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Economic Growth and Catch-Up Effect Between the Less Developed States and the Richer State of Selangor

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ABSTRACT

The last fifty years, the state of Selangor has benefited from the various policies and strategies of the Five-Year Malaysia Plans and has made the state of Selangor the richest state in Malaysia in terms of state's gross domestic product. Unfortunately, many other states in Malaysia are lagging behind in particular the less developed states of Kedah, Kelantan, Perlis, Pahang, Sabah and Terengganu; except for the state of Sarawak which has shown an amazing catching-up to Selangor. Our main concern in this study is: how do we compare growth between states given that each of the states has different level of economic development? For example, for the period 2009-2013, the average growth for Sabah is 6.5% which is faster than the average growth of the richer state of Selangor of 5.2% (1.25 times of Selangor), but that the initial economic conditions (i.e. the level of economic development) for the two states are vastly different. Selangor having output of RM139 billion while Sabah output is RM41 billion in 2009. Direct comparison of economic growth rates between these two states is inaccurate, unless the catch-up effect is taken into consideration. Thus, the purpose of the present study is to address this question, and our study indicates that after taking into account the catch-up effect, Selangor exceeds growth to Sabah by 2.7 times. For policy implication, the most adequate picture can be obtained only after the removal of this effect, while direct comparison between economic growths will lead to bad economic and political decisions.

JEL Classification Codes: O40, E20.

Keywords: Income disparity; Economic growth; Catch-up effect; Malaysian states.

1. INTRODUCTION

Malaysia consists of federation of thirteen states and three Federal Territories. The thirteen states in the Federation are Perlis, Kedah, Kelantan, Terengganu, Penang, Perak, Pahang, Selangor, Negeri Sembilan,

Melaka, Johor, Sabah and Sarawak while the Federal Territories are Kuala Lumpur and Putrajaya in West Malaysia and Labuan in East Malaysia. For the past fifty years or more, Malaysia has been plagued with uneven economic development as well as wide gap in income inequalities among the ethnic groups as well as the states' income gap.

Unfortunately, states in Malaysia are categorized into two, namely the more developed states and the less developed states. The more developed states are Johor, Melaka, Negeri Sembilan, Perak, Penang and Selangor; while the less developed states comprises of Kedah, Kelantan, Pahang, Perlis, Sabah, Sarawak and Terengganu. The Federal Territory of Kuala Lumpur and Putrajaya are categorized as more developed states, while the Federal Territory of Labuan is classified as less developed states. The rationale in partitioning between the developed and less developed states is clear when Sundaram and Hui (2014) show that less developed states have higher unemployment rates and lower wages than the developed states. The less developed states are most likely to have more inequality and social problems since fewer people participate in the earning process. The existence of disparities for example in per capita income does not only indicate that there are states where the average household is less wealthy and has fewer resources to spend on consumption, but more than that, income disparities are also go hand-in-hand with social disparities.

Recognizing the importance of achieving regional equality in Malaysia the government has instituted several policies and strategies since independence to close the gap between the states in Malaysia. These policies and strategies are reported and documented in nine volumes of the Five-Year Malaysia Plans. For example, the Ninth Malaysia Plan 2006-2010 (Government of Malaysia, 2006) places greater emphasis on ensuring balanced regional development. Some of the main thrusts for achieving balanced regional development in the Ninth Malaysia Plan are: i) accelerating development in lesser developed states; ii) improving the quality of life of the population in rural and urban areas; iii) establishing new regional development authorities in Sabah and Sarawak; iv) developing growth centers and growth corridors; and v) promotes ASEAN sub-regional cooperation in the form of growth triangles. Nevertheless, the state of Selangor has benefited from the various policies and strategies of the Five-Year Malaysia Plans and has made the state of Selangor the richest state in Malaysia in terms of gross domestic product. Unfortunately many other states in Malaysia are lagging behind in particular the less developed states of Kedah, Kelantan, Perlis, Pahang, Sabah and Terengganu; except for the state of Sarawak which has shown an amazing catching-up to Selangor.

Figure 1 shows the trends in log per capita real GDP for all fourteen states in Malaysia. On one extreme we have Wilayah Persekutuan being having higher income per capita while on the extreme we have Kelantan being the lowest income per capita.

Results on ranking states by their real GDP and per capita real GDP are presented in Table 1. In Panel A, we can observe that the state of Selangor has been the richest state in Malaysia for the last four decades. This is followed by Wilayah Persekutuan, and surprisingly Sarawak is in the third place. Sarawak has been the third richest state in Malaysia for the last decade or more. On the other hand, Panel B suggests that in terms of per capita income, the state of Selangor is second to Wilayah Persekutuan, except in the year 2000 that Selangor ranked fourth after Penang and Sarawak. Among the developed states, Perak has been falling behind for the last thirty years, and is the fifth poorest states in Malaysia. Other interesting observations are the states of Sabah and Sarawak. Sabah has been the third richest state in 1970; however, for the last decades or more, Sabah has been lagging behind and placing her as the third poorest state in Malaysia. Sarawak on the other hand, has an amazing economic performance, catching-up and position herself as the fourth richest state in Malaysia after Wilayah Persekutuan, Selangor and Penang.

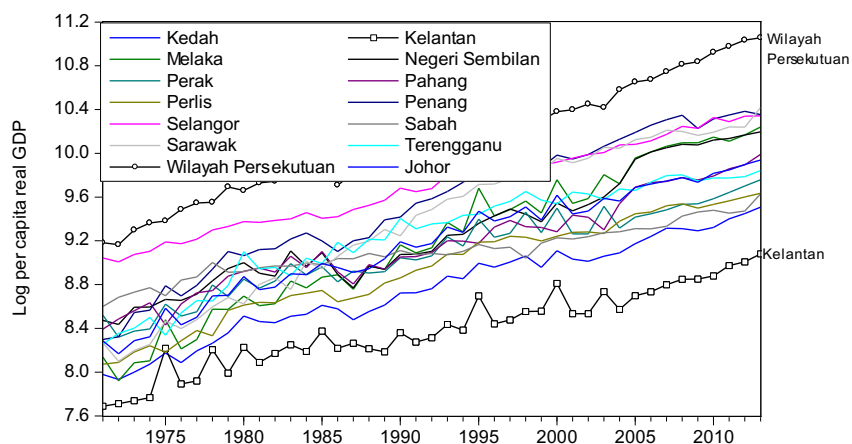


Figure 1: Trends in log per capita real GDP for all states in Malaysia

Table 1
States' ranking by real GDP and per capita real GDP, 1970-2010

States	1970	1980	1990	2000	2010
<i>Panel A: Ranking by real GDP:</i>					
<i>Less developed states:</i>					
Kedah	8	9	10	8	10
Kelantan	13	12	13	13	13
Pahang	10	8	9	9	8
Perlis	14	14	14	14	14
Sabah	6	6	6	7	6
Sarawak	5	7	4	3	3
Terengganu	11	10	8	10	12
<i>Developed states:</i>					
Johor	4	4	3	4	4
Melaka	12	13	12	12	11
Negeri Sembilan	9	11	11	11	9
Perak	1	3	5	6	7
Penang	7	5	7	5	5
Selangor	2	1	1	1	1
Wilayah Persekutuan	3	2	2	2	2
<i>Panel B: Ranking by per capita real GDP:</i>					
<i>Less developed states:</i>					
Kedah	13	13	13	13	13
Kelantan	14	14	14	14	14
Pahang	9	6	10	10	8
Perlis	12	12	12	11	11
Sabah	3	7	8	12	12
Sarawak	7	11	5	3	4
Terengganu	8	3	4	8	9

States	1970	1980	1990	2000	2010
<i>Developed states:</i>					
Johor	10	8	6	6	7
Melaka	11	10	7	5	5
Negeri Sembilan	4	5	9	7	6
Perak	5	9	11	9	10
Penang	6	4	3	2	3
Selangor	2	2	2	4	2
Wilayah Persekutuan	1	1	1	1	1

Notes: Authors' calculation.

Sources: Five Year Malaysia Plans and Department of Statistics Malaysia, various issues.

The catching-up process of Sarawak can clearly be seen in Figure 2. For the period 1971 to 2013, the differential in terms of per capita real GDP between Sarawak and Selangor has been narrowing (crossing the zero line) since 2000 onwards. On the other hand, Kelantan is showing divergent in terms of per capita real GDP differential with Selangor. However, for the other less developed states, their per capita real GDP differential is reducing (trending upwards) albeit slowly as they are moving towards the zero line indicating zero output differentials with the state of Selangor.

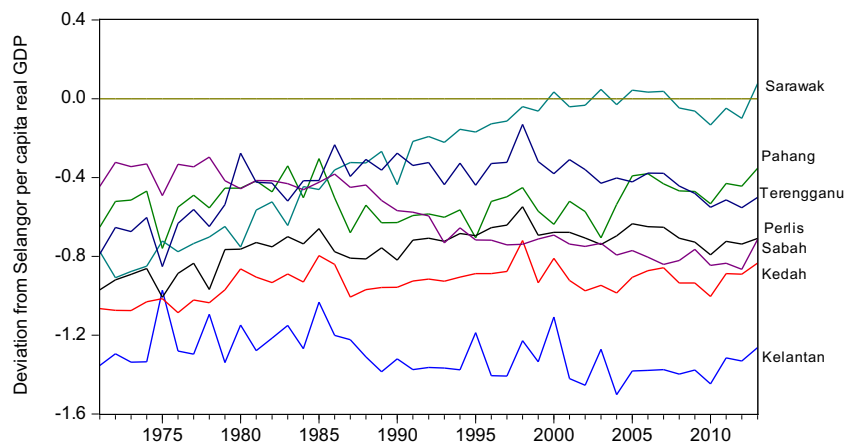


Figure 2: Income deviation of less developed states to Selangor

Our main concern in this study is: for example, given 5% average growth rate of Selangor, what are the average growth rates for other less developed states to catch-up with Selangor? How do we compare growth between states given that each of the states has different level of economic development? Thus, the purpose of the present study is to address this question, and our study indicates that after taking into account the catch-up effect, in terms of real GDP, Selangor exceeds growth to: for example, Sabah by 3 times, Kelantan by 11 times, Perlis by 87 times and Terengganu 14 times. For policy implication, the most adequate picture can be obtained only after the removal of this effect, while direct comparison between economic growths will lead to bad economic and political decisions.

The paper is organized as follows. In the next section we review some of the related literature on income convergence between states. The method use to make comparison on growth between states and their empirical results will be discussed in section 3. The last section is our conclusion.

2. RELATED LITERATURE

The literature on catching-up suggests that due to diffusion and imitation, relatively backward countries should grow at a faster rate. Through diffusion and imitation it is supposed that a 'follower' country experiencing a technological gap can increase its rate of economic growth by catching-up with the technology of the 'leader'. As pointed by Skonhofs (1995), a main premise for the process of convergence is the existence of differences in the level of technology embodied in a country's capital stock compared to the level of technology embodied in the leading country's capital stock. Catching-up therefore implies that the capital stock in a country following behind becomes relatively more recent than in the leading country as time goes by. Lim and McAleer (2004) further elaborate that technological catching-up is associated with innovation (e.g. R & D) and capital investment (importing advanced technology). Besides innovation and investment, the level of education (social capability) also plays a crucial role in determining the technical competence of the labor force.

Several studies have been conducted to test the hypothesis of economic convergence for Malaysia. Habibullah et. al., (2009) investigate whether the state of Sabah has been converging, catching-up or falling behind the other states in Malaysia. Their finding suggests that Sabah has been catching-up with twelve states in Malaysia except with the state of Terengganu. On the same note, using panel unit root tests, Habibullah et. al., (2011) address the question whether Kelantan being the poorest states in Malaysia has been narrowing their income gap with other states in Malaysia. The results of their study indicate that: (i) Kelantan converges towards Kedah, Negeri Sembilan, Perak, Pahang, Perlis and Selangor; (ii) Kelantan is catching-up to Johor, Melaka, Penang, Sabah, Terengganu and Wilayah Persekutuan; and (iii) Kelantan showing divergence with Sarawak.

On one hand, on the regional perspectives, Habibullah et. al., (2012) investigate whether the regional income gaps has been narrowing for the past four decades in Malaysia. They found that there is strong evidence of stochastic convergence of catching-up hypothesis for the six regions in Malaysia. The results indicate that the regions of eastern (Kelantan, Pahang and Terengganu), northern (Kedah, Perak, Perlis and Penang), southern (Johor), Sabah and Sarawak has been catching-up with the central region (Melaka, Negeri Sembilan, Selangor, Wilayah Persekutuan). On the other hand, taking into account that economic growth is non-linear, Habibullah et. al., (2013) examine whether states' income are long-run convergence, divergence or catching-up to the income of Wilayah Persekutuan. The results show that Kedah, Negeri Sembilan, Perak, Perlis and Selangor support the long-run convergence hypothesis while Johor, Kelantan, Melaka, Pahang and Penang suggest catching-up. However, the states of Sabah, Sarawak and Terengganu indicate income divergence from Wilayah Persekutuan. On another note, Hooi et. al., (2011) investigate disparities in output and income across the states of Malaysia using the log-*t* test proposed by Phillips and Sul (2007). The results indicate that GDP per capita at the state level generally diverged over the 1972-2003 period; nevertheless, there was convergence within each of the three "clubs". The first club consists of Wilayah Persekutuan, Terengganu, Penang and Melaka; second club includes Selangor, Johor, Negeri Sembilan, Sarawak and Perak; while the third club comprises of the states of Pahang, Sabah, Perlis, Kedah and Kelantan.

3. THE CATCH-UP EFFECT AND COMPARISON OF ECONOMIC GROWTH

The neoclassical Solow (1956) growth models predict that due to diminishing marginal product of capital, poor countries have the opportunity to grow faster to catch-up with the rich countries. This happens

when capital in a higher per capita income country which subject to ‘diminishing returns’ moves outward seeking opportunities in a country with a comparatively lower per capita income. Thus, in this model capital movement between countries serves as the primary instrument driving economic convergence. Economic convergence is attained when differences in rates of marginal returns to capital between countries is equal to zero. When such occurs it is assumed that income per capita would also have equalized between countries. Papava (2014) coined this phenomenon as the “catch-up effect”.

Our main concern in this study is: How do we compare growth between states given that each of the states has different level of economic development (the initial economic conditions)? This is the rationale of including the initial conditions in many of the Barro-type growth models. For example, for the period 2009-2013, the average growth for Sabah is 6.5% which is faster than the average growth of the richer state of Selangor of 5.2%, but that the initial economic conditions (i.e. the level of economic development) for the two states are vastly different. Selangor having output of RM139 billion while Sabah output is RM41 billion. Thus, direct comparison of economic growth rates between these two states is inaccurate, unless the catch-up effect is taken into consideration (Papava, 2014). As illustrates in Table 2, direct comparison between the growth of Sabah and Selangor would suggest that economic growth in Sabah is 1.25 times higher than the growth in Selangor (column 4), and Kelantan demonstrates 1.08 times higher growth than Selangor.

To make comparison more meaningful and accurate, Papava (2012, 2014) propose the following adjusted economic growth of the j -th states (less developed states), r_{ij}^* ,

$$r_{ij}^* = \frac{r_i}{\alpha_{ij}} \quad (1)$$

where, r_i is the growth rate of the reference state, Selangor; α_{ij} is the proportional offset of the catch-up effect. According to Papava (2012, 2014) the hypothesis of proportional offset of the catch-up effect says that “if the level of economic development of i -th country is α times higher than the level of economic development of j -th country, achieving the same economic growth in the i -th country will be α times difficult than in the j -th country”. The proportional offset of the catch-up effect, α_{ij} , is calculates as,

$$\alpha_{ij} = \frac{y_i}{y_j} \quad (2)$$

where, y is real GDP or per capita real GDP for states j (the less developed states) and i . (the reference state – Selangor). To compute how many times economic growth in the i -th state is really faster than the economic growth in the j -th state, we divide the actual economic growth of the i -th state (r_i) by the adjusted economic growth of the j -th states, (r_{ij}^*) as

$$\beta_{ij} = \frac{r_i}{r_{ij}^*} = \frac{r_i}{r_j} \alpha_{ij} \quad (3)$$

or equivalently equals to

$$\beta_{ij} = \frac{\Delta y_i}{\Delta y_j} \quad (4)$$

From Table 2, for example, we see that Kelantan’s average annual real economic growth for the period 2009-2013 was 5.6% and in Selangor it was 5.2%, despite that the level of economic development in Selangor was 12.2 times higher than that of Kelantan. Taking the catch-up effect into account, consequently, Kelantan’s 5.6% growth corresponds to 0.46% growth in Selangor (5.6:12.2=0.46). Thus, the appropriate ratio for measuring the actual economic growth in Kelantan against the actual economic growth in Selangor is 0.09 (0.46:5.2). Therefore, despite that direct comparison indicates economic growth in Kelantan is 1.08 times higher than economic growth in Selangor, but after adjusting economic growth in Selangor for the catch-up effect (5.2:0.46), Selangor exceeds growth in Kelantan by 11.3 times. For the rest of the less developed states, Selangor exceeds growth to: Kedah by 6.8 times; Pahang by 5.1 times; Perlis by 86.7 times; Sabah by 2.7 times; Sarawak by 1.8 times; and Terengganu by 14.4 times.

Table 2
Economic growth and level of economic development in less developed states and Selangor, real GDP

<i>States</i>	<i>Average economic growth 2009-2013 (%)</i>	<i>Real GDP in 2009 (RM million)</i>	<i>Ratio of actual average economic growth in a given state to that of Selangor:</i> $\frac{r_i}{r_j}$	<i>Proportion of catchup effect (ratio of Selangor real GDP to that of a given state):</i> α_{ij}	<i>Hypothetical economic growth:</i> r_{ij}^*	<i>Ratio of a given state's hypothetical average economic growth to Selangor actual average economic growth:</i> $\frac{r_{ij}^*}{r_i}$	<i>Ratio of actual Selangor average economic growth to a given state's hypothetical average economic growth:</i> β_{ij}
Kedah	5.1	21,092	0.98	6.60	0.77	0.15	6.75
Kelantan	5.6	11,436	1.08	12.17	0.46	0.09	11.30
Pahang	5.4	26,203	1.04	5.31	1.02	0.20	5.10
Perlis	2.5	3,166	0.48	43.98	0.06	0.01	86.67
Sabah	6.5	40,986	1.25	3.40	1.91	0.37	2.72
Sarawak	6.4	64,173	1.23	2.17	2.95	0.57	1.76
Terengganu	2.8	17,720	0.54	7.85	0.36	0.07	14.44
Selangor	5.2	139,236	1.0	1.0	5.20	1.00	1.00

Source: Authors’ Calculations

Similarly, for the per capita real GDP, results in Table 3 suggest that Selangor exceeds growth to: Kedah by 1.3 times; Kelantan by 1.7 times; Pahang by 0.8 times; Perlis by 2.3 times; Sabah by 1 time; Sarawak by 0.5 times; and Terengganu by 3.8 times. Results from the per capita real GDP imply that economic growth differences are much smaller compared to real GDP.

A. Sources of Data

The data used in this study are annual observations on states per capita gross domestic product (GDP) in constant 2005 prices. The sample covers the period 1970 to 2013. Data for states GDP at constant prices are collected from the various issues of the Five-Year Malaysia Plan and Department of Statistics Malaysia. A complete range of time-series data for states per capita real GDP were interpolated using information on time, time-squared and one-year lagged Malaysia’s per capita real GDP. These states are Perlis, Kedah, Kelantan, Terengganu, Penang, Perak, Pahang, Selangor, Negeri Sembilan, Melaka, Johor, Sabah, Sarawak

Table 3
Economic growth and level of economic development in less developed states and Selangor, per capita real GDP

<i>States</i>	<i>Average economic growth 2009-2013 (%)</i>	<i>Real GDP in 2009 (RM million)</i>	<i>Ratio of actual average economic growth in a given state to that of Selangor:</i> $\frac{r_i}{r_j}$	<i>Proportion of catch-up effect (ratio of Selangor real GDP to that of a given state):</i> α_{ij}	<i>Hypothetical economic growth:</i> r_{ij}^*	<i>Ratio of a given state's hypothetical average economic growth to Selangor actual average economic growth:</i> $\frac{r_{ij}^*}{r_i}$	<i>Ratio of actual Selangor average economic growth to a given state's hypothetical average economic growth:</i> β_{ij}
Kedah	5.1	21,092	0.98	6.60	0.77	0.15	6.75
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Selangor	5.2	139,236	1.0	1.0	5.20	1.00	1.00

Source: Authors' calculations

and Wilayah Persekutuan. Using these states data series both –real GDP and per capita real GDP, we can ranked the states' output and income for 1970, 1980, 1990, 2000 and 2010.

4. CONCLUSION

One of the important issues in the economic agenda of many countries is equitable and sustains economic growth. Despite different countries having different perceptions of what equitable is and how best to achieve it, there is a general consensus that extreme inequality of income, wealth or opportunity is unfair and those efforts should be made to raise the income of the poorest members of the society. Accordingly, to achieve both development and equity at the same time, policies and strategies are continuously being formulated and implemented across the globe.

In Malaysia, regional income disparity has been a never ending story for the Malaysian population. For the last fifty years narrowing the regional income gap has been a daunting task faced by the Malaysian government. Recognizing the importance of achieving regional equality in Malaysia the government has instituted several policies and strategies since independence to close the gap between the states in Malaysia. These policies and strategies are reported and documented in nine volumes of the Five-Year Malaysia Plans. The state that benefits most from the various development plans laid by the Malaysia government is the state of Selangor, being the richest state in Malaysia; while the laggards are the less developed states.

The present study compares and estimates and answers the question: What it takes for the less developed states to catch-up with the richer state of Selangor? Our results clear indicate that, in terms of real GDP, for Kedah to catch-up with Selangor, Kedah growth rate has to be 7 times to the growth rate of Selangor. For other states: Kelantan 11 tomes, Pahang 5 times, Perlis 87 times, Sabah 3 times, Sarawak 2 times, and Terengganu 14 times to the growth rate of Selangor. In this respect, the federal and state government has

an important role to play in enhancing growth by continuously providing stable economic environment for investment and other productive economic activities. This will ensure full convergence can take place at a faster rate in the future.

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