia, 1976) aim to establish more regional development. The government has categorized states in Malaysia into six regions for performance monitoring purposes, namely the Northern region,

In the Eighth Malaysia Plan 2001-2005 (Government of Malaysia, 2001), the government reemphasizes efforts to transform all states into modern economies by diversifying and strengthening the less developed states. It is to narrow the disparities and inequalities among and within ethnic groups and regions to foster national unity. Not only that, this five year plan had also emphasized on the role of the regional cooperation through the growth triangle to improve economic development in the less developed states.

Malaysian government has showed its concern towards the issue of regional income disparities of the country in the Ninth Malaysia Plan 2006-2010 (Government of Malaysia, 2006) by focusing on reducing the regional imbalances and income disparity among states. The objective of this plan comprises of accelerating lesser developed states through improving the quality life in rural and urban areas.

Not only that, the latest, Tenth Malaysian Plan 2011-2015 (Government of Malaysia, 2011) has highlighted on the shifting the economy to a high value-added and high income economy via productivity from domestic market. The 10MP goals emphasized on eradicating regional income disparities by upgrading the quality of life of the rural citizen. For example, the government implemented variety of economic programmes and provision of basic amenities to those living in the interior, especially those who live in long house in Sabah and Sarawak, as well as Orang Asli and estate workers in Peninsular Malaysia.

In evaluating the issue of regional disparity among states in Malaysia, its thus crucial to asses the issue of convergence and divergence as it would point to the existence of market force, which will bring similar living standards across the states (Habibullah et al., 2012).

ECONOMIC CONVERGENCE

The issue of economic convergence has attracted the authorities and also much debated as, regional disparities among states remain in the country. Figure 1 and Figure 2, show some interesting observations on the performance of the fourteen states in Malaysia for the period of 1970-2000.
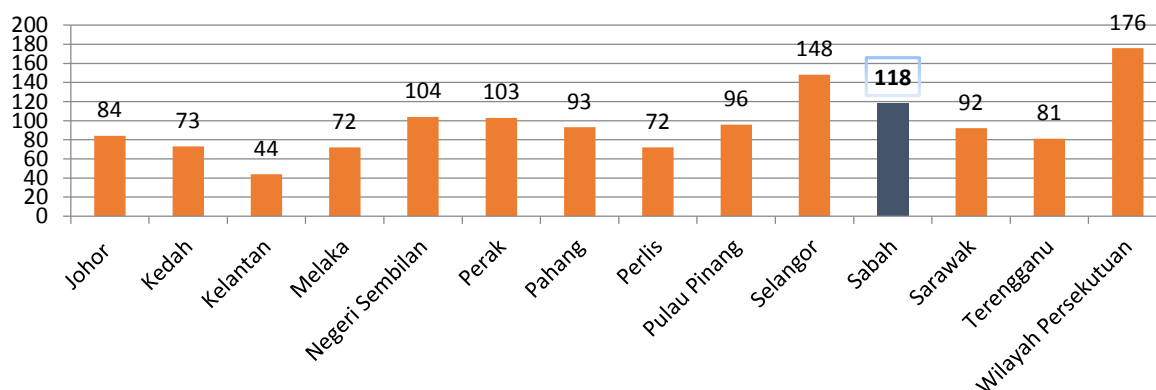

Figure 1 Real GDP per Capita of Each State in 1970 at Constant Price 2000 (RM Million)
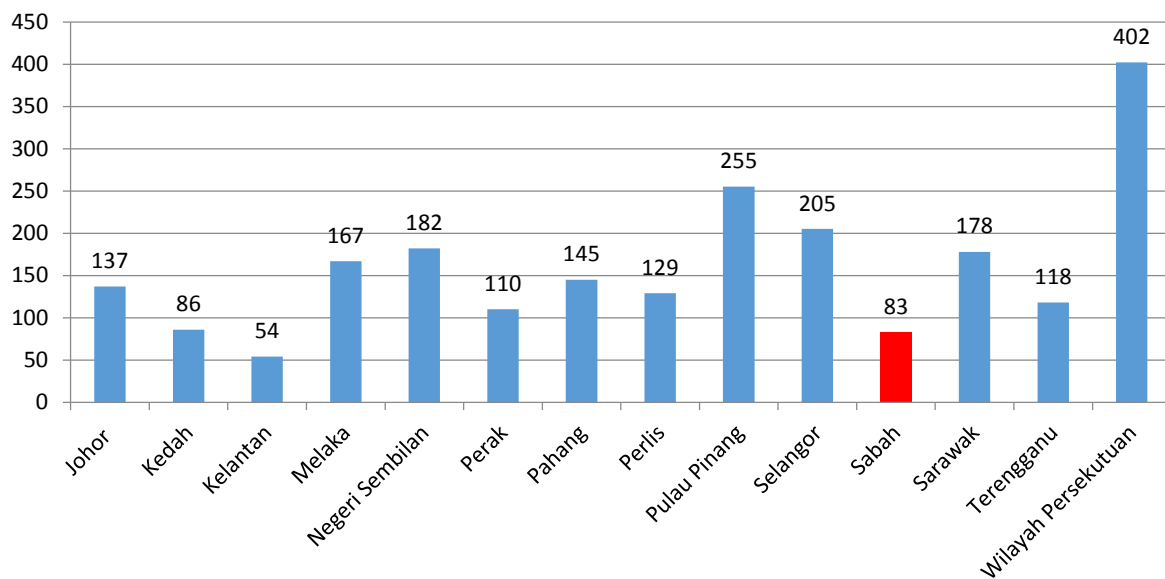Source Five Year Malaysia Plan, various plan

Figure 2 Real GDP per Capita of Each State in 2010 at Constant Price 2000 (RM Million)
Source Five Year Malaysia Plan, various plan.

As shown in the above chart, in the year 1970, Wilayah Persekutuan, Selangor and Sabah ranked as the richest states among all states as they performed real GDP higher than the national average. During that time, Kedah, Perlis and Kelantan is the poorest states as they contributed less real GDP than the national average. However, it is stated that Wilayah Persekutuan, Terengganu and Selangor has become the biggest contributor if compare to other states. Kelantan has been declared as the poorest states in 1970 and its status remains till the year 2000. As for Kedah, it was ranked eleventh in 1970 but since 1980 the state has been the second poorest state in the country. On the other hand, Sabah ranked as the third poorest state in the country in 2000 despite its ranking as the third richest states in 1970. The tremendous downturn has been recognized by the government of Sabah in the Outline Perspective Plan Sabah (1995). They revealed that the reliance of the primary sector and the export of unprocessed or minimally-processed commodities was the major weakness of the state's economy (Lim, 2008, p.129).

According to Malaysia Economic Monitor 2010, it has stated that Sabah is the state with the highest poverty rate where 31 percent of all the households live in rural Sabah and Labuan in 2009. Not only that, this state has once declared as the richest state in Malaysia in 1970 but has experienced economic downturn according to the Outline Perspective Plan Sabah (1995). This is shown in Figure 3 as Sabah performs a worsening performance after the year of 1980. This tremendous change in Sabah has becoming a concern for the government and the problem that cause this changes should be examined. This situation can also be shown clearly in Figure 1 and Figure 2 whereby the comparison of the real GDP per capita and the ranking by states. According to Figure 3, Sabah's real GDP per capita has seemingly decreased from the year 1970 to 2010. On the other hand, the ranking of Sabah has dropped from the third to the thirteenth.
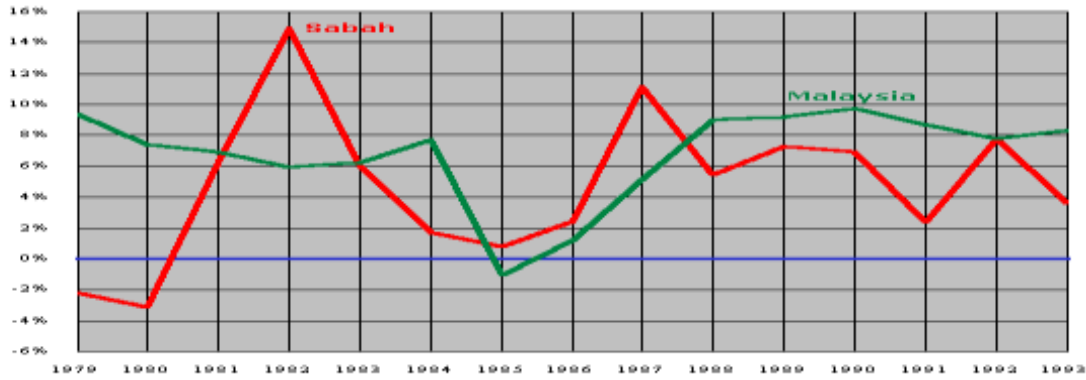
Figure 3 GDP Growth Patterns of Sabah vs. Malaysia 1979-1993

Source Annual Bulletin of Statistic, Sabah; Various issues, Annual Bulletin of Statistics, Malaysia; various issues, 1994/96 Economic Report, Malaysia (Outline Perspective Plan of Sabah, 1995)
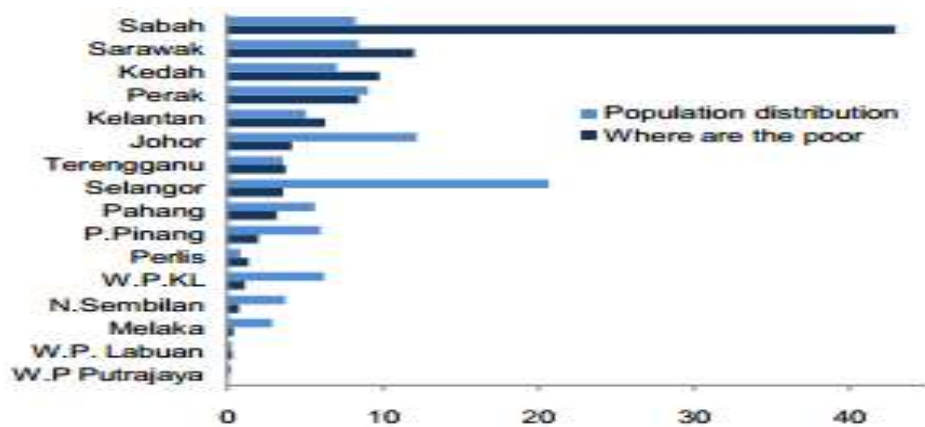

Figure 4 Poverty Has Declined in All States But Remains Higher in Some
Source: World Bank staff calculation using Household Income Surveys (2009)

In the case of Sabah, despite various kinds of plans and regional development project implemented on this rich state, the actual fact and report shows that this state remains to be the poorest states in Malaysia. According to the World Bank 2010, it has stated that this state continue to struggle to make ends meet with this being more evident in the outskirts of town (Figure 4). It also stated that the deep pockets of poverty are here in Sabah. In the World Bank Malaysia Economic Monitor (MEM) 2010, it stated that Sabah has only 10 percent of Malaysia's population but it has more than 40 percent of all poor people in Malaysia live in this state which is shown in Figure 1.4. With this statistic, it continues to alert the government that the spatial inequality remains at a high level and need to be curbed. Although Sabah has ranked as the second poorest states according to GDP per capita, the World Bank has proven that Sabah has the highest poverty level among all states according to recent population distribution. Despite many plans and means been implemented to minimize the poverty issue in Sabah the problem seems to exist and worsen.

The paper is hope to examine the convergence hypothesis on Sabah and the clustering of states in Malaysia via applying the non linear time varying factor method by Philips and Sull(2007). It is expected to enhance the regional balanced though reducing the disparity by accommodating appropriate policy recommendation.

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CONVERGENCE HYPOTHESIS ON REGIONAL DISPARITY

Barro and Sala-i-Martin (1990), Hashemzadeh and Woolley (2003) Holmes et al. (2012) and Miller and Grene (2005) have conducted a study to examine the existence of regional convergence in United States. In their research study, they had successfully showed that there is convergence among United States region. Barro and Sala-i-Martin (1990) has applied the time series annually data covering 1840 to 1988. In their study, they examined on 48 continental states since 1929. They had proved that the poor states tend to grow faster than the rich states, which means that the convergence of poor states towards the rich states has existed regions of United States in recent period.

Hashemzadeh and Woolley (2003) have utilized 50 state non-metropolitan areas and 50 metropolitan areas covering annually time series 1979 to 1999. They employed the data from the U. S. Bureau of Economic Analysis (2000) by using their real GDP per capita as their variables. In their empirical study, they used beta convergence to investigate the sign of convergence among the states. The empirical beta coefficients in all the regression models have the correct sign which indicate that regions that start off with lower per capita income tend to grow at a faster rate relative to those with higher income. They have also showed that the income gap between the metro and non-metro regions is wider than some states compared to the country as a whole.

Habibullah et al. (2009 and 2011) conducted a research study on analysing the pattern of convergence in Malaysia among states in these two years. They employed ADF method and MW, IPS and LLC panel unit root test to test the hypothesis of stochastic convergence, divergence or convergence as catching-up between Kelantan and the rest of the 13 states. They found out that Kedah is convergent with Kelantan, Negeri Sembilan, Perak, Pahang, Perlis and Selangor. However, they also discovered that Kedah is diverging and catching-up with other states. They discovered that lack of convergence is due to the resources are being underemployed. In order to improve the economic welfare is to put the unused resources to productive use.

On the other hand, Ali and Ahmad (2009) conducted the research study on finding whether Malaysia is converging, catching-up or diverging among states. By using the time series which covers 1970 to 2006 and the Location Quotient (LQ) analysis, they found out that the gap between the poor states and rich states remains wide. They also discovered that this wide gap is because of the concentration of agricultural sector in poor states and manufacturing sector in rich sector back in the days. The result shows that the main contributor for the economy of Sabah, Sarawak and Wilayah Persekutuan Labuan is agriculture and mining and quarrying although there is decreasing trend and also import much of its goods in 2000 which is the central drives of the poor states in the economies. Not only that, they also suggest that the poor states to catch up with the rich economy by making expansion of economic sectors such as manufacturing sectors and constructions sectors to increase its income and population, thus can minimize the gap between the states.

Habibullah et al. (2008) used the KSS-CHLL nonlinear approach to find out the long run economic converging and catching-up among the states in Malaysia. This test analyses nonstationarity under the null hypothesis against the alternative of nonlinear but globally stationary Exponential Smooth Transition Autoregressive (ESTAR) processes. In the result of this investigation show that Johor, Kelantan, Melaka, Penang and Pahang is catching-up with Wilayah Persekutuan (benchmark state). They also discovered that Malaysian regional policies have an impact on the positions of the fourteen states in terms on their shares of Malaysia's GDP. By using the ADF method and MW, IPS and LLC panel unit root test and sample data from various issues of the five year Malaysia plan that covers 1961 to 2003, Habibullah et al.

(2009 and 2011) have found out that Kedah is catching up with the states of Pahang, Johor, Penang, Sabah and Sarawak

METHODOLOGY

The Phillip and Sul (2007) have proposed a new econometric approach to analyse the transitional behaviour of per capita income as they believed that there might be multiple equilibrium in a rejected convergence hypothesis. In this study, this new method will be used to investigate the convergence hypothesis among Malaysia's states over the 1961-2010 periods. According to Phillip and Sul (2007), the time varying factor model has adapted the common stochastic trends which accommodates convergence in aggregate behaviour without insisting on the existence of cointegration. This will allow for the modelling of transitional effects to be taken placed as this idiosyncratic factor loadings gives a mechanism for heterogeneous behaviour across individuals. Besides that, they also believed that even though the series of the data tested may not be cointegrated, it does not mean that there is no convergence between two series. Rejection of the null hypothesis of convergence does not imply that there is no evidence of convergence in the subgroups of panel (Apergis et al., 2012).

Log t Regression

Phillips and Sul proposed the log *t* convergence test that is based on a simple time series regression, which involves a one sided *t*-test. The test is known as *t*-test as the *t*-statistic refers to the coefficient of log *t* regression in the equation.In order to test for the null hypothesis of convergence, the following log *t* regression is performed:

$$log(H_1/H_t) - 2logL(t) = \hat{c} + \hat{b}log\ t + \mu_t, \quad t = [rT], \dots, T \tag{1}$$

Where H is the cross-sectional variation. H_1/H_t is the ratio of the cross-sectional variation at the beginning of the sample, H_1 (i.e. H_t at $t = 1$) over the respective variation for every point in time$t$, that is H_t ($t = 1, \dots, T$). The ratio,H_1/H_t measures the distance of the panel from the common limit. On the other hand, $L(t) = \log(t)$ and$r > 0$. Thus, the convergence hypothesis can be test whether it is diverges; $\alpha > 0$, or $\alpha = 0$. Meanwhile it converge when α ≥ 0.

Thus, the hypothesis can be specified as;

$H_0 : \delta_i = \delta$ for all i, α ≥ 0   ; Convergence for all countries

$H_a : \delta_i \neq \delta$ for some i, α < 0. ; No convergence for some countries

The null hypothesis indicates convergence for all countries meanwhile the alternative hypothesis indicates no converge for some countries.

Philips and Sul (2007) conditions stated that the test statistic $\hat{b}$ is asymptotically standard normally distributed, so that standard critical values can be employed. The standard error of the estimates is calculated using a HAC estimator for the long-run variance of the residuals. Thus, the null hypothesis of convergence is rejected if $t_b < $ -1.65. Meanwhile, if the t-statistics, t_b suggests that $\hat{b}$ is either positive or equal to zero, we conclude that the panel converges. In addition, according to Philips and Sul (2007), r should be set equal to 0.3 and the remaining two-thirds (latter part) of the sample should be able to identify whether there is convergence or not.

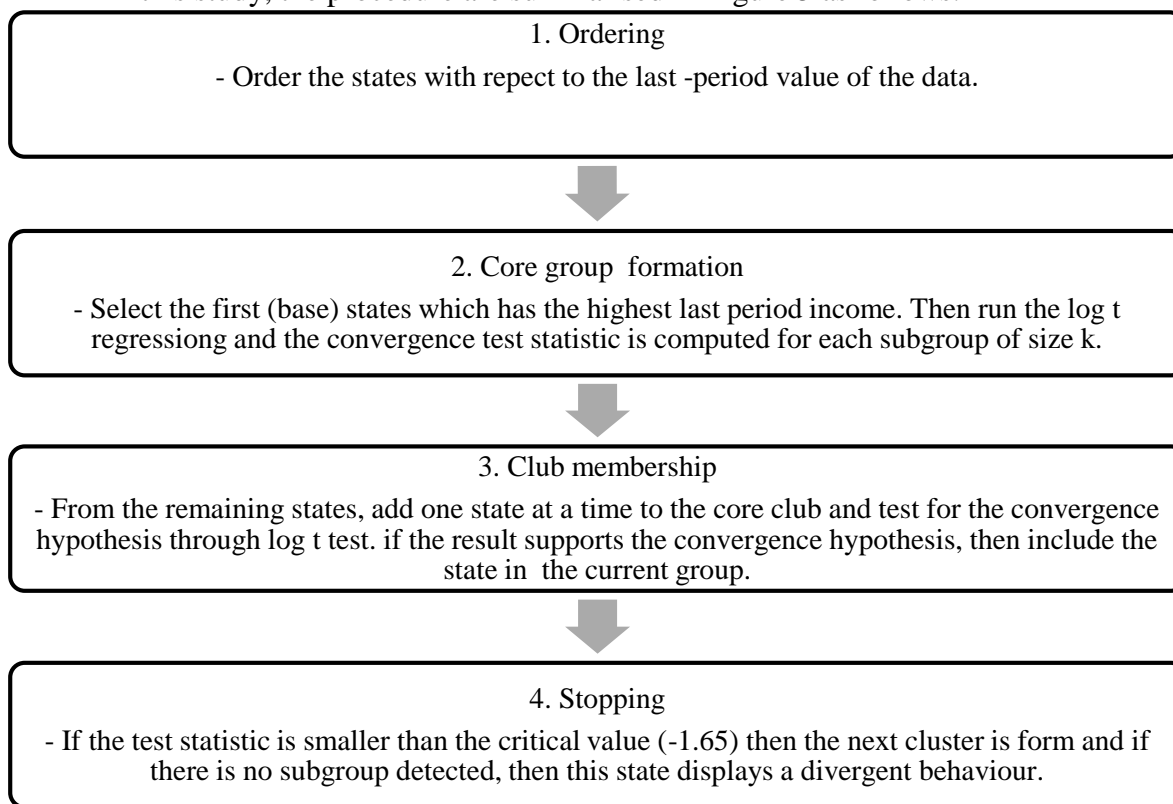In this study, the procedure are summarised in Figure 5 as follows:

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┌─────────────────────────────────────────────────────────────┐
│                        1. Ordering                          │
│   - Order the states with repect to the last -period value   │
│                       of the data.                          │
└─────────────────────────────────────────────────────────────┘
                              ▼
┌─────────────────────────────────────────────────────────────┐
│                   2. Core group  formation                  │
│  - Select the first (base) states which has the highest last │
│  period income. Then run the log t regressiong and the       │
│  convergence test statistic is computed for each subgroup    │
│  of size k.                                                  │
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│                     3. Club membership                      │
│  - From the remaining states, add one state at a time to the │
│  core club and test for the convergence hypothesis through   │
│  log t test. if the result supports the convergence          │
│  hypothesis, then include the state in  the current group.   │
└─────────────────────────────────────────────────────────────┘
                              ▼
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│                        4. Stopping                          │
│  - If the test statistic is smaller than the critical value  │
│  (-1.65) then the next cluster is form and if there is no     │
│  subgroup detected, then this state displays a divergent      │
│  behaviour.                                                  │
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Figure 5 Convergence Procedure

FULL PANEL CONVERGENCE

Table 1 reports the results of the panel convergence methodology for real per capita GDP of 14 states. After determining the ranking of the states according to their last-period value of the data, panel convergence is analysed for acknowledging the level of convergence in aggregate level.

Table 1 Panel Convergence: Per capita GDP

Clubs	States	t- statistic	Remarks
Full Sample	14 states of Malaysia	-4.668681**	Divergence

Notes: Asterisk (**) denotes statistically significance at 5% level. The 5% critical value is -1.65.

In this Phillip and Sul (2007) test, $\log t$- test results shows divergence with -4.668681 which also indicate the rejection of the null hypothesis of convergence at the 5 percent significance level. The null hypothesis of full convergence is rejected for the period of 1978 to 2010 when data trimming focuses on the latter part of the sample data. This is because Phillip and Sul (2007) believed that the empirical log t regression is based on time series data where the first r% (0.3) of the data is removed before analysis. According to this analysis, the speed of convergence is not fast enough to ensure cointegrated behaviour. This indicates that overall

the states in Malaysia are heterogeneous in terms of GDP per capita. However, this does not imply that there is no convergence in the sub group of the states which brings a further analysis for the trimmed observation. As stated by Phillip and Sul (2007) although cointegration and convergence are highly related, they have distinct features and cointegration tests do not serve an adequate test for further convergence test. They also believed that there will be many possibilities exist if the null hypothesis of full panel convergence is removed. Therefore, the newly formed method by Phillip and Sul (2007) is adapted for the next section.

CLUB CLUSTERING AND CONVERGENCE

According to Figure 6, the results suggests that convergence exists across most of the states in Malaysia which are the first club; Selangor (core), Wilayah Persekutuan, Johor, Sarawak, Penang, the second club; Sabah, Perak, and the fourth club which are Negeri Sembilan, Kedah, Melaka, Terengganu and Kelantan.. As for the third and the fifth clubs which comprises of Pahang and Perlis displayed a diverging pattern which the t-statistics are found to be smaller than -1.65.

First Group
- Selangor
- Wiayah Persekutuan
- Johor
- Sarawak
- Penang

Second group
- Pahang

Third group
- Sabah
- Perak

Fourth group
- Perlis

Fifth group
- Negeri Sembilan
- Kedah
- Melaka
- Terengganu
- Kelantan

Figure 6 Club Clustering And Convergence

The result shows clearly that the state that is emphasised in this study, which is Sabah has become the core or leading state in the second cluster. This is a contradiction to most of the statistical data and report that is reported by World Bank 2010. The great improvement which is shown by this state is mainly due to the contribution of agriculture, mining and quarrying and also tourism. Department of Statistics (DOS), 2011 has stated that Sabah is the biggest contribution in terms of agriculture and the second highest in mining and quarrying. Besides that, Sabah has been most of the tourists' hot spot to travel due to its beautiful

preservation of Mother Nature. Eco-tourism has attracted 2.5 million tourist arrivals in 2009 which is clearly stated that tourism contributed a wide part for the economic growth of Sabah (Bernama, 2011). Not only that, the government also emphasised on boosting up the states which is claimed to be left behind from the rich ones. Plans like Outline Perspective Sabah and Five year Malaysia Plans are implemented to improve the economic growth of poor states including Sabah.

As for the core groups, Selangor and Wilayah Persekutuan contributes the most to the GDP per capita of Malaysia in terms of government services, finances, insurance, real estates and business services and utilities, transport, storage and communication. Johor, Sarawak and Penang on the other hand are categorized in this group as it has a large contribution in terms of manufacturing and also other aspects. The fifth club which is comprises of Negeri Sembilan, Kedah, Melaka, Terengganu and Kelantan has proven that these states converge slower than the former groups. This is mainly due to its smaller contribution in most of the aspects of economy stated above, if compared to the leading groups. The only diverging states would be Pahang and Perlis. Typically, these states are diverging because of their lesser contribution as well as development. Lesser exploitation of resources has been done in these states and limited geographical area for Perlis also limits the development of the state.

In this analysis, the result displayed an interesting fact that Sabah is converging with the core groups and she is categorized in the second converging group. This is contradict to the ranking of Sabah according to the GDP per capita by various Five Year Malaysia plans which argued that Sabah is the second poorest states among all. This happens probably because of the economic downturn in Sabah in 1980s but this beautiful state has increased slowly throughout the years.

This is also a contradiction with the statistical data provided by the World Bank Malaysia Economic Monitor 2010 which stated that Sabah has the highest poverty in Malaysia (40 percent) although she has only covers 10 percent of Malaysia's population. The possible reason Sabah is classified as the poorest among all probably is because almost 31 percent of all poor households live in rural Sabah and Labuan. This has shows that regional disparity issue in Sabah is more serious than the others.

POLICY RECOMMENDATION

Regional policies implemented by the government are important to the development of each state and also the focus and emphasis of the government towards a particular state. If the authority focuses on implementing effective policies to a certain state, it is for sure will let the states especially the diverging ones to catch up with the other states.

Nonetheless, it is also important to recognise the states income per capita by year to acknowledge the state's performance. With the help of this flexible methodology, real states performance can be determined and it helps the authority to identify ways to reduce this issue. Although Sabah is claimed to be the poorest state among them all, it has proven that Sabah is performing well and it is largely related to the policy implications emphasised by the authority. However, the performance of this state should be maintained.

As for the diverging group, it gives an alert for the policy makers to put more emphasis and focus on them in order to boost them up with the other states. Effective regional policies should be implemented or restructured for the sake of the economic growth of the whole.

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