
WORKING PAPER SERIES

CenPRIS WP 121/10

**IS THE TOURISM-LED GROWTH HYPOTHESIS VALID FOR MALAYSIA?
A VIEW FROM DISAGGREGATED TOURISM MARKETS**

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March 2010

[Available online at <http://www.usm.my/cenpris/>]

CenPRIS Working Paper No. 121/10

March 2010

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ABSTRACT

IS THE TOURISM-LED GROWTH HYPOTHESIS VALID FOR MALAYSIA? A VIEW FROM DISAGGREGATED TOURISM MARKETS

This study attempts to re-investigate the validity of tourism-led growth hypothesis for Malaysia based on the dataset of twelve different tourism markets from January 1995 to February 2009. The ECM-based cointegration test (Kremers et al., 1992) shows that economic growth and international tourist arrivals are cointegrated for all tourism markets. Nevertheless, the Granger causality results demonstrate that not all international tourism markets are Granger-cause economic growth. Therefore, identification of potential tourism markets is vital for implementing effective tourism marketing policies.

JEL Classification codes: C22

KEYWORDS: Causality; ECM-based test; tourism-growth nexus

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ISSN : 2180-0146

Acknowledgement: The author would like to acknowledge the USM Fellowship. All remaining flaws are the responsibility of the author.

1. INTRODUCTION

Tourism is one of the rapid growing services sectors in the global economy and the contribution of tourism on economic growth has long been debated in past literatures. Remarkably, most empirical studies found that development of tourism industry are Granger-cause economic growth, thus tourism researchers tend to propose to implement international tourism development programme in elsewhere to create sustainable economic growth and development through foreign exchange earnings, employment, tax revenues and others potential benefits (West, 1993; Archer, 1995; Gunduz and Hatemi-J, 2005; Kim et al., 2006). One of the problems with much of the existing literature is that analysis with aggregate international visitor arrivals dataset does not necessarily imply that all tourism markets will lead to economic growth. Therefore, the earlier studies may have the aggregation bias problem and the evidence of tourism-led growth with aggregate data may offer little guidance for policymakers when formulating tourism marketing and economic growth policies (see also Oh, 2005). In this spirit, a disaggregate data analysis may provide more information to the tourism-led growth hypothesis.

This study attempts to re-investigate the relationship between tourism and economic growth using the example of Malaysia as a case study to illustrate the aggregation bias problem and the advantage of using disaggregated tourism markets dataset. One of the pre-test advantages of using disaggregated data is that it will offer a better explanation on the role of each tourism market on economic growth in Malaysia because not all international tourism markets contribute to economic growth. Therefore, the finding of this study may provide more precise information to policymakers when choosing the tourism marketing destination. In order to achieve the objective of this study, we examine the presence of cointegration relationship within the error-correction modelling (ECM) framework developed by Kremers et al. (1992).¹ This is because Masih and Masih (1998) postulated that the Granger causality is a predictability test if the variables are not cointegrated. Thus, we assess the cointegration relationship to obtain reliable and robust causality results. Next, the Granger causality test will be employed to examine the causal relationship between tourism markets and economic growth in Malaysia.

¹ Kanioura and Turner (2005) simulation study showed that the ECM-based t-test is more powerful than the Engle-Granger test and the ECM-based F-test for cointegration (see also Banerjee et al., 1986; Cook, 2006).

2. DATA AND METHODOLOGY

This study employs the monthly data from January 1995 to February 2009 for Industrial Production Index (IPI, 2000 = 100) and disaggregates categories of international tourism markets. The disaggregated tourism markets consist of international visitor arrivals from Australia, Brunei, China, Germany, Indonesia, Japan, Korea, Singapore, Taiwan, Thailand, the United Kingdom (UK), and the United States (USA). The Consumer Price Index (CPI, 2000 = 100) is used to derive the real variables. The data used in this study were collected from *International Financial Statistics* (IFS) published by International Monetary Funds (IMF) and CEIC data.

In line with Gunduz and Hatemi-J (2005) and Oh (2005), this study applied the double-log bi-variate model to examine the relationship between tourism and economic growth in Malaysia. The ECM-based t-test for cointegration developed by Kremers et al. (1992) will be used to investigate the cointegration relationship between tourism and economic growth by estimating the following ECM equations:

$$\Delta \ln Y_t = a_0 + \pi ECT_{t-1} + \sum_{k=1}^p a_{1k} \Delta \ln Y_{t-k} + \sum_{k=0}^q a_{2k} \Delta \ln VA_{i,t-k} + e_{1t} \quad (1)$$

$$\Delta \ln VA_{i,t} = b_0 + \pi ECT_{t-1} + \sum_{k=1}^r b_{1k} \Delta \ln VA_{i,t-k} + \sum_{k=0}^s b_{2k} \Delta \ln Y_{t-k} + e_{2t} \quad (2)$$

where \ln is the natural logarithm, Δ is the first difference operator, Y_t is the income and $VA_{i,t}$ is the i numbers of tourism markets. The residuals (e_{1t}, e_{2t}) are assumed to be white noise and normally distributed. To examine the presence of cointegration relationship, we set $H_0: \pi = 0$ versus $H_1: \pi \neq 0$. If the computed t-statistics for one period error-correction term (ECT_{t-1}) is greater than the critical values, the variables are cointegrated; otherwise the variables are not cointegrated.

Granger (1988) postulated that if the variables are cointegrated, the Granger causality test should be conducted within the ECM equations as presented in (1) and (2) to avoid missing of long run information. Otherwise, the first difference vector autoregressive (VAR) system without ECT_{t-1} term will be estimated. The significance of the ECT_{t-1} represents the long run causal relationship, while the short run causality can be tested by restricting the first difference lagged explanatory variables with the likelihood ratio (LR) test. For example, from equation (1), $a_{2k} \neq 0 \forall_k$ implies causality runs from tourism to economic growth, while in equation (2), $b_{2k} \neq 0 \forall_k$ denotes economic growth Granger-cause tourism.

3. EMPIRICAL RESULTS

Initially, we examine the order of integration for each series with the Augmented Dickey-Fuller (ADF) unit root test. The results shows that all the variables under investigation are integrated of order one, $I(1)$ process. Due to space limitation, the results are not reported here, but it is available upon request. This result is consistent to the finding of Nelson and Plosser (1982) that most of the macroeconomic variables are non-stationary at level, but they are stationary after first differencing. With the finding of uniformly $I(1)$ process, we can proceed to examine the presence of long run equilibrium relationship with the ECM-based test. The cointegration results and also optimal lag length selected by Akaike's Information Criterion (AIC) are presented in Table 1. The diagnostics tests suggest that the final ECMs are free from serial correlation and autoregressive conditional heteroskedasticity (ARCH) problems.

Table 1: The ECM-based t-test for cointegration results

Tourism Markets	Lag length $t(\ln Y \ln VA)$		Lag length $t(\ln VA \ln Y)$	
Australia	5, 5	-0.907	2, 0	-3.286***
Brunei	5, 0	-0.592	5, 4	-3.585***
China	5, 1	-1.432	1, 5	-3.777***
Germany	5, 2	-1.604	1, 4	-6.472***
Indonesia	5, 1	-1.336	2, 0	-4.056***
Japan	5, 5	-1.489	1, 0	-5.555***
Korea	5, 0	-0.896	4, 8	-2.106**
Singapore	5, 3	-2.403**	6, 0	-2.702***
Taiwan	5, 3	-1.718*	1, 0	-5.474***
Thailand	5, 0	-3.088*	2, 4	-4.480***
United Kingdom (UK)	5, 2	-1.704*	1, 2	-5.716***
United States (USA)	5, 0	-1.767*	1, 0	-5.264***

Note: The asterisks ***, ** and * denote statistically significance at 1, 5 and 10 percent level, respectively. The optimal lag order is determined by using AIC.

In order to ascertain the existence of cointegration relationship, we compute the t-statistics for the ECT_{t-1} from equation (1) and (2). Interestingly, all estimated coefficients for ECT_{t-1} are negative in sign and significant at 10% level, in particular when $\ln VA_{i,t}$ is the dependent variable. These implied that Malaysia's economic growth is cointegrated with all categories of tourism markets. Thus, this study suggests that there is a stable long-run relationship between disaggregated tourism markets and economic growth.² These results are also corroborated with the finding of Salleh et al. (2007, 2008).

² In addition, Perman (1991) noted that the presence of cointegration implied that the model is correctly specified.

Given that the variables are cointegrated, there must be at least one direction of Granger causality to hold the existence of long run equilibrium relationship. Table 2 reports the short-run and long-run Granger causality results within the ECM framework. Interestingly, over 12 tourism markets under investigation only 5 international tourism markets such as Singapore, Taiwan, Thailand, the United Kingdom and the United States are Granger-cause economic growth in the long run, and 6 of the 12 international tourism markets such as Australia, Germany, Japan, Singapore, Taiwan, and Thailand are found to be Granger-cause economic growth in the short run. Extremely, 3 out of 12 international tourism markets such as Brunei, China, and Korea are not Granger-cause economic growth in both the short and long run. Although earlier empirical research works find strong evidence to support the tourism-led growth hypothesis, the finding of this study shows that not all the international tourism markets contribute to economic growth.

On the other hand, the finding suggests that all the tourism markets support the economic-driven tourism growth hypothesis in the long run, while only 4 tourism markets like Indonesia, Japan, Singapore, and Taiwan do not support this hypothesis. Malaysia is one of the fast growing economies in the Southeast Asia and has attracted much business travel and created more employment opportunities for other low-middle income countries in the region. Hence, it is logical to obtain results that support strongly the economic-driven tourism growth hypothesis for the Malaysian economy.

Table 2: The Granger test results

Tourism Markets	Tourism-led growth hypothesis			Growth-led tourism hypothesis		
	Lag Order	LR statistics	ECT_{t-1}	Lag Order	LR statistics	ECT_{t-1}
Australia	5, 5	16.673**	-0.028	2, 0	3.569***	-0.252***
Brunei	5, 0	0.210	-0.021	5, 4	12.324**	-0.227***
China	5, 1	4.454	-0.044	1, 5	16.897***	-0.224***
Germany	5, 2	6.848*	-0.035	1, 4	19.825***	-0.468***
Indonesia	5, 1	3.477	-0.057	2, 0	0.219	-0.304***
Japan	5, 5	15.665**	-0.032	1, 0	0.978	-0.429***
Korea	5, 0	0.448	-0.030	4, 8	20.702***	-0.131**
Singapore	5, 3	8.825*	-0.098**	6, 0	0.952	-0.212***
Taiwan	5, 3	11.701**	-0.036*	1, 0	1.285	-0.388***
Thailand	5, 0	4.060**	-0.141*	2, 4	17.739***	-0.398***
United Kingdom (UK)	5, 2	5.247	-0.095*	1, 2	9.388**	-0.415***
United States (USA)	5, 0	0.936	-0.055*	1, 0	4.296**	-0.400***

Note: The asterisks ***, ** and * denote statistical significance at 1, 5 and 10 percent level, respectively. The optimal lag order is determined by using AIC.

4. CONCLUSION AND POLICY RECOMMENDATION

Even though the tourism-led growth hypothesis has long been recognised, this study attempts to add a new idea into the tourism literature by demonstrating that not all international tourism markets contribute to economic growth. This study used the dataset for international visitor arrivals to Malaysia from different countries to illustrate the important of using disaggregate data in examining the tourism-led growth hypothesis and thus lead to tourism marketing and economic growth policymaking purposes. Contrary to the conventional wisdom, empirical results from this study show that only 5 tourism markets contribute to economic growth in the long run, and 6 out of 12 tourism markets for the short run. Based on the findings, this study recommends that policymakers implement tourism marketing policy to the countries that significantly contribute to economic growth; otherwise the resources may be allocated to non-productive tourism markets.

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