Int. Journal of Economics and Management **5(1):** 38 – 52 (2011) ISSN 1823 - 836X

Dynamic Inter-relationship between Trade, Economic Growth and Tourism in Malaysia

TAMAT SARMIDI AND NORLIDA HANIM MOHD SALLEH*

Universiti Kebangsaan Malaysia

ABSTRACT

Based on the export led growth (ELG) hypothesis, this study aims to test a hypothesis that postulate a positive inter-relationship between tourism, trade and economic growth. Although tourism is one of the major components in trade of services, and it has been certified by large number of literatures on the strong correlation between tourism industry and economic development, yet not much is known on the dynamic inter-relationship between these three variables in Malaysia. Closing-up this gaping hole, this study employs the cointegration tests under autoregressive distributed lag (ARDL) structure to investigate a dynamic inter-relationship between economic development, total trade (import and export) and number of tourist arrival for Malaysia and her major ASEAN tourism partners. The estimated result based on the long run time series behavior for number of tourist arrival, volume of total trade and economic development's indicator shows that these three variables are moved in tandem. Interestingly, in the analysis of short run behavior, we find that number of tourist arrival has significantly Granger caused total trade flows at least for some countries. At the same time, in the short-run, we find that both growth in total trade (export and import) and international tourists' arrival to Malaysia have uni-directionally Granger caused real income growth and there is statistical evidence for international trade to lead tourist arrival.

Keywords: Economic growth, trade, tourism, cointegration, and Malaysia

INTRODUCTION

Malaysia is a trading economy. Since the end of 1980s Malaysia total trade exceeded more than 100% of her Gross Domestic Product (GDP) and become more than 200% after 2000s. A lot of strategies and incentives including trade agreement

* Corresponding author: E-mail: norlidahanim@gmail.com

Any remaining errors or omissions rest solely with the author(s) of this paper.

(for example AFTA, FTA between Malaysia-Pakistan, Malaysia-US and Malaysia-GCC) have been or being proposed by the Malaysian government to strengthen international trade competitiveness and then to boost-up export in goods as well as in services industries. As a consequence, for years, product markets especially electronic and electrical products, petroleum and gas, and vegetable oil and fat produce have contributed more than half of the income in export industry. However, due to slowing down in the global demand due to repetitive global economic crisis especially for electrical and electronic market in most of Malaysian major export partners, new strategies to divert export concentration from goods market to services industries is intensified. Therefore, enhancing export of services for selected industries that we have comparative advantage such as tourism is a strategic move and then may diversify our export portfolio.

Malaysia has extensively developed her tourism industry after the establishment of Ministry of Culture, Arts and Tourism in 1987. And later, this ministry have been upgraded it to the Ministry of Tourism in 2004 to manage, monitor, synchronize and ensure all tourism development activities and programs are in line with the National Tourism Master Plan. Various attractive incentives and assistances have been given to private operators to encourage them to be directly involved in the tourism industry. The government also allocated substantial amount of fund to tourism industry besides providing necessary and sufficient infrastructure. To further promote tourism, the government actively pioneering in various marketing strategies such as launching many Visit Malaysia Years.

As a result, the growth of Malaysian tourism is very good in the last two decades. For instance, in 1985, the total tourist arrivals were 3.11 million and increased to about 16.43 million in 2004. In terms of growth, within the last 20 years tourist arrivals to Malaysia have increased an average of 14.9 per cent annually. According to WTO (2005), Malaysia is ranked as the thirteen world's top tourist destinations while within ASEAN region Malaysia is one of the leading country in receiving inbound tourists by controlling about 32.37% of total arrivals in 2004 (WTO, 2006). Increasing in total tourist arrivals eventually has led to huge amount of tourist receipts. From 1985 to 2005, tourist receipts have increased at an annual average of 16.4 per cent or from RM1.543 billion to RM31.954 billion. In 2006, tourism recorded the second largest contributor of foreign exchange earnings to the country, as well as the contribution of the trade industry.

Even though their significant importance to the national income accounting, not many researches either theoretical or empirical has been carried out to analyze the dynamic linkages between economic growth, tourism industry and international trade together. Existing researches are concentrated on investigating the relationship either between trade and growth (including export-led growth (ELG), Bahmani-Oskooee and Alse 1993, import-led growth (ILG), Deme 2002, or trade-led growth (TLG), Jin 1995, and Hatemi and Irandoust 2001, among others),

tourism and growth (Balaguer and Jorda 2002, and Oh 2005) or tourism and trade (Al-Qudair 2004 and Fischer and Gil-Alana 2005). Generally, these researchers are unanimously agreed on the strong relationship between trade and economic growth, or tourism and growth, while no strong ties can be drawn from the trade and tourism relationship. However the ELG, ILG or TLG hypothesis does not verify clearly the direction of causality among these three variables and the issues of which one (trade, tourism or growth) caused which one either trade, tourism or growth is far from resolved. Understanding the interrelationship of these three variables is highly significant for economic policies and strategic planning for trade or tourism promotion. This study move one step ahead by combining these two industries together and examine their impact on the economic growth. Thus, this study tries to unravel the dynamic inter-relationship between tourist arrival, trade and economic growth for Malaysia case.

The paper is organized as follows. Subsequent section elaborates the hypothesis of inter-relationship between tourism, trade and economic growth. Section 3 explains the empirical model, econometric methodology and the data employed in the analysis. Section 4 reports and discusses the results from the model estimation. Finally, Section 5 summarizes and concludes.

TOURISM, TRADE AND ECONOMIC GROWTH

The importance of export in generating economic growth is not deniable (Frankel and Romer 1999). One of the most celebrated theories that explain the intricacies between export and economic growth is export led growth hypothesis. According to its advocates, overall economic growth of a country can be promoted not only by increasing the amount of labor and capital, but also by intensifying export. The ELG hypothesis goes beyond traditional neoclassical theory of production by adding export as third input. It postulates that export expansion either in goods market or services sector can be an important determinants of economic growth (He and Zhang 2010 and Mahadevan 2008). Manipulating the ELG hypothesis, Katircioglu (2009) explains that the dynamic inter-relationship between tourism, trade and economic growth can be established.

The linkages between tourism and economic growth can be in two forms. First is through direct connection between tourism and economic growth. Many countries that have fascinating tourism attraction like Malaysia enjoy a high number of tourist arrival and subsequently hefty amount of foreign exchange revenue through international tourism receipts. Oh (2005) explains that tourists expenditure in the destination countries can be considered as an alternative form of export revenue that could moderate current account deficit. Tourists expenditure also could help to improve government revenue through direct and indirect taxes imposed to the local businesses as well as to the tourist (if applicable). Second, the linkage is via improvement of trade as a result of tourism industry. With appropriate tourism

promotion and hospitality rendered to the tourists, there are possibilities for holiday travel to end up as business travel if lucrative business opportunity is available from local market. This eventually could improve images of local goods and services, widen accessibility of local product in international market as well as business allies abroad. This scenario may help to ameliorate host country's balance of payment.

Generally, not much devotion has been given to empirically investigate the dynamic linkages between these three variables either in developed or developing countries. Most of the previous studies concentrate more on either analyzing the contribution of trade to economic growth or contribution of tourism industries to economic growth (Gunduz and Hatemi 2005, Khalil, Kakar and Waliullah 2007, Carrera, Brida and Risso 2007, Chen and Chiou-Wei 2009). The question of inter-relationship between these variables is still open for investigation and only a handful studies devoted for this sake. For instance, Al-Qudair (2004) investigated the dynamic causal relationship between the number of tourists and total trade in a number of Muslims developing countries using cointegration and Granger causality techniques. He found that the existence of a long run equilibrium relationship between the number of tourists and total trade for some countries while not for others. In the case of Granger causality analysis there exist uni-directional and bi-directional relationship between trade and tourism only for two countries out of nine sample countries under studies. Kulendran and Wilson (2001) investigated the relationship between international trade and international travel between developed countries and found that although the results on the causal relationship from number of tourist arrival to total or component of trade are mixed, but generally there are long run relationships between these variables across markets. Another example was Shan and Wilson (2001) who investigated the causality between trade and tourism using time series data for Chinese economy. Their findings suggested a bi-directional Granger causality between international travel and international trade. Further, Habiballah and Lin (2002) have explored the nature of the relationship between international trade and tourism flows between Singapore and its major partners. Results of the study gave support for a systematic relationship between business travel and total trade. The direction of the causality shows that there is a bi-directional causality between business arrivals and trade but no causality between holiday travel and trade. In general, there is a constant evidence of long run relationship between number of tourist arrival and total trade but the evidence for causality tests is mix and country specific in nature.

DATA AND METHODOLOGY

Empirical analysis was carried out using set of quarterly data for 1997:01 to 2007:04. The data used are real GDP that are linearly interpolated from annual to quarter, real trade volume (exports plus imports), real exports of goods and services, real imports of goods and services and total number of international tourist visiting

and accommodating in tourist establishment of Malaysia. All of these data are in ringgit Malaysia and were obtained from the Department of Statistics, Malaysia.

In investigating the dynamic inter-relationship between economic growth, trade and number of tourist, we employ three stage testing. In the first stage the order of integration of the data time series was tested using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. The PP procedures, which compute a residual variance that is robust to auto-correlation, are applied to test for unit roots as an alternative to ADF unit root test.

The second stage is dealing with testing for the existence of a long-run equilibrium relationship either between real income and real exports, or real income and real import, or real income and total trade, or real income and number of tourist arrival, or tourist arrival and real import, tourist arrival and real export, or tourist arrival and total trade (macroeconomic variables) within a bivariate framework utilizing the ARDL cointegration procedure proposed by Pesaran *et al.* (2001). The most highlighted advantage of this testing and estimation approach is that it can be applied irrespective of whether the regressors are I(0) or I(1) which avoids the well-known pre-testing problems associated with conventional methods. In their influential paper, Pesaran and Shin (1999) demonstrated that the appropriate lags in the ARDL model corrected both serial correlation and endogeneity problems and that it performs well in small samples. The ARDL procedure can distinguish between dependent and explanatory variables. In our case, the error correction representation of the ARDL specification model of Eq. (x) is given by:

$$\Delta \ln Y_t = a_{0Y} + \sum_{i=1}^{n} b_{iY} \Delta \ln Y_{t-i} + \sum_{i=1}^{n} c_{iY} \Delta \ln X_{t-i} + \sigma_{1Y} \ln Y_{t-i} + \sigma_{2Y} \ln X_{t-i} + \varepsilon_{Yt} \quad (1)$$

$$\Delta \ln X_t = a_{0X} + \sum_{i=1}^{n} b_{iX} \Delta \ln X_{t-i} + \sum_{i=1}^{n} c_{iX} \Delta \ln Y_{t-i} + \omega_{1X} \ln X_{t-i} + \omega_{2X} \ln Y_{t-i} + \varepsilon_{Xt} \quad (2)$$

In Equation 1 and 2, where Δ is the difference operator, Y_t is the log of dependent variable, X_t is the log of independent variable, a_{0Y} and a_{0X} are the drift component, and ε_{Yt} and ε_{Xt} are serially independent random errors with mean zero and finite covariance matrix. Equation 1 and 2 above are traditional ARDL model with the (n) specification based on AIC which is commonly used to determine the orders of lags in the ARDL model.

Pesaran *et al*. (1996) provide two sets of asymptotic critical values for the *F*-test. One set assumes that all the variables are *I*(0) and another assumes they all are *I*(1). The null hypothesis of the non-existence of a long-run relationship, denoted by $H_0 = \sigma_{1Y} = \sigma_{2Y} = 0$ against $H_0 = \sigma_{1Y} \neq \sigma_{2Y} \neq 0$. If the test statistic is higher than the upper bound critical value, the null of no cointegration is rejected in favour of the presence of cointegration. On the other hand, an *F*-statistic lower

than the lower bound critical value implies the absence of cointegration. In the event that the calculated *F*-statistic lies between the two critical values, there is no clear indication of the absence or existence of a cointegrating relationship and prior information about the order of integration of the variables is necessary to make a decision on long-run relationships.

The third stage is about constructing standard Granger-type causality tests with additional of lagged error-correction term only where the series are cointegrated. If the variables in the models are cointegrated, then there must be Granger causality in at least one direction (short run or long run) even though it does not indicate the direction of temporal causality between the variables. In view of the above considerations, we relied on the error correction models of cointegration to examine the short-run inter-relationship between Malaysian economic development indicator (GNP) and Malaysia's export to, import from, total trade with and total number of tourist arrival from top four ASEAN tourism partners – Singapore, Thailand, Indonesia and Brunei Darussalam. Therefore, error correction models of cointegration can be specified as follows:

$$\Delta \ln Y_t = \alpha_0 + \varphi_{Y1}^{p}(L)\Delta \ln Y_t + \varphi_{Y2}^{q}(L)\Delta \ln X_t + \delta ECT_{t-1} + u_{Yt} \quad (3)$$

$$\Delta \ln X_t = \alpha_1 + \varphi_{X1}^{p}(L)\Delta \ln X_t + \varphi_{X2}^{q}(L)\Delta \ln Y_t + \delta ECT_{t-1} + u_{Xt} \quad (4)$$

where $\varphi_{ij}^{p}(L) = \sum_{n=1}^{p_{ij}} \varphi_{ijn} L'$ and $\varphi_{ij}^{q}(L) = \sum_{n=1}^{qp_{ij}} \varphi_{ijn} L'$

As before Δ is difference operator, $(L)\Delta \ln Y_t = \ln Y_{t-1}$ is lag operator, ECT_{t-1} is lag error correction term derived from long run cointegration model. u_{Yt} and u_{Xt} are serially independent random error with mean zero and finite covariance matrix.

RESULTS AND DISCUSSION

Table 1 reports the results of the unit root tests. The ADF and PP statistics for the levels of Malaysian real export, real import, total trade, number of tourist arrival and real income do not exceed the critical values (in absolute terms). However, when we take the first difference of each of the variables, the ADF and PP statistics are higher than their respective critical values (in absolute terms). Therefore, we conclude that all variables are each integrated of order one *I(1)*.

The second stage involves investigating the existence of a long-run relationship using unrestricted error-correction model (UECM). The *F* test is used to determine whether a long-run relationship exists between the variables through testing the significance of the lagged levels of the variables.

Table 1 ADF and PP unit root tests for 1997:Q1 to 2007:Q4

		lnX	lnM	lnT	lnTOUR	ly
Singapore						
Level	ADF	-1.49(0)	-0.92(2)	-1.35(0)	-1.50(1)	-
	PP	-1.45(5)	-1.18(6)	-1.32(5)	-1.06(2)	-
1stΔ	ADF	-6.15*(0)	-5.82*(1)	-5.44*(1)	-6.52*(3)	-
	PP	-6.65*(8)	-6.48*(12)	-6.16*(10)	-3.99*(2)	-
Thailand						
Level	ADF	-0.36(0)	-0.63(0)	-0.28(0)	-1.62(1)	-
	PP	-0.09(6)	-0.64(1)	-0.28(0)	-1.17(4)	-
1stΔ	ADF	-4.87*(3)	-4.35*(2)	-4.65*(3)	-3.57*(3)	-
	PP	-8.24*(5)	-6.20*(2)	-5.86*(1)	-3.01*(4)	-
Indonesia						
Level	ADF	-0.13(2)	-0.90(2)	-0.59(2)	-0.97(1)	-
	PP	-0.33(42)	-1.57(13)	-1.05(15)	-0.44(4)	-
1stΔ	ADF	-10.02*(1)	-5.72*(1)	-8.09*(1)	-3.14*(0)	-
	PP	-13.08*(23)	-8.26*(27)	-8.47*(23)	-3.10*(1)	-
Brunei						
Level	ADF	-1.14(3)	-2.52(0)	-0.28(3)	-0.08(1)	-
	PP	-2.65	-2.41(1)	-1.95(2)	0.76(2)	-
1stΔ	ADF	-6.33*(5)	-5.40*(2)	-6.14*(2)	-4.04*(3)	-
	PP	-27.70*(4)	-12.86*(4)	-22.72*(8)	-3.76*(3)	-
Malaysia						
Level	ADF	-	-	-	-	-0.18(1)
	PP	-	-	-	-	0.13(2)
1stΔ	ADF	-	-	-	-	-10.41*(3)
	PP	-	-	-	-	-3.98*(2)

Notes: lnX is natural logarithm of real export, lnM is natural logarithm of real import, lnT is natural logarithm of total trade, lnTOUR is natural logarithm of total number of tourist arrivals and ly is real GNP. Number in brackets are lag lengths used in ADF test (as determined by AIC set to maximum three) to remove serial correlation in the residuals. Both in ADF and PP tests, unit root tests were performed by intercept across the model. When using PP test, number in brackets represent Newey-West Bandwith (as determined by Bartlett-Kernel). Tests for unit roots have been carried out in E-VIEWS 6. * denote rejection of the null hypothesis at the 5% levels.

Table 2a to 2d clearly show that there are long run relationship amongst the real income and total trade (Y-T and T-Y), number of tourist arrival and real income (Tour-Y and Y-Tour) for Singapore; real income and total trade (Y-T and T-Y), total trade and number of tourist arrival (T-Tour), real income and number of Thai tourist visiting Malaysia (Y-Tour), and real import and tourist arrival (M-Tour) for case of Thailand; real income and total trade (Y-T and T-Y), total trade and number of

tourist arrival from Indonesia (T-Tour and Tour-T), real income and tourist arrival (Y-Tour), real export and number of tourist arrival (X-Tour), and number of tourist arrival and real import (Tour-M and M-Tour) for Indonesia; and real income and total trade (Y-T and T-Y), real income and number of tourist arrival from Brunei (Y-Tour), real export and number of tourist arrival (X-Tour), and real import and number of tourist arrival (Tour-M and M-Tour) for Brunei Darussalam because their *F*-statistic is higher than the upper bound critical value at the 10 per cent level. This implies that the null hypothesis of no cointegration among the variables in Equation (1) and (2) are being rejected or in other words the bounds testing approach provides evidence for the existence of cointegration relationships.

Table 2a The bound test for Malaysia-Singapore bilateral cointegration

Variables	With deterministic trends			Without deterministic trends		
	1 Lag	2 Lag	3 Lag	1 Lag	2 Lag	3 Lag
(1) Y and T						
$F_Y(Y/T)$	3.12[a]	4.02[b]	4.29[c]	9.55[c]	17.65[c]	22.65[c]
$F_T(T/Y)$	5.36[c]	4.13[b]	3.80[b]	4.97[c]	6.88[c]	5.49[c]
(2) T and TOUR						
$F_T(T/TOUR)$	2.42[a]	1.51[a]	0.92[a]	3.60[a]	2.32[a]	2.51[a]
$F_{TOUR}(TOUR/T)$	2.18[a]	2.55[a]	2.92[a]	3.63[a]	4.68[b]	4.29[b]
(3) Y and TOUR						
$F_{TOUR}(TOUR/Y)$	7.33[c]	8.25[c]	8.86[c]	4.51[b]	4.73[b]	3.73[a]
$F_Y(Y/TOUR)$	4.99[c]	4.68[c]	3.56[b]	38.39[a]	45.58[c]	42.29[c]
(4) X and TOUR						
$F_X(X/TOUR)$	2.29[a]	3.18[b]	3.44[b]	3.77[a]	3.07[a]	2.54[a]
$F_{TOUR}(TOUR/X)$	2.66[a]	1.89[a]	1.02[a]	3.54[a]	4.59[b]	4.35[b]
(5) M and TOUR						
$F_{TOUR}(TOUR/M)$	2.22[a]	1.35[a]	0.85[a]	3.75[a]	4.92[b]	4.09[a]
$F_M(M/TOUR)$	2.02[a]	1.99[a]	2.31[a]	3.35[a]	1.85[a]	2.41[a]

Notes: Akaike Information Criteria (AIC) was used to select the number of lags required in the cointegration test. Superscript [a], [b] and [c] indicate that the statistic is below lower bound, within lower and upper bound and above upper bound respectively. The critical value ranges of *F*-statistics with two variables are 3.17 – 4.14 at 10% level of significances, respectively. See Pesaran *et al*. 2001, p.p. 300 -301, Table CI, Case III. The critical value ranges of *F*-statistics with two variables are 4.19 – 5.06 at 10% level of significances, respectively. See Pesaran *et al*. 2001, p.p. 300 -301, Table CI, Case V.

Table 2b The bound test for Malaysia-Thailand bilateral cointegration

Variables	With deterministic trends			Without deterministic trends		
	1 Lag	2 Lag	3 Lag	1 Lag	2 Lag	3 Lag
(1) Y and T						
F_Y(Y/T)	14.61 [c]	19.79 [c]	18.37 [c]	14.05 [c]	21.86 [c]	28.39 [c]
F_T(T/Y)	6.24 [c]	5.88 [c]	4.64 [c]	7.06 [c]	5.54 [c]	4.39 [b]
(2) T and TOUR						
F_T(T/TOUR)	0.16 [a]	0.29 [a]	0.53 [a]	6.86 [c]	8.27 [c]	5.43 [c]
F_{TOUR}(TOUR/T)	1.84 [a]	1.89 [a]	1.40 [a]	0.82 [a]	1.65 [a]	1.28 [a]
(3) Y and TOUR						
F_{TOUR}(TOUR/Y)	3.10 [a]	3.75 [b]	3.94 [b]	1.11 [a]	0.81 [a]	0.55 [a]
F_Y(Y/TOUR)	4.49 [c]	4.72 [c]	6.07 [c]	28.90 [c]	32.70 [c]	38.12 [c]
(4) X and TOUR						
F_X(X/TOUR)	0.26 [a]	0.234 [a]	0.15 [a]	4.86	4.72 [b]	3.69 [a]
F_{TOUR}(TOUR/X)	1.68 [a]	1.68 [a]	1.48 [a]	0.85 [a]	1.52 [a]	1.37 [a]
(5) M and TOUR						
F_{TOUR}(TOUR/M)	2.04 [a]	2.23 [a]	1.64 [a]	0.70 [a]	1.62 [a]	1.10 [a]
F_M(M/TOUR)	0.92 [a]	1.13 [a]	1.42 [a]	7.43 [c]	9.69 [c]	4.97 [c]

Notes: refers to note in Table 2a

Table 2c The bound test for Malaysia-Indonesia bilateral cointegration

Variables	With deterministic trends			Without deterministic trends		
	1 Lag	2 Lag	3 Lag	1 Lag	2 Lag	3 Lag
(1) Y and T						
F_Y(Y/T)	11.09[c]	20.21 [c]	57.30 [c]	10.03 [c]	21.56 [c]	112.52 [c]
F_T(T/Y)	9.58 [c]	8.37 [c]	7.03 [c]	10.07 [c]	8.75 [c]	7.13 [c]
(2) T and TOUR						
F_T(T/TOUR)	0.21 [a]	0.04 [a]	0.12 [a]	8.40 [c]	7.98 [c]	5.45 [c]
F_{TOUR}(TOUR/T)	3.46 [b]	4.42 [c]	5.34 [c]	3.31 [a]	4.20 [b]	5.14 [c]
(3) Y and TOUR						
F_{TOUR}(TOUR/Y)	3.90 [b]	3.89 [b]	3.41 [b]	3.33 [a]	3.63 [a]	3.28 [a]
F_Y(Y/TOUR)	8.05 [c]	7.66 [c]	6.99 [c]	25.72 [c]	32.49 [c]	44.31 [c]
(4) X and TOUR						
F_X(X/TOUR)	0.98 [a]	0.18 [a]	0.01 [a]	15.95 [c]	13.26 [c]	5.60 [c]
F_{TOUR}(TOUR/X)	3.00 [a]	3.26 [a]	3.10 [a]	2.83 [a]	3.24 [a]	2.95 [a]
(5) M and TOUR						
F_{TOUR}(TOUR/M)	3.63 [b]	5.32 [c]	7.05 [c]	3.46 [a]	5.07 [c]	6.79 [c]
F_M(M/TOUR)	0.48 [a]	0.14 [a]	0.44 [a]	7.12 [c]	5.15 [c]	4.77[b]

Notes: refers to note in Table 2a

Table 2d The bound test for Malaysia-Brunei Darussalam bilateral cointegration

	With deterministic trends			Without deterministic trends		
Variables	**1 Lag**	**2 Lag**	**3 Lag**	**1 Lag**	**2 Lag**	**3 Lag**
(1) Y and T						
$F_Y(Y/T)$	4.82 [c]	7.92 [c]	8.46 [c]	8.83 [c]	16.35 [c]	55.55 [c]
$F_T(T/Y)$	11.92 [c]	6.19 [c]	3.92 [b]	12.72 [c]	6.59 [c]	4.09 [b]
(2) T and TOUR						
$F_T(T/TOUR)$	5.57 [c]	1.79 [a]	2.13 [a]	15.08 [c]	7.46 [c]	1.49 [a]
$F_{TOUR}(TOUR/T)$	5.59 [c]	4.93 [c]	3.42 [b]	5.05 [b]	4.88 [b]	3.31 [a]
(3) Y and TOUR						
$F_{TOUR}(TOUR/Y)$	2.71 [a]	3.21 [b]	3.08 [a]	2.32 [a]	2.76 [a]	2.47 [a]
$F_Y(Y/TOUR)$	2.60 [a]	3.17 [b]	2.42 [a]	48.06 [c]	63.78 [c]	78.09 [c]
(4) X and TOUR						
$F_X(X/TOUR)$	4.25 [c]	2.92 [a]	1.57 [a]	11.46 [c]	11.54 [c]	3.96 [b]
$F_{TOUR}(TOUR/X)$	2.97 [a]	2.86 [a]	2.59 [a]	2.62 [a]	2.53 [a]	2.02 [a]
(5) M and TOUR						
$F_{TOUR}(TOUR/M)$	2.69 [a]	1.85 [a]	0.87 [a]	5.40 [c]	5.25 [c]	3.25 [b]
$F_M(M/TOUR)$	9.87 [c]	8.88 [c]	6.47 [c]	9.36 [c]	7.30 [c]	4.71 [b]

Notes: refers to note in Table 2a

In the third stage, only Equation 1 and Equation 2 that show of having long run cointegration properties will be tested for Granger-type causality tests which include the lagged error-correction term. In the analysis the lag length *p* and *q* are set to 3.[1] Table 3 shows the short run and long run Granger causality within the Error-Correction Mechanism (ECM). The *F* statistics on the explanatory variables in each of the equations indicates the statistical significance of the short-run causal effects while the *t*-statistic on the coefficient of the lagged error-correction term indicates the statistical significance of the long-run causal effect. Having statistically significant on both *F* and *t* ratios for *ECTt-1* in Equations 3 and 4 would be enough condition to have causation from X to Y and from Y to X, respectively. The Granger-type causal relationship between trade, income and number of tourist visiting Malaysia are summarized as follows:

- ***Malaysia-Singapore relationship***: Base on the bound cointegration tests, only two models (1 and 3) have long run relationship and would be potential

[1] We use 3 lags in the analysis is due to the lack of number of observations. Alternatively we may use other information criterian such as AIC (Akaike Information), SIC (Schwartz Information Criterion) and Hsiao's sequential procedure (which combines Granger's definition of causality and Akaike's minimum final prediction error (FPE) criterion).

candidates for VECM-Granger causality relationship. The statistical tests show that there exist a bidirectional relationship between real GNP and trade () and unidirectional relationship from real GNP to a number of Singaporean visiting Malaysia (Y).

- ***Malaysia-Thailand relationship***: Table 3 shows that there is a unidirectional relationship from real income to total Malaysian trade with Thailand (), and bidirectional relationship between real income and number of Thai visiting Malaysia (Y).
- ***Malaysia-Indonesia relationship***: There exists a unidirectional relationship from real income to total trade with Indonesia (), from real income to total number of Indonesian tourist visiting Malaysia (Y), and from number of Indonesian tourist visiting Malaysia to Malaysian real export to Indonesian economy ().
- ***Malaysia-Brunei Darussalam relationship***: The bidirectional causal relationships exist between total trade and number of tourist arrival from Brunei, real income and number of tourist arrival and total export and number of tourist arrival(),), and (). While there exists a unidirectional relationship from real income to total trade and number of Brunei tourist visiting Malaysia and total import () and ().

Our results generally agree that tourism, trade and economic growth are highly interrelated in the long run. These three variables are moving towards the same direction with at least one of these variables serve as pulling factor to the general equilibrium. In case of short run inter-relationship, there exist a unidirectional relationship from income (Y) to total trade (T). Besides new evidence in trade and tourism relationship, our results seem to be consistent with previous papers. For instance, we find that there are bidirectional causation for () Malaysia-Brunei Darussalam which similar to Shan and Wilson (2001) for the case of China. Another instances are () for Malaysia-Singapore and Malaysia-Indonesia relationship which similar to (Katirchioglu (2009). The causality between these variables indicates that the linkages between tourism, trade and economic growth may not be straight forward but these three variables are highly inter-related. High number of tourist arrival may lead to increase in trade transaction as well. It is possible that the holiday travel in Malaysia may end up as business travel due to availability of business opportunities while they are visiting Malaysia.

Table 3 Granger causality tests for Malaysia and her trading partners

Lag Level	1		2		3		Result
Null hypothesis	**F-Stat**	**tECT-1**	**F-Stat**	**tECT-1**	**F-Stat**	**tECT-1**	
Malaysia-Singapore							
(1) Y and T							
lnY does not Granger cause lnT	5.70*	-0.09*	5.14*	-0.14*	2.93*	-0.16*	Y-T
lnT does not Granger cause lnY	1.53	-0.27*	2.41	-0.28*	2.74*	-0.32*	T-Y
(3) Y and TOUR							
lnY does not Granger cause lnTOUR	2.69*	-0.12*	0.18	-0.15*	0.13	-0.18*	Y-TOUR
lnTOUR does not Granger cause lnY	12.99	-0.03	5.38*	-0.06	3.80*	-0.08	
Malaysia- Thailand							
(1) Y and T							
lnY does not Granger cause lnT	1.08	-0.21*	2.01	-0.34*	2.68*	-0.55*	Y-T
lnT does not Granger cause lnY	4.49	-0.10*	10.31*	-0.11	9.35*	-0.03	
(3) Y and TOUR							
lnY does not Granger cause lnTOUR	4.7*	-0.11*	0.86	-0.12	0.76	-0.11*	Y-TOUR
lnTOUR does not Granger cause lnY	6.26*	-0.03	4.11*	-0.06	2.98*	-0.08*	TOUR-Y
Malaysia- Indonesia							
(1) Y and T							
lnY does not Granger cause lnT	3.24*	-0.18*	1.95	-0.31*	0.76	-0.58*	Y-T
lnT does not Granger cause lnY	6.83*	-0.13	7.68*	-0.12	9.41*	-0.06	
(2) T and TOUR							
lnT does not Granger cause lnTOUR	4.68*	-0.07	3.58*	0.01	2.80*	0.04	
lnTOUR does not Granger cause lnT	0.77	-0.11*	0.4	-0.14*	0.23	-0.17*	
(3) Y and TOUR							
lnY does not Granger cause lnTOUR	3.76*	-0.09*	2.4	-0.11*	1.5	-0.13*	Y-TOUR
lnTOUR does not Granger cause lnY	9.2*	0.01	4.16*	0.01	2.84*	0.01	

Table 3 (*Cont'd*)

(4) X and TOUR							
lnX does not Granger cause lnTOUR	4.01*	-0.16	2.48*	-0.01	1.69	0.04	
lnTOUR does not Granger cause lnX	1.84*	-0.1*	1.02	-0.12*	1.57	-0.14*	TOUR-X
(5) M and TOUR							
lnM does not Granger cause lnTOUR	4.41*	-0.09	4.06*	-0.04	3.55*	0.02	
lnTOUR does not Granger cause lnM	1.69	-0.11*	0.65	-0.15*	0.12	-0.19*	
Malaysia-Brunei Darussalam							
(1) Y and T							
lnY does not Granger cause lnT	13.11*	-0.11*	6.45*	-0.21*	3.81	-0.30*	Y-T
lnT does not Granger cause lnY	0.45	-0.66*	3.28*	-0.67*	4.19	-0.66	T-Y
(2) T and TOUR							
lnT does not Granger cause lnTOUR	15.80*	-0.67*	5.9*	-0.49	4.02*	-0.16	T-TOUR
lnTOUR does not Granger cause lnT	8.29*	-0.10*	3.48*	-0.13*	2.02	-0.14*	TOUR-T
(3) Y and TOUR							
lnY does not Granger cause lnTOUR	3.16*	-0.16*	2.37	-0.2*	2.06	-0.20*	Y-TOUR
lnTOUR does not Granger cause lnY	2.86*	-0.09*	3.63*	-0.13*	2.68*	-0.16*	TOUR-Y
(4) X and TOUR							
lnX does not Granger cause lnTOUR	11.52*	-0.53*	3.52*	-0.55*	2.27*	-0.32	X-TOUR
lnTOUR does not Granger cause lnX	5.43*	-0.05*	1.85	-0.06*	1.28	-0.08*	TOUR-X
(5) M and TOUR							
lnM does not Granger cause lnTOUR	2.29	-0.72*	1.66	-0.84*	1.28	-0.98*	M-TOUR
lnTOUR does not Granger cause lnM	10.73*	-0.05	5.67*	-0.05	4.30*	-0.04*	TOUR-M

*Significance at 10% levels

CONCLUSION

In general this study tries to investigate whether there are any dynamic inter-relationships between the tourism, trade and economic growth for Malaysia and its major tourism partner in ASEAN. The linkages between these three variables may not be straight forward. Thus the short- and long-run relationships between real income and real exports, or real income and real import, or real income and total trade, or real income and number of tourist arrival, or tourist arrival and real import, tourist arrival and real export, or tourist arrival and total trade of from 1997:Q1 to 2007:Q4 has been analyzed using the ARDL approach developed by Pesaran *et al*. (2001).

Interestingly, our result shows that there are evidences of long-run relationship amongst these three variables. Further, on the short run analysis, there are some unidirectional and bidirectional relationships between the trade, economic growth and tourism amongst Malaysian and the top four ASEAN countries. Therefore, the positive effect of promoting Malaysia as a tourist destination may not limited to the tourism industry only but to the international trade and economic growth as well.

ACKNOWLEDGEMENTS

An earlier version of this paper was presented at the XIth Seminar Kebudayaan Malaysia and Indonesia, Universitas Padjajaran Bandung, 18-20 November, 2009. The authors are grateful to the participants for their comments and suggestions on the earlier draft of this paper. Finally, the authors acknowledge financial support from the Fakulti Ekonomi dan Pengurusan [EP-012-2009]. All remaining errors are our own.

REFERENCES

Al-Qudair K.H.A. (2004) The Causal Relationship between Tourism and International Trade in some Islamic Countries, *Economic Studies*, **5**, 19.

Bahmani-Oskooee, M. and Alse, J. (1993) Export growth and economic growth: an application of co-integration and error correction modeling, *The Journal of Developing Areas*, **27**, 535-42.

Balaguer, J. and Jorda, M.C. (2002) Tourism as a long-run economic growth factor: the Spanish Case, *Applied Economics*, **34**, 877-84.

Carrera, E.J.S., Brida, J.G. and Risso, W.A. (2007) Tourism impact in the long-run Mexican economic growth, *Economics Bulletin*, **3(21)**, 1-8.

Chen, C.-F. and S.Z. Chiou-Wei. (2009) Tourism expansion, tourism uncertainty and economic growth: New evidence from Taiwan and Korea, *Tourism Management*, **30(6)**, 812-818.

Deme, M. (2002) An examination of the trade-led growth hypothesis in Nigeria: A co-integration, causality, and impulse response analysis, *The Journal of Developing Areas*, **36**, 1-15.

Fischer F. and L. A. Gil-Alana. (2005) The Nature of the Relationship between International Tourism and International Trade: The Case of German Imports of Spanish Wine. Faculty Working Papers 15/05, School of Economics and Business Administration, University of Navarra.

Frankel, J. and D. Romer (1999) Does Trade Cause Growth? *The American Economic Review*, **89(3)**, 379-399.

Gunduz, L., and Hatemi-J, A. (2005) Is the tourism-led growth hypothesis valid for Turkey? *Applied Economics Letters*, **12(8)**, 499e504.

Habiballah, K. and Lin, C. (2002) International Trade and Tourism: Evidence from Cointegration and Causality Tests by using Singapore Data. 33rd Annual TTRA conference, 23-26 June, Virginia, USA.

Hatemi-J.A and M. Irandoust. (2001) Productivity Performance and Export Performance: A Time-Series Perspective, *Eastern Economic Journal*, **27(2)**, 149-164.

He, D. and W. Zhang. (2010) How dependent is the Chinese economy on exports and in what sense has its growth been export-led? *Journal of Asian Economics*, **21(1)**, 87-104.

Jin, C.J. (1995) Export-led growth and the four little dragons, *The Journal of International Trade and Economic development*, **4**, 203-15.

Katircioglu, S. (2009a) Tourism, trade and growth: the case of Cyprus, *Applied Economics*, **41**, 2741-2750.

Katircioglu, S.T. (2009b). Revisiting the tourism-led-growth hypothesis for Turkey using the bounds test and Johansen approach for cointegration, *Tourism Management*, **30(1)**, 17-20.

Khalil, S., Kakar, M.K. and Waliullah. (2007) Role of tourismin economic growth: Empirical evidence from Pakistan economy, *Pakistan Development Review*, **46(4)**, 985e994.

Kulendran, N. and Wilson, K. (2000) Is there a relationship between international trade and international travel, *Applied Economics*, **32**, 1001-1009.

Mahadevan, R. and S. Suardi (2008) A dynamic analysis of the impact of uncertainty on import- and/or export-led growth: The experience of Japan and the Asian Tigers. *Japan and the World Economy*, **20(2)**, 155-174.

Oh, C.K. (2005) The contribution of tourism development to economic growth in the Korean economy, *Tourism Management*, 26, 39-44.

Pesaran, H., R. Smith and K. Im. (1996) The Econometrics of Panel Data: A Handbook of the Theory with Applications, Kluwer Academic Publishers, Dordrecht (1996), pp. 145–195.

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001) Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, **16**, 289-326.

Shan, J. and Wilson, K. (2001) Causality between trade and tourism: empirical evidence from China, *Applied Economics Letters*, **8**, 279-283.