



**REGIONAL INCOME DISPARITY IN MALAYSIA: IS SABAH
CONVERGING, CATCHING-UP WITH OR FALLING BEHIND
OTHER STATES IN MALAYSIA?**

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Abstract

Whether poor economies tend to converge towards rich ones or else to diverge over time is an issue that has attracted the attention of policy-makers and academics alike for some decades. Economic convergence or divergence is a topic of considerable interest and debate, not only for validating or otherwise the two leading and competing growth models (the neoclassical and the endogenous growth approaches) but also for its policy-oriented implications. In Malaysia, the issue of economic convergence is also much debated. Despite the various Malaysia Plans for the past three decades, regional disparity between states remains. Thus, the objective of the present paper is to address the question whether the state of Sabah has been converging, catching-up or falling behind the other states in Malaysia. Using annual data for the period 1965 to 2003, our univariate unit root test result suggest that the state of Sabah has been catching-up with other states except with the state of Terengganu. In this respect, the local government has an important role to play in enhancing growth by providing stable economic environment for investment and other productive economic activities. This will ensure convergence can take place in the future.

JEL Classifications: O18, O47, R11, R58

Keywords: regional income disparity, stochastic convergence, catching-up, Malaysia, Sabah

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1. Introduction

For the last twenty-five years, Malaysia has been recognized as one of the most dynamic countries in the Asian region. Among the ASEAN economies Malaysia's economic growth has surpassed that of the other ASEAN nations including also the industrialized countries. Despite these achievements in the international arena, disparity in income across states in Malaysia continues to be a matter of concern. The existence of regional inequalities and the prospect that these inequalities may widen were recognized by the Malaysian government. The Government also recognized that "the different stages of development in the different states of Malaysia pose major problems of balancing needs with the best economic allocation of resources². An uneven distribution of income which involves wide disparities between rural and town dwellers, between inhabitants of Malaysia and the Borneo states as well as among various social groups was identified in the First Malaysia Plan. Accordingly, Malaysia envisaged bringing the low-income states to the general income level by 1985, so that economic development will yield the fullest possible human benefits (First Malaysia Plan, 1965). As a matter of fact, the eight volumes of the 5-Year Malaysia Plan reflects the sincerity of the Malaysian government in eradicating if not elevating the problem of regional or states imbalances. Accordingly, in their quest to achieve both development and equity at the same time, policies and strategies are continuously being formulated and implemented across the states.

In the Second Outline Perspective Plan (OPP2, 1991), the states of Sabah and Sarawak has been given greater emphasize in the regional development plan. According to the OPP2 (p. 24), "an important objective of regional development is to progressively integrate the regional economies of the states of Sabah and Sarawak to foster national integration and to promote the complementarity of these economies with the economy of the Peninsular states." The Malaysian government recognizes that both states have great potential to improve their level of income to the national average given their vast land and rich of natural resources to promote their socio-economic growth and physical infrastructures.

Table 1 and Table 2 show some interesting observations on the performance of the fourteen states in Malaysia for the period 1970-2000. In the year 1970, five states- Negeri Sembilan, Perak, Selangor, Sabah and Wilayah Persekutuan registered real GDP per capita that is above the national average. However, in the year 2000, Melaka, Penang,

²From an address delivered by the Deputy Prime Minister, Tun Abdul Razak, to the Federal and State Heads Of Department, June 4, 1964.

Selangor, Terengganu and Wilayah Persekutuan has been acting as the engine of growth, contributing to real GDP per capita that is above the national average. Sabah in 2000, has been lagging behind the national average by 35 percent of real GDP per capita. In terms of ranking, in 1970, Sabah ranked third after Wilayah Persekutuan and Selangor. However in 2000, Sabah ranked twelve followed by Kedah (13th) and Kelantan (14th). The statistics suggest that in 2000 Sabah is the third poorest state in Malaysia, despite her high ranking as the third richest states in 1970. The poor performance of the Sabah economy has been recognized by the government of Sabah in the Outline Perspective Plan Sabah (1995). They revealed the following facts (i) The State's economy has been growing out of tandem with the national economy, (ii) The growth of the States's economy has been very erratic, (iii) The economy is still dominated by the primary sector, (iv) Unemployment remains persistently high, (v) The investment ratio is low by national standard coupled with a probable massive outflow of funds from Sabah, (vi) Rapidly depleting timber and petroleum resources, (vii) Limited sources of economic growth, and (ix) Low value-adding economic activities.

The purpose of the present paper is to assess empirically whether the states of Sabah has been converging, diverging or catching-up with the rest of the thirteen states in Malaysia for the period 1965 to 2003. The notion of economic convergence usually refers to a process in which national economies display increasing similarities in the patterns of their performance. From an economic policy point of view, the issue of convergence and divergence is very important. In a case of convergence, this would point to the existence of market forces, which will eventually lead to similar living standards across states. In the case of persistently large (or widening) gaps or divergence between poor and rich states, there could be a need for economic policy measures to stimulate a catch-up process. The catching-up hypothesis suggests that the poorer states with low initial income and productivity will tend to grow more rapidly by copying the technology from the leader country, say by replacing existing older capital stock with more modern equipment, implying that capital investment is necessary to import the more advanced technology embodied in new equipment (Lim and McAleer, 2002). One good example of transferring foreign technology and knowledge to the host country is through foreign direct investment.

The paper is organised as follows. In the next section, we discuss the method used to estimate stochastic convergence, divergence or catching-up for Sabah with respect to the rest of the Malaysian states. Section 3 discusses the empirical results and the last section contains our conclusion.

2. Methodology

Tests of convergence within regions in a country and between international economies have been receiving increasing attention. Numerous cross country studies have found a negative relation between initial per capita income and an average growth in per capita income, that is, the analysis support absolute convergence. Furthermore, since economic growth is a complex function of a wide range of interrelated factors; have led researchers to evaluate what they called conditional convergence, that is, after having controlled for other variables that affect per capita income growth. With absolute convergence, growth rates in income per capita converge to a constant and identical level across countries, states and regions. On the other hand, with conditional convergence, each country or region is converging towards its own respective steady state. Studies support convergence among countries, among others include Baumol (1986), Barro and Sala-i-Martin (1991, 1992, 1995), DeLong (1988), Dowrick and Nguyen (1989), Grier and Tullock (1989), and Mankiw et al. (1992).

However, the traditional testing for convergence has been questioned by Quah (1993), Evans (1998) and Bernard and Durlauf (1995). They suggest using time-series methods (the so-called stochastic convergence) to evaluate convergence since the cross-sectional approach is subject to bias. In a time-series approach, stochastic convergence asks whether permanent movements in one country's per capita income are associated with permanent movements in another countries' income, that is, it examines, whether common stochastic elements matter, and how persistent the differences among countries are. Thus, stochastic convergence implies that income differences among countries cannot contain unit roots. In other words, income per capita among countries is stationary. Empirical studies on testing stochastic convergence, among others include Bernard (1991), Bernard and Durlauf (1995), Campbell and Mankiw (1989), Cogley (1990), Greasley and Oxley (1997), St. Aubyn (1999), Cellini and Scorcu (2000) and Carlino and Mills (1993).

Following Bernard and Durlauf (1995), stochastic convergence occurs if relative log per capita GDP, y_{it} , follows a stationary process, where $y_{it} = \log Y_{it} - \log Y_{qt}$, and Y_{it} is the log of real per capita GDP for country i , and Y_{qt} is log of real per capita GDP of a benchmark country, and both series is $I(1)$. Stochastic convergence is tested by using the conventional univariate augmented Dickey-Fuller (ADF) regression of the following form:

$$\Delta y_{iqt} = \alpha_i + \alpha t + \beta_i y_{iqt-1} + \sum_{j=1}^p \theta_{ij} \Delta y_{iqt-j} + \varepsilon_{iqt}, \quad t = 1, \dots, T \quad (1)$$

for $i = 1, \dots, N$ series, and $j = 1, \dots, p$ ADF lags. In a time series framework, a distinction is made between long-run convergence and convergence as catching-up. The statistical tests are interpreted as follows. First, if Δy_{iqt} contains a unit root (i.e. $\beta = 1$), real GDP per capita for states i and q diverge over time. Second, if Δy_{iqt} is stationary (i.e. no stochastic trend, or $\beta < 1$) and (a) $\alpha = 0$ (i.e. the absence of a deterministic trend) indicates long-run convergence between states i and q ; (b) $\alpha \neq 0$ indicates catching-up (or narrowing of output differences) between states i and q .

Sources of Data

The data used in this study are annual observations on per capita gross domestic product (GDP) in constant 2000 prices for fourteen states as regional units. These states are Perlis, Kedah, Kelantan, Terengganu, Penang, Perak, Pahang, Selangor, Negeri Sembilan, Melaka, Johore, Sabah, Sarawak and Wilayah Persekutuan. The samples cover the period 1965 to 2003. Data for states GDP at constant prices are collected from the various issues of the 5-Year Malaysia Plan. A complete range of time-series data for states per capita GDP were interpolated using information on time, time-squared and lagged states per capita GDP. Figure 1 plots the log differential in per capita GDP between Sabah and each states in Malaysia. Figure 1 clearly demonstrates that the gap in per capita GDP between Sabah and the thirteen states are generally constant.

3. Discussions of Empirical Results

Before testing for convergence based on Equation (1), it is essential to determine the order of integration for each of the states income series. The standard ADF tests are used to test for the presence of unit roots in the logarithm of per capita states income. The result of the ADF test are reported in Table 3, with series in levels are run with constant and trend, while series in first differences are run with a constant only. The chosen lag length is selected based on SIC.³ The estimated t -statistics for the ADF test reported in Table 3 indicate that all states real GDP per capita (including the national average per capita income) series are $I(1)$

³In this study, we used EViews5.1 and the software automatically selects the optimal lag length based on SIC.

processes. The null hypothesis of unit root cannot be rejected at the 5 percent level of significance for series in levels, while for series in first difference, the null hypothesis of $I(2)$ can be rejected at the 5 percent level of significance. In other words, the states per capita income series achieve stationarity after first differencing.

Having determined that all states per capita GDP are integrated of order one, that is, they are $I(1)$ processes; we proceed for the testing of stochastic convergence by using Equation (1). We do this by employing the ADF unit root test on the differential between each state per capita GDP and the rest of the Malaysian states including the national average per capita GDP. The result is presented in Table 4. We report the result of the estimated Equation (1) with the inclusion of both deterministic components: with a constant in column 2, and with a constant and trend in column 4. As shown in column 2, the null hypothesis of a unit root cannot be rejected at the 5 percent significance level implying that there is no long run convergence between Sabah and the rest of the states in Malaysia. On the other hand, the result for the test for convergence as catching-up is shown in column 4 of Table 4. Except for Perak, Perlis and Terengganu, our result suggests that catching-up exists between Sabah and the rest of the states in Malaysia as the null hypothesis of convergence of catching-up cannot be rejected at the 5 percent level of significance. However, at 10 a percent significance level convergence as catching-up exists between Sabah and the states of Perak and Perlis.

4. Conclusions

Since independence, Malaysia has undergone profound transformations and has been considered as one of the fastest growing economy in the Asian region. Malaysia's outward orientation such as openness to trade and foreign direct investment, and human capital investment are some of the factors that have contributed to the rapid growth in the economy. Despite having recognized as the new emerging market economies, Malaysia's regional income disparity has been a major concern of the Malaysian authority. There are instances that rich states become richer and poor states become poorer over time for the past 45 years.

The state of Sabah is no exception in this case. It ranked third as the richest state in 1970 and over 45 years Sabah has become the third poorest state in Malaysia in 2000. Nevertheless, despite this poor ranking, our question is has Sabah been converging, diverging or catching-up with the rest of the states in Malaysia for the past four decades. Using annual data of state real GDP per capita for the period 1965 to 2003, we employed the unit root test for testing the hypotheses of long-run convergence, divergence or convergence as catching-up

between Sabah and the rest of the thirteen states in Malaysia. Our results suggest that the state of Sabah has been catching-up with the rest of the states except with Terengganu.

Generally, the lack of convergence and the existence of lagging states imply that resources are being underemployed. Thus, one way of improving economic welfare is to put these unused resources to productive use. It follows that national GDP per capita could be increased by raising the productivity of these lagging regions; and regional policy provides a means of achieving this objective. In this respect, the local government has an important role to play to promote economic growth and development in the state of Sabah.

One aspect that Sabah local government can focus is on building infrastructure to meet existing needs and also developing adequate infrastructure for new growth. This is because infrastructure is an important investment in the growth of society, the economy and our quality of life. Investing in infrastructure helps accommodate and facilitate quality growth to benefit the whole community. In fact, providing the infrastructure can attract new business that in turn drives the economic engine that funds many of the services the community wants and ultimately new investment will enhance growth of the Sabah economy. Apart from this, the local government must coordinate their infrastructure development with their land use plans. Infrastructure – highways, roads, sewers, sewage treatment, water, and advanced telecommunications – potentially involves many different local and state agencies, like port authorities, special fire, water, irrigation, transit, school, parks, hospital, or utility improvement districts, city street and county road departments, as well as private business providing cable, natural gas, electricity, telecommunication, and garbage services. Only with well-thought-out-capital facilities plans that include adequate financing methods will local governments are able effectively and realistically provide for growth.

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Table 1
Real GDP per Capita, 1970-2000 (Malaysia=100)

States	1970	1980	1990	2000
Johore	84	89	91	96
Kedah	73	61	59	60
Kelantan	44	60	38	42
Melaka	72	75	83	104
Negeri Sembilan	104	101	84	93
Perak	103	93	79	81
Pahang	93	79	82	67
Perlis	72	60	66	66
Penang	96	113	118	143
Selangor	148	156	142	124
Sabah	118	101	85	65
Sarawak	92	80	88	90
Terengganu	81	71	159	154
Wilayah Persekutuan	176	197	191	205
Malaysia	100	100	100	100

Table 2
Ranking by States According to Real GDP per Capita, 1970-2000

States	1970	1980	1990	2000
Johore	9	8	5	6
Kedah	11	13	13	13
Kelantan	14	14	14	14
Melaka	13	10	9	5
Negeri Sembilan	4	5	8	7
Perak	5	9	11	9
Pahang	7	6	10	10
Perlis	12	12	12	11
Penang	6	4	4	3
Selangor	2	2	3	4
Sabah	3	7	7	12
Sarawak	8	11	6	8
Terengganu	10	3	2	2
Wilayah Persekutuan	1	1	1	1

Table 3
Result of Unit Root Test for State per Capita Income Series

Per capita income by state	Levels (Constant and trend)	Lag length	First difference (Constant)	Lag length
Johore	-2.26 [0.44]	0	-5.36 [0.00]*	0
Kedah	-2.64 [0.26]	4	-5.08 [0.00]*	0
Kelantan	-2.66 [0.25]	9	-6.84 [0.00]*	1
Melaka	-2.34 [0.40]	1	-7.69 [0.00]*	0
Negeri Sembilan	-2.78 [0.21]	0	-7.47 [0.00]*	0
Perak	-2.40 [0.36]	2	-5.74 [0.00]*	0
Pahang	-2.70 [0.24]	0	-7.92 [0.00]*	0
Perlis	-2.56 [0.29]	0	-7.12 [0.00]*	0
Penang	-2.05 [0.55]	0	-6.87 [0.00]*	0
Selangor	-2.84 [0.18]	1	-9.44 [0.00]*	0
Sabah	-2.79 [0.20]	0	-8.11 [0.00]*	0
Sarawak	-1.76 [0.70]	2	-7.81 [0.00]*	1
Terengganu	-3.03 [0.13]	2	-6.30 [0.00]*	0
Wilayah Persekutuan	-2.77 [0.21]	0	-7.80 [0.00]*	0
National Average	-2.60 [0.28]	0	-5.62 [0.00]*	0

Notes: All unit root estimations were done using EViews5.1. EViews5.1 automatically select lag length based on SIC as default and was used throughout the analysis. The square brackets [.] contain the *p*-values. Asterisk (*) denotes statistically significance at 5% level. Critical values for unit root test are referred to MacKinnon (1996).

Table 4
Testing for Long Run Convergence

Differential per capita income by state	<i>t</i> -value ($\alpha=0$) No trend	Lag length	<i>t</i> -value ($\alpha\neq 0$) Trend	Lag length
SABAH:				
Johore	-0.50	0	-4.47*	0
Kedah	-1.19	0	-3.76*	0
Kelantan	-1.16	1	-4.53*	0
Melaka	-0.72	3	-4.17*	2
Negeri Sembilan	-1.23	0	-3.91*	0
Perak	-1.36	0	-3.41	0
Pahang	-2.17	0	-4.36*	0
Perlis	-1.14	0	-3.40	0
Penang	-0.15	0	-3.94*	0
Selangor	-0.61	1	-4.77*	0
Sarawak	0.14	1	-4.93*	1
Terengganu	-0.41	0	-2.97	0
Wilayah Persekutuan	-0.45	1	-4.36*	0
National Average	-0.47	0	-4.25*	0

Notes: All unit root estimations were done using EViews5.1. EViews5.1 automatically select lag length based on SIC as default and was used throughout the analysis. The square brackets [.] contain the *p*-values. Asterisk (*) denotes statistical significance at 5% level. Critical values for unit root test are referred to MacKinnon (1996).