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TOURISM AND ECONOMIC GROWTH IN MALAYSIA: EVIDENCE FROM TOURIST ARRIVALS FROM ASEAN-5 COUNTRIES

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This paper examined the causal relationship between tourism and economic growth in Malaysia by using panel time-series approach. Results from the panel cointegration analysis suggest the existence of cointegration between international tourism receipts and real economic growth. Results of the panel causality test based on the error correction model show Granger causality running from international tourism receipts to real economic growth indicating the existence of both short- and long-run relationship between the two. The results provide evidence of the significance contribution of tourism industryto Malaysia's economic growth justifying the necessity of public intervention in providing tourism infrastructure and facilities.

Keywords:
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I. INTRODUCTION

Today, tourism has become one of the most dynamic economic sectors in the world's economy. Over the last three decade, international tourist arrivals have increased five-fold to 842 million, while tourism expenditure was valued at some US$682 billion in 2005 alone. Europe experienced the largest tourist arrivals, with 442 million or 55 per cent of the world tourist arrivals followed by Asia Pacific, which received 155 million tourists or one fifth of the international tourist arrivals (WTC, 2007). In the Asia Pacific region, tourism industry has become a major source of foreign exchange earnings for countries like Thailand, Australia and New Zealand. Tourism industry is ranked second in Hong Kong, Malaysia and the Philippines and third in Singapore and Indonesia (Singh *et al*., 1989).

Currently, tourism is one of the fastest growing industries in the services sector and the second biggest gross domestic product (GDP) contributing industry for Malaysia. This industry performed favorably as reflected in the growth of tourist arrivals and tourist receipts. For example, in 1974, Malaysia attracted only 1.2 million international tourist arrivals. However, by 2007, this figure has increase to 20.9 million. Income generated from foreign arrivals rose from RM0.35 billion to RM46.07 billion for the same period (Malaysia Tourism Promotion Board). In addition, the development in tourism sector also contributed positively to the expansion of activities in other sub-sectors, particularly the hotel, travel and tour industry, retail and restaurants as well as transport[3].

Table 1 presents data on tourist arrivals and tourism receipts from ASEAN and non-ASEAN countries to Malaysia. Both tourist arrivals and receipts from ASEAN countries are outstanding not only in terms of values but also in percentage growth. This could be explained by the fact that ASEAN countries are located relatively near to Malaysia, and hence, relative low traveling cost. Moreover, these countries also have significant trade relation with Malaysia hence, further increase travel between countries in the region.

Although tourism is argued to contribute towards economic growth, empirically, the evidence of whether tourism-led economic growth or economic growth-led tourism are still lacking in the literature. Only a

[3] See Ninth Malaysia Plan, 2006-2010.

Table 1. Malaysian tourist arrivals and receipts, 2004 and 2005

Country of Residence	Tourist Arrivals 2004	Tourist Arrivals 2005	Growth (%)	Tourist Receipts (RM mil) 2004	Tourist receipts (RM mil) 2005	Growth (%)
Brunei	453,664	486,344	7.2	1,153.7	1,286.5	11.5
Indonesia	789,925	962,957	21.9	1,125.8	1,447.7	28.6
Philippines	143,799	178,961	24.5	282.6	348.8	23.4
Singapore	9,520,306	9,634,506	1.2	16,826.9	17,715.0	5.3
Thailand	1,518,452	1,900,839	25.2	1,362.7	2,005.6	47.2
Vietnam	42,088	52,543	24.8	62.1	79.3	27.7
Other ASEAN	22,796	22,748	-0.2	33.5	38.4	14.8
Total ASEAN	12,491,030	13,238,898	6.0	20,846.3	22,921.3	9.9
Total non-ASEAN	3,212,376	3,192,157	-0.6	8,804.1	9,032.8	2.6
Grand Total	15,703,406	16,431,055	4.6	29,651.4	31,954.1	7.8

SOURCE: Tourism Malaysia (2005)

handful of studies tried to ascertain this relationship; for example, Balaguer and Cantavella-Jordà (2002), Dritsakis (2004), Gunduz and Hatemi-J (2005), Oh (2005), Kim *et al.* (2006) and Narayan *et al.* (2007). However, most of these studies analyze the causal relationship between tourism and economic growth in a bivariate context (except for Dritsakis, 2004) and the results are inconclusive. Hence, the main objective of this paper is to determine the causal relationship between tourism and economic growth in Malaysia by using the panel cointegration and panel causality analysis. The paper contributes to the literature by examining causal relationship between tourism and economic growth in Malaysia by using panel time series approach[4].

The rest of the paper is organized as follow: Section 2 reviews related literature. Section 3 explains the data and methodology used. Section 4 presents and discussed the empirical results. Finally, section 5 concludes.

[4] *Panel time series analysis in this study refers to panel unit root tests [Levin, Lin & Chu (LLC) test, Breitung test, Im,Pesaran and Shin (IPS) test and Maddala-Wu Fisher (MWF) test], Padroni's panel cointegration test and panel Granger causality test.*

II. THE LOGIC OF TOURISM AND ECONOMIC GROWTH

The tourism-led growth hypothesis which is directly derived from export-led growth hypothesis has been popularized by Balaguer and Cantavella-Jorda (2002). As in the export led-growth hypothesis, tourism-led growth hypothesis postulated the existence of a channel where tourism would influence the overall long-run economic growth. In the more traditional sense, it should be argued that tourism brings in foreign exchange, which can be used to import capital goods to produce goods and services leading in turn to economic growth (Mckinnon, 1964).

The rapid growth of tourism would also leads to a growth of household incomes directly and indirectly by means of multiplier effects, further contributing to economic growth.Furthermore, international tourism can contribute to increase in income by enhancing efficiency through competition between local destinations and other international tourist destinations, facilitating the exploitation of scale economies at the local level (Helpman and Krugman, 1985).

In addition, Bryden (1973), de Kadt (1979), Blackman (1991), and Bull (1992) stated that tourism revenue could positively affect economic growth and development for several reasons like increase imports, facilitate the use of resources that are in line with country's factor endowment, provide employment opportunities, promote infrastructure improvements, transfer new technology and managerial skills into the economy, and create positive linkages with other sectors in the economy. Therefore, growth in the tourism sector is expected to increase economic growth in the host country.

The hypothesis of economic growth-led tourism, on the other hand, focuses on the role of economic growth in influencing the development of tourism sector. Increase in economic growth of the host country would increase the development of tourism products or tourism services. This would attract more tourists to demand for tourism products or services offered. Hence, higher economic growth is expected to increase the development of tourism in the host country, which helps increase the number of tourist arrivals and thus justifying the economic growth-led tourism hypothesis.

III. REVIEW OF LITERATURE

In recent years there has been a growing interest in analyzing the relationship between tourism and economic growth (see among others, Balaguer and Cantavella-Jordà (2002); Dritsakis (2004); Eugenio-Martin *et al.* (2004); Gunduz and Hatemi-J (2005); Oh (2005); Kim *et al.* (2006) and Narayan *et al.* (2007). However, most of these studies analyze the causal relationship between tourism and economic growth in a bivariate context and the results are still inconclusive.

Balaguer and Cantavella-Jordà (2002) in examining the role of tourism in the long run economic development of Spain found that economic growth is sensitive to persistent expansion in international tourism. Increase in international tourism to Spain produce multiplier effects over time. Oh (2005) study the causal relationship between tourism development and economic growth for the Korean economy by using Engel and Granger two-stage approach and the bivariate Vector Auto-regression (VAR) model. Two principle results emerged from the study. First, result of the co-integration test indicates that there is no long-run relationship between the two series. Second, the outcomes of the Granger-causality test imply that there is one-way causal effect running from economic growth to tourism development in Korea. The hypothesis of tourism-led economic growth was not held in Korea.

Dritsakis (2004) investigates whether tourism affects Greece's long-run economic growth by using multivariate causality analysis. He found the presence of common trend or long-run relationships among international tourism earnings, real exchange rate and economic growth.

Moreover, the results of the causality analysis indicate that international tourism earnings and real exchange rate cause economic growth with a 'strong causal' relationship.
Narayan *et al.* (2007) in analyzing the relationship between tourism and economic growth in four Pacific Island countries (the Fiji Islands, the Solomon Islands, Papua New Guinea and Tonga) by using panel data analysis found that tourism industry is a significant contributor to GDP of all the four Pacific Island countries. Modeste (1995) study the impact of growth in the tourism sector on economic development in Caribbean countries found that economic development is positively affected by growth in the tourism sector. Moreover, the growth in tourism sector is accompanied by contraction in the agricultural sector as the latter sector loses resources to the expanding sector.
Based on the literatures reviewed, the results of whether tourism affects economic growth are still inconclusive. Furthermore, none of the studies used panel time-series approached.

IV. DATA AND METHODOLOGY

The study utilized the balanced panel data set consisting of Malaysia's GDP growth and international tourism receipts from five ASEAN countries, namely Singapore, Indonesia, Thailand, Brunei and the Philippines. The yearly balanced panel data used in this study spans from 1998 to 2005, which were obtained from Malaysian Tourism Promotion Board (Planning and Research Division), *Key Performance Indicator of Tourism in Malaysia*, *Annual report of Bank Negara Malaysia* (the Central Bank of Malaysia), *Economic Report 2005-2006* and the *IMF International Financial Statistics Yearbook*.

A. Panel Unit Root Tests

Before we proceed with the panel cointegration test, it is required to establish the panel unit root properties of all series used. We employed four panel unit root tests, namely the Levin, Lin and Chu (LLC, 2002) test; the Breitung (2000) t-test; the Im, Pesaran and Shin (IPS, 2003) test; and the Maddala and Wu Fisher (MWF, 1999)[5].
Levin, Lin and Chu (2002), hereafter LLC, proposed to perform the augmented Dickey-Fuller tests based on the following regression model. For a sample of *N* groups observed over *T* time periods, the panel unit root regression of the ADF test is as follows

$$\Delta y_{kit} = \alpha_i + \beta_i y_{ikt} + \sum_{j=1}^{pi} \delta_{ij} \Delta y_{ikt-j} + \varepsilon_{ikt}, \; i = 1,....N, t = 1,.....,T \qquad (1)$$

where α_i, $\beta_i$and δ_{ij} are parameters and the error terms ε_{ikt} are uncorrelated across countries. The LLC tests for the H_0: $\beta_i = 0$ against H_a: $\beta_i < 0$. Under the null hypothesis, they show that the test statistics, t^* is asymptotically distributed as the standard normal distribution.
Besides, Im *et al.* (2003), hereafter IPS, extent the work of Levin *et al.* (2002) to allow for heterogeneity in the value of β_i in equation (1). Im *et al.* (2003) proposed a *t-bar statistic* that is based on the mean value of individual ADF statistics. The null hypothesis of a unit root in the panel data is defined as

$\beta_i = 0$, for all *i*

against the alternatives that are stationary

$\beta_i < 0, \; i = 1, 2, ..., N; \quad \beta_i = 0, \; i = N_1 + 1, N_2 + 2, ..., N.$

[5] *See Baltagi (2005: p.239).*

The alternative hypothesis allows for $\beta i = \beta < 0$ for all *i*. In addition, the standardized *t-bar* statistic that propose by Im *et al*. (2003) to test for the hypothesis is as follows

$$\psi_i = \frac{\sqrt{N}\{t_{NT} - (1/N)\sum_{i=1}^{N} E[t_{i,T}(P_i,0)|\beta_i = 0]\}}{\sqrt{(1/N)\sum_{i=1}^{N} Var[t_{i,T}(P_i,0)|\beta_i = 0]}} \quad (2)$$

where

$$t_{NT} = \frac{1}{N}\sum_{i=1} t_{iT}(P_i, \beta_i) \quad (3)$$

and $t_{i,T}(P_i, \beta_i)$is the individual *t*-statistic for testing $\beta_i=0$ for all *i*. Under the null hypothesis, the standardized *t*-bar statistic $\psi_i$is asymptotically distributed as a standard normal distribution [$\psi_i \sim N(0,1)$]. The IPS panel unit root test is derived assuming that the series are independently generated, and they suggested subtracting cross-sectional means to remove common time specific effects. This assumes the error term in equation (3) consists of two random components, $\varepsilon_{it} = \delta_t + v_{it}$ where v_{it} is the idiosyncratic random component, and δ_t is a stationary time specific effect that accounts for correlation in the error across economies.

Breitung (2000), however, found that the LLC and IPS tests suffer from a dramatic loss of power if individual-specific trends are included. Breitung suggests a test statistic that does not employ a bias adjustment whose power is substantially higher than that of LLC or the IPS tests using Monte Carlo experiments (Baltagi, 2005).

The Breitung method differs from LLC in two distinct ways: first, only the autoregressive portion (and not the exogenous components) is removed when constructing the standardized proxies:

$$\Delta\tilde{y}_{it} = \left(\Delta y_{it} - \sum_{j=1}^{Pi} \hat{\beta}_{ij}\Delta y_{it-j} / S_i\right)$$

$$\tilde{y}_{it-1} = \left(y_{it-1} - \sum_{j=1}^{Pi} \hat{\beta}_{ij}\Delta y_{it-j} / S_i\right) \quad (4)$$

where β's are estimated coefficients from the two regressions. Second, the proxies are transformed and detrended,

$$\Delta y_{it}^* = \frac{\sqrt{(T-t)}}{(T-t+1)}\left(\Delta\tilde{y}_{it} - \frac{\Delta\tilde{y}_{it+1} + ... + \Delta\tilde{y}_{iT}}{T-t}\right) \quad (5)$$

$$y_{it}^* = y_{it} - y_{i1} - \frac{t-1}{T-1}(\tilde{y}_{iT} - \tilde{y}_{i1}) \quad (6)$$

The persistence parameter β is estimated from the pooled proxy equation:

$$\Delta y_{it}^* = \beta y_{it-1}^* + \upsilon_{it} \quad (7)$$

Breitung shows that under the null, the resulting estimator β^* is asymptotically distributed as a standard normal. The Breitung method requires only a specification of the number of lags used in each cross section ADF regression, ρ_i, and the exogenous regressors. The *t*-statistic for H_0: $\rho = 0$ which has in the limit a standard *N*(0,1) distribution. In contrast with LLC, the Breitung method does not require kernel computation.

Another panel unit root tests considered is the Maddala-Wu Fisher (hereafter MWF) test. The test was proposed by Maddala and Wu (1999) and is based on Fisher (1932). The test statistic is derived by combining the *p*-values of individual unit root tests (βi) of *N* independent ADF regressions from equation (1). The test statistic [the Fisher test P(λ)] is as follows:

$$P(\lambda) = -2\sum_{i=1}^{N} \log(\pi_i) \tag{8}$$

where π_i is the *p*-value of the test statistic for unit *i*. The Fisher (MWF) test statistic $P(\lambda)$ is distributed as chi-square distribution with 2*N* degree of freedom.

B. Panel Cointegration Test

To test for cointegration relationship between the series, we use the panel cointegration test as suggested by Pedroni (1999, 2004). The Pedroni panel cointegration test is an extension of Engle-Granger (1987) cointegration framework. It is based on examination of the residuals of a spurious regression performed using *I*(1) variables. According to Engle-Granger (1987), if variables are cointegrated, the residuals will be *I*(0). If it is not cointegrated, the residual is *I*(1). Pedroni (1999, 2004) and Kao (1999) extended this Engle-Granger cointegration framework to the panel data analysis. Pedroni proposes several tests for the cointegration that allow for heterogeneous intercepts and trend coefficients across cross-sections, namely Panel v-statistic, Panel ρ-statistic, Panel PP t-statistic (non-parametric), Panel t-statistic (parametric), Group ρ-statistic, Group ρ-statistic and Group PP t-statistic (non-parametric)[6]. These seven different tests can be categorized as "*combining" tests* or as "*pooled" tests*. The combining procedure calls for pooling along the within dimension of the panel, where each test is calculated individually by unit and then combined into an asymptotically converging statistics (Group Mean Statistics). This is analogous to the IPS and MWF tests.

The panel cointegration regression to be estimated is as follow.

$$\ln GDP_{it} = \alpha_i + \sum \beta_i \ln REC_{it} \text{ , } t = 1, \ldots, T; \quad i = 1, \ldots, N \tag{9}$$

where T refers to the number of observations over time and *N* refers to the number of individual country (cross-sectional unit) in the panel. ln*GDP* is the natural logarithm of real GDP and ln*REC* is the natural logarithm of international tourism receipts. To determine whether there are cointegrating relationships between the variables, we used the *seven test statistics* that were proposed by Pedroni.

[6] *See Pedroni (1999, 2004).*

C. Panel Granger Causality Test

Based on the work of Engle and Granger (1987), we develop a model with a *dynamic error correction* representation, assuming that real GDP and international tourism receipts are cointegrated. This refers to the traditional VAR model that is augmented with a one period lagged error correction term, which is obtained from the cointegrated model. We extend this to a panel data case, thus specifying the following equations for the panel Granger causality test:

$$\Delta \ln GDP_{it} = \alpha_1 GDP + \sum_{\rho} \alpha_{11i\rho} \Delta \ln GDP_{it-j} + \sum_{\rho} \alpha_{12i\rho} \Delta \ln REC_{it-\rho}$$

$$+\beta_{1i} ECT_{t-1} \quad (10)$$

$$\Delta \ln REC_{it} = \alpha_1 REC + \sum_{\rho} \alpha_{11i\rho} \Delta \ln REC_{it-j} + \sum_{\rho} \alpha_{12i\rho} \Delta \ln GDP_{it-\rho}$$

$$+\beta_{2i} ECT_{t-1} \quad (11)$$

where Δ denotes the first difference of the variable, and ρ denotes the lag length. The significance of the first differenced variables provides evidence on the direction of the short-run causation, while the *t*-statistics on the one period lagged error correction term denotes long-run causation.

V. RESULTS AND DISCUSSION

Table 2 presents the results of panel unit root tests for all series in level and first differences. The results of the panel unit root tests for the series in level show that the null hypothesis of non-stationary cannot be rejected even at the 10 per cent level of significance. The associated

Table 2. Panel unit root tests

Variable	Levin, Lin and Chu (LLC) test, t^{*a}		Breitungtest, t^{*a}		Im, Pesaran and Shin (IPS) test, ψ^a		Maddala-Wu Fisher (MWF) test, $P(\lambda)^b$	
	Level	1st Difference	level	1st difference	Level	1st difference	Level	1st difference
lnGDP	-0.02927(1) [0.5117]	-2.63508(1)*** [0.0009]	-21.7099(0) [0.9866]	-11.9536(0)*** [0.0009]	-0.66968(0) [0.9886]	-0.41533(0)*** [0.0009]	-0.84401(1) [0.8007]	-2.96963*** (0.0009)
lnREC	-2.82685(1) [0.9976]	-3.72224(1)*** [0.0001]	-0.36845(0) [0.3563]	-0.58713(0)*** [0.0027]	-1.63399(0) [0.4389]	-2.38050(0)*** [0.0011]	-3.14917(0) [0.9992]	-3.18663*** (0.0007)

Notes:

i. ***, ** and * denotes statistical significance at 1%, 5% and 10% level respectively.
ii. Number in parentheses denotes the range of lag length and those in square brackets are *p*-values.
iii. [a] Under the null hypothesis, the standardized t-bar statistic ψ (the IPS test statistic) is asymptotically distributed as a standard normal distribution. The *p*-values are estimated from the one-tail test of the standardized normal distribution.
iv. [b] Under the null hypothesis, the Fisher test statistic $P(\lambda)$ is distributed as a chi-squared distribution with 2*N* degree of freedom. The *p*-values are estimated from a chi-squared distribution with 2N degree of freedom.
v. Lag length chosen is based on SIC which is automatically selected by E-Views 6.0.

SOURCE: Author

probability values are all greater than 0.10. However, for series in first difference, the results of panel unit root test show probability values less than 0.01 for all the series, suggesting that we can reject the null hypothesis of non-stationarity even at the 1 percent level of significance. This indicates that the series are stationary in first-difference but not in level.

After confirming that all series are integrated of the same order, we proceed with the panel cointegration test as suggested by Pedroni (1999, 2004) to determine the presence of common trend or long-run relationship between the variables. The results of the seven different panel test statistics are presented in Table 3. Based from Pedroni's panel cointegration test, six of the seven test statistics suggests evidence of cointegration at 1 per cent level. For instance, the panel v, panel rho, panel pp and panel adf test statistics are 1.81, -1.71, -1.63 and -1.91, respectively. The group rho and group pp test statistics are -2.49 and -1.83, respectively. Hence, the results indicate the presence of common trend or long-run relationship between international tourism receipts and real economic growth.

Table 3. Pedroni's panel cointegration test

Tests	Statistics
Panel v-statistics	1.8075*
	(0.0787)
Panel rho-statistics	-1.7094*
	(0.0926)
Panel pp-statistics	-1.6352*
	(0.1048)
Panel adf-statistics	-1.9104*
	(0.0643)
Group rho-statistics	-2.4873*
	(0.0181)
Group pp-statistics	-1.8289*
	(0.0749)
Group adf-statistics	-1.2096
	(0.1920)

Note: Probability values are in parenthesis and ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.
SOURCE: Author

The results of panel Granger causality test reported in Table 4 indicate that there is a strong relationship between international tourism receipts and real economic growth in Malaysia. Specifically, the long-run bidirectional causality of real economic growth and international tourism receipts was found through the lagged error correction terms, which were statistically significant for both variables. In addition, the coefficient of *lnREC* is statistically significant in the equation where *lnGDP* is the dependent variable. Likewise, the coefficient of *lnGDP* is statistically significant in the equation where *lnREC* is the dependent variable. Hence, the results also indicate the existence of short-run bidirectional causality between the two variables. Hence, tourism-led economic growth hypothesis and economic growth-led tourism were confirmed in the case of Malaysia. This result is in line with the previous studies done by Dritsakis (2004), Durbarry (2003), and Kim *et al.* (2006).

Table 4. Panel Granger causality test

Dependent variable	F-Statistics		ECT[$\varepsilon_{i,t-1}$]	
	ΔlnGDP	*ΔlnREC*	C	t-statistics
ΔlnGDP	-	-0.1901**(1)	-0.0760	-9.3183**
ΔlnREC	8.2369**(1)	-	-0.0029	-1.5434

Notes: i. C stands for coefficient
ii. ** and * indicates statistical significance at 1% and 5% level, respectively.
iii. Number in parentheses is lag length
SOURCE: Author

VI. CONCLUSION

The purpose of this paper is to determine the causal relationship between international tourism and economic growth in Malaysia, by using panel data time-series approach for the period 1998-2005. The results of the Pedroni's panel cointegration test and panel Granger causality test indicate that there is a short- and long-run relationship between tourism and real economic growth in Malaysia. This suggests that tourism industry is a significant contributor to the economic growth of Malaysia. Hence, the government should give priority to the tourism sector since it has the potential to be the key driver of Malaysia' economic growth.

The findings justify the necessity of public intervention in providing tourism infrastructure and facilities. Provision of better tourism related infrastructures and other facilities are important to sustain the growth of tourist arrivals. Malaysia needs to invest heavily in the tourism infrastructure to promote the country as a desirable holiday destination. Apart from developing tourism infrastructure, efforts should be intensified to draw more tourists to stay longer, increase spending and make repeat visits, which would help increase tourism receipts.

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TURIZAM I EKONOMSKI RAST U MALEZIJI: DOKAZI IZ TURISTIČKIH DOLAZAKA IZ ASEAN-5 ZEMALJA

Sažetak: Rad istražuje kauzalnu vezu između turizma i ekonomskog rasta u Maleziji koristeći panelne vremenske serije. Rezultati panelne kointegracijske analize upućuju na postojanje kointegracije između međunarodnih turističkih prihoda i realnog ekonomskog rasta. Rezultati panelnog kauzalnog testa baziranog na modelu korekcije pogrešaka pokazuju da Grangerova kauzalnost ide od međunarodnih turističkih prihoda prema realnom ekonomskom rastu ukazujući kako na kratkoročnu tako i na dugoročnu vezu među njima. Rezultati dokazuju važnost turizma za Malezijski ekonomski rast i opravdavaju potrebu javnih intervencija u svrhu osiguravanja turizmu potrebne infrastrukture i sadržaja.

Ključne riječi: Turizam, ekonomski rast, panelna kointegracija, panelna kauzalnost, Malezija, ASEAN-5