Journal of Applied Sciences

ISSN 1812-5654

science alert

ANSInet
an open access publisher
http://ansinet.com

Journal of Applied Sciences 12 (12): 1245-1254, 2012
ISSN 1812-5654 / DOI: 10.3923/jas.2012.1245.1254

Analysis of Causal Relationship Between Tourism Development, Economic Growth and Foreign Direct Investment: an ARDL Approach

R. Othman, N.H.M. Salleh and T. Sarmidi
Faculty of Economics and Managament, School of Economics,
National University of Malaysia, 43600 Bangi, Selangor, Malaysia

Abstract: This study investigated the relationship between the development of tourism industry (ARR), economic growth (GDP) and foreign direct investment (PLA) in 18 major international tourism destinations. Utilizing autoregressive distributed lag (ARDL) methodology; this study finds that there is a long run relationship between variables in this study. This study also indicates the existence of multi-directional relation between all three variables. ARR was found more significant Granger cause to the GDP. GDP was also found a Granger cause to ARR. The bidirectional relationship between ARR and GDP exist in United Kingdom, Malaysia, Singapore, Austria, Turkey, Netherland and Canada. Bidirectional relationship between ARR and PLA was found in French, Mexico, China and Hong Kong, while bidirectional relationship between PLA and GDP being recorded for Austria and Mexico. Research findings also show PLA and GDP variables do not have any relationship in many countries studied. There is a fairly strong relationship between variables ARR of GDP as compared to the relationship between ARR and the PLA variables and the relationship between the PLA and the GDP variables.

Key words: Cointegration, foreign direct investment, tourism development, economic growth, gross domestic product

INTRODUCTION

Tourism is one of the increasingly important industries in many countries in the world. Its contribution to the national income, export and employment opportunities are important to some countries especially in countries with established tourism destinations. At the same time, particularly in the last two decades, many countries mainly from the developing countries has seriously developed their tourism industry. Within the last 15 years, between 1995 and 2010, for example, international tourist arrivals had increased from 540.6 to 935 million. During this period international tourist arrivals grew at an average rate of 3.72% per annum. At the same time the total tourism receipts had increased from USD 410.7 billion to USD 919 billion or with an annual average growth of 5.52% (http://unwto.org/en). This clearly shows the development of the global tourism industry brings a positive impact on the economic growth and national income.

The effect of the positive contribution of this industry, many countries in the world is taking initiatives to further enhance and stimulate the development of their tourism industry. However, the share of international tourist arrivals and receipts are still concentrated in the traditional markets namely the European and American markets. However, within the last two decades the share of international tourist arrivals and receipts began to change in which new tourism destinations, especially the Asia and the Pacific market which recorded an increasing share, especially the Chinese market (Salleh *et al*., 2011a).

Rapid increase in international tourist arrivals to new markets, particularly to Asia and the Pacific mainly due to various factors such as tourists interest to explore new destinations which offering new tourism products, especially their natural environment that have not polluted and local heritages (Salleh *et al*., 2007). Within this region there are abundant of relatively untouched natural environment such as islands that are gazetted as marine parks, mangrove areas and caves that can be promoted as attractive ecotourism destinations (Yacob *et al*., 2009; Sathya and Sekar, 2012; Biswas *et al*., 2011). In addition, cheaper travel costs also encouraged more people travelling to the area. The governments in those countries were also taking serious initiatives to promote tourism in their respective countries.

Various strategies and incentives were given to tour operators, particularly private operators to spur the

Corresponding Author: R. Othman, Faculty of Economics and Managament, School of Economics, National University of Malaysia, 43600 Bangi, Selangor, Malaysia Tel:+60135339006

development of their tourism industry. In Malaysia, for example, basic facilities such as good and extensive infrastructure facilities required by the tourists have been developed. In fact, the government tried hard to encourage local and foreign investors to participate in the tourism industry by providing them various attractive investment incentives (Othman and Salleh, 2006).

Development of an integrated tourism industry requires a large sum of investment funds. In many developing countries such investment funds are rather limited. Many poor countries such as Indonesia, foreign direct investments are highly needed to finance its economic development projects (Hadiwibowo, 2010). According to UNCTAD the inflow of foreign direct investment (PLA) could boost the tourism industry, particularly upgrading the facilities and basic services such as hotels, restaurants and recreation centers and supporting physical infrastructure and services that are still inadequate. PLA from the developed countries in tourism industry in the developing countries is expected to spur the development of this industry in developing countries. However, the inflow of PLA into the developing countries tourism sector only accounts for about 10% of the overall PLA at the global level (UNCTAD, 2007). This means that the tourism sector is quite lagging behind in terms of getting PLA as compared to other economic sectors such as services, manufacturing, agriculture and others. Despite this, the tourism sector is still growing well and even managed to surpass the growth of other sectors. Therefore, countries that would like to develop their tourism industry, especially in the NSM should design appropriate policies and strategies to attract the inflow of PLA that could accelerate the development of this industry (UNCTAD, 2007). On the other hand a good development in tourism can be an attractive factor to draw the inflow of PLA.

Economic developments as manifested by the performance of the GDP are also expected to influence the development of tourism industry. Economic development in the form of supplying of basic infrastructural facilities directly or indirectly also influenced the development of the tourism industry since these facilities and services are needed by tourists. At the same time the development of tourism may also help the economic development of any country (Othman and Salleh, 2010a).

Realizing the existence of interconnections between tourism development, economic growth and foreign direct investments as described above, an interesting issue here is to find empirical evidence about the possibility and the pattern of relationship between these variables. For that purpose, the study causal analysis for the ARR, GDP and the PLA is carried out. A total of 18 major international tourism destinations/countries are used as the case study.

For this purpose, cointegration analysis is utilized. In this study the number of tourist arrivals is a proxy for ARR, the gross domestic product is for GDP and the inflow foreign direct investment is for PLA. If cointegration relationship exists between the variables studied their direction of relationship can be identified.

In general, this study attempts to analyze the causal relationship between the ARR, GDP and the PLA in several major international tourist destinations. In particular the research objectives are as follows:

- Identifying the possibilities of cointegration relations between the ARR, GDP and PLA
- Determining the direction of relationship between the ARR, GDP and PLA

Past studies: There are many studies done on causality analysis to identify the pattern of relationship between economic variables. Among the common variables studied is economic growth with other variables such as foreign direct investment (PLA), technology transfer and trade/export. Lately, tourism variable was also considered in such study. Causality analysis is also employed in various other areas such as in macroeconomic, energy, calorie demand and medicine. Table 1 represents the summary of some previous studies that discuss the relationships among the selected variables including tourism.

Major tourism destinations: The main international tourists destinations based on tourist arrivals in 2007, according to the World Tourism Organization (WTO) were led by France (80.9 million), Spain (58.7 million), United States (56.0 million), China (54.7 million), Italy (43.7 million), United Kingdom (30.9 juta), Germany (24.4 million), Ukraine (23.1 million), Turkey (22.2 million), Mexico (21.4 million), Malaysia (21.0 million), Austria (20.8 million), Russia (20.6 million), Canada (17.9 million), Hong Kong (17.2 million), Greece (16.2 million), Poland (15.0 million), Thailand (14.5 million), Macau (12.9 million) and Portugal (12.3 million).

Judging from above the data, it appears that tourist arrivals are not only focused on American and European destinations but has spread to other countries, especially Asian and Pacific markets. South Africa and the Middle East destinations also received attention but still are insignificant as compared to other established destinations.

This situation clearly shows that there is a good demand for new tourism destinations and this is a good indication for the development of tourism industry in those countries. This condition is also supported by the

Table 1: Researchers of past studies and empirical findings

List of researchers	Empirical Findings
Mohd Azlan *et al.* (2003)	The relationship between the PLA and economic growth among developed countries and developing countries did not have similar pattern of relationship
Borensztein *et al.* (1998)	PLA allows the transfer of technology and increase economic growth
Dunning and McQueen (1981), Contractor and Kundu (1995), Kundu and Contractor (1999)	The growth rate of the economy, particularly business tourism is an important determinant of the PLA
Kulendran and Wilson (2000)	Exist relationship between tourism and international trade
Corte-Jimenez and Pulina (2006)	Tourism industry and exports are found to influence economic growth in Spain and Italy
Othman *et al.* (2007)	The development of the tourism industry has been found to have one-direction relation with economic growth. The study also estimates an increase of 10% in tourist arrivals could result in an increase of 1.9% in Malaysian GDP
Othman and Salleh (2010a)	Study focused on the ASEAN countries. Exist one-way relationship between the development of the tourism industry and economic growth. For Thailand and Indonesia economic growth is the determinant to the development of the tourism industry, while for Malaysia and Singapore tourism industry is the determinant to economic growth
Tang *et al.* (2007)	Exist one way causal relationship. PLA as determinant to tourism development in China
Othman and Salleh (2010b)	No specific pattern of causal relations between GNP and tourism development in developed and newly developed tourism destinations/markets
Kaplan and Celik (2008)	Looking at the relationship between tourism expansion and economic performance in Turkey from 1963-2006. Findings show there is a unidirectional causality indicating tourism and exchange rate causes output
Feridun (2004)	Analyzing relationship between economic growth and foreign direct investment (FDI) in Cyprus. Findings indicate there is unidirectional causality from FDI to economic growth
Javed and Sahinoz (2005)	Examine the relationship between economic growth, government spending and money supply in Turkey from 1992-2003. Results show economic growth is more volatile than government spending and money supply
Ghorbani *et al.* (2009)	Investigating the relationship between energy usage in economic sectors and macroeconomic indexes in Iran from 1970-2000. Research findings indicate the existence of long run relationship between energy consumption, price index and GDP
Alhajhoj (2007)	Empirically determine the long run relationship between export and domestic economic growth in Saudi Arabia from 1970-2005. The results indicate export sector triggers a substantial effect on the economic growth
Musgtaq *et al.* (2007)	Study the long run relationship between per capita daily calorie intake, per capita income and food prices in Pakistan from 1960-2001. Research findings indicate there is bidirectional relationship from income to calorie intake and from calorie intake to income
Richardson (2010)	Investigate the relationship between the use of cannabis and mental health problems. Even though there is no clear relationship between them, usage of cannabis may cause mental health problems

Source: Paraphrased from past studies

awareness among the governments in the developing countries about the potential of this industry in generating national income and foreign exchange earnings. Various policies, strategies and promotional travel incentives are being implemented in an effort to attract tourists and boost the tourist service providers to be actively involved in various sub-sectors in the industry.

Realizing limited development fund available, governments in developing countries through various efforts, especially attractive tax reduction incentives try to encourage the inflow of PLA from abroad particularly from developed countries to finance their development projects including tourism projects. As indicated by UNCTAD (2007) PLA from developed countries had helped tourism industry infrastructure such as hotels, restaurants and recreational facilities in developing countries. However, whether the PLA has directly influence the economic and tourism development of the tourism industry or the economic and tourism industry development that attracts the inflow of PLA is less empirically verifiable. The pattern of relationships between economic growth (GNP), foreign direct investment (PLA) and tourism development (ARR) are still unclear and need to be proved empirically. However, based on the real data, over the years these variables in general seemed to have similar upward trends (Salleh and Othman, 2011; Salleh *et al*., 2011b). Utilizing the ARDL approach this study attempts to identify whether there is any relationship between them and further to determine the pattern of their relationships.

Research methodology: In determining the presence of relationship between the variables discussed and pattern of relationships of these variables, this study is using the ARDL approach and causal analysis. This method involves three steps or tests need to be implemented. The first step in applying cointegration methods is to ensure that data is purely stationary. For this purpose, the test stationarity or unit root test would be done first.

Once the data is confirmed stationary, the second step is to test for cointegration for the three variables GDP, ARR and PLA for all countries selected. Cointegration test with the ARDL approach would use in this study.

Finally, Granger causal the test is carried out to test whether there is a one-way or two-way relationship between the three variables of the study.

Unit root test: In economic analysis, unit root test is done to determine the stationarity of time series data used. A

time series data is stationary when the mean and variance are constant over time while the autocovariance series do not depend on time. A number of stationarity tests are often adopted in economic studies including Dickey and Fuller (1979) and Phillips and Perron (1988). However, this study only uses Augmented Dickey Fuller test that is the test using a single parameter autoregression to approach the structural error in regression tests, as shown by the following equation:

ADF test:

$$\Delta Y_t = \alpha + \delta\, t + \beta Y_{t-1} + \gamma \sum_{i=1}^{p} \Delta Y_{t-1} + u_t \quad (1)$$

With variable ΔY_t shows the unit root test using the logarithm of Y for all variables of the model (ARR, GDP and PLA) at time t. While; the variables ΔY_{t-1} is the first differential lag where Δ is the symbol of differentiation. μ is the estimation error and α, β and δ are parameters to be estimated. The hypothesis tested is:

- H_O: $\beta = 0$ indicates the data is stationary
- H_1: $\beta < 0$ indicates the data is not stationary

Cointegration: Stationary data as discussed above is important to prevent the occurrence of spurious regression that would lead the results from that regression is meaningless in economic analysis. To overcome this problem a number of studies in economics have used differentiated data (Cochrane-Orcutt method). However, an analysis using data that have been differentiated only show the short-term relationship and unable to estimate the long run relationship which is very important for policy formulations.

The above shortcomings are resolved by utilizing cointegration method as proposed by Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990). Cointegration methods allow non-stationary data to be used in economic studies and the resulting regression is not spurious if the data is stationary after it is differentiated. However, important pre-conditions to be met in applying the cointegration methodology is the data must be stationary at the same level (order). This means that if data is not stationary at the same level, the cointegration analysis cannot be used.

Pesaran and Shin (1995), Pesaran *et al.* (1996), Pesaran and Shin (1999) and Pesaran *et al.* (2001) has improved this deficiency by introducing new methods in cointegration approach that is the Autoregressive Distributed Lag (ARDL bound test). With the ARDL bound test approach, the cointegration tests can be performed using data with different levels of stationarity but limited to data that stationary at level I(0) and the first difference I(1) only (Salleh *et al.*, 2007).

This study utilizes ARDL together with the computer package Microfit 4.0. The long run model for estimating ARR, GDP and PLA is given in Eq. 2a-c. ARDL bound test model and Error Correction Model (ECM) are as in Eq. 3 and 4, respectively:

$$LARR = \alpha_1 + \beta_1 GDP_t + \beta_2 LPLA_t + \varepsilon_t \quad (2a)$$

$$LGDP = \alpha_1 + \beta_1 ARR_t + \beta_2 LPLA_t + \varepsilon_t \quad (2b)$$

$$LPLA = \alpha_1 + \beta_1 GDP_t + \beta_2 ARR_t + \varepsilon_t \quad (2c)$$

$$\Delta LARR = a_1 + \sum_{i=1}^{n} \beta_{1i} \Delta LARR_{t-1} + \sum_{i=1}^{n} \beta_{2i} LGDP_{t-1} + \sum_{i=1}^{n} \beta_{3i} LPLA_{t-1} + \alpha_2 LARR_{t-1} + \alpha_3 LGDP_{t-1} + \alpha_4 LFDI_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta LARR_t = \alpha_1 + \sum_{i=1}^{n} \beta_{1i} \Delta LARR_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta LGDP_{t-1} + \sum_{i=1}^{n} \beta_{3i} \Delta LFDI_{t-1} + \lambda ECT_{t-1} + \varepsilon_t \quad (4)$$

Δ is the symbol of differentiation, ε_t is the error/residual (white noise) and α and β are parameters that to be estimated. ARR, GDP and PLA refer to the development of tourist industry, economic growth and foreign direct investment from 18 countries selected, respectively.

The test of bound test is based on the F test or Wald-statistic. F test is to test the two following hypotheses as below:

- **H_0:** $\alpha 2 = \alpha 3 = 0$, no cointegration between the variables
- **H_a:** $\alpha 3 \neq \alpha 2 \neq 0$, there is cointegration between the variables

Equation for cointegration tests can also be written as follows:

$$FLARR\ (LARR \mid LFDI). \quad (5)$$

Since the F-test does not have a standard distribution (non-standard distribution), the two critical values are given for the Upper Critical Bound (UCB) and Lower Critical Bound (LCB) (Pesaran *et al.*, 2001). LCB value assumes all variables are I (0), meaning there is no cointegration between variables, while the UCB assume all variables are I (1) which means that there is cointegration between variables. If the calculated F value is greater than the UCB, hypothesis H0 is rejected. Therefore, there is cointegration between the variables. The opposite is true

if the calculated F value is smaller than the LCB. This means that the hypothesis H_0 failed to be rejected. If the F calculated is between the LCB and UCB, this indicates that the results could not be ascertained.

Engle Granger causal analysis: Engle and Granger (1987) and Granger (1988) stated if there are two variables of time series data that are cointegrated, then at least there is one relationship between variables in either long run or in the short run. Error Correction Model (ECM) can be used in analyzing the causal relationships between variables as shown in Eq. 4, 6 and 7:

$$\Delta LGDP_t = \alpha_1 + \sum_{i=1}^{n} \beta_{1i}\Delta LARR_{t-i} + \sum_{i=1}^{n} \beta_{2i}\Delta LGDP_{t-1} + \sum_{i=1}^{n} \beta_{3i}\Delta LFDI_{t-1} + \lambda ECT_{t-1} + \varepsilon_t \quad (6)$$

$$\Delta LPLA_t = \alpha_1 + \sum_{i=1}^{n} \beta_{1i}\Delta LARR_{t-i} + \sum_{i=1}^{n} \beta_{2i}\Delta LGDP_{t-1} + \sum_{i=1}^{n} \beta_{3i}\Delta LFDI_{t-1} + \lambda ECT_{t-1} + \varepsilon_t \quad (7)$$

The hypothesis to be tested are as follows:

- H_0: no Granger causal relationship between variables studied
- H_1: there is Granger causal relationship between variables studied

Granger causal relationship is important to test whether:

- Tourism development (ARR) is the determinant to the inflow of PLA (ARR-led PLA) or otherwise, PLA as the cause to tourism development (PLA-led ARR)
- Tourism development (ARR) is the determinant to GDP growth (ARR-led GDP) or vice versa as GDP growth is the determinant to tourism development (GDP-led ARR
- GDP is the determinant o the inflow of PLA (PLA-led GDP) or vice versa as PLA is the determinant to GDP growth (PLA-led GDP)

RESULTS AND DISCUSSIONS

Unit root test: ADF test results are shown in Table 2 for 18 selected major countries. Results indicate that H_0 is rejected at the 5% level of significance after the first difference for most of the variables in all countries. This means that all variables have unit root and is stationary at the first difference and denoted as I (1).

PLA variable from Austria, Canada, China, Germany, Greece, Hong Kong, Italy, Spain, United Kingdom and

Table 2: Results of ADF for Unit Root Test at Level and First Difference

		Level I(0)		First Difference I(1)	
Countries	Variables	Intercept	Intercept and trend	Intercept	Intercept and trend
Austria	ln GDP	-0.42 (0)	-3.04 (1)	-5.11* (0)	-5.03* (0)
	ln PLA	-0.422 (1)	-5.03* (0)	-10.04*(0)	-9.91* (0)
	ln ARR	-1.00 (1)	-2.09 (2)	-3.00* (0)	-2.85* (0)
Canada	ln GDP	0.05 (1)	-2.87 (1)	-3.85* (0)	-3.80* (0)
	ln PLA	-1.78 (1)	-3.74* (0)	-5.42* (0)	-5.35* (0)
	ln ARR	-1.36 (0)	-1.41 (0)	-6.25* (0)	-6.38* (0)
China	ln GDP	-0.51 (6)	-4.00* (3)	-3.61* (3)	-4.14* (5)
	ln PLA	-1.94 (2)	-13.04*(1)	-13.27*(1)	-11.88*(1)
	ln ARR	-2.19 (0)	-2.19 (0)	-5.47* (0)	-5.35* (0)
French	ln GDP	-1.05 (0)	-3.33 (3)	-4.05* (0)	-4.02* (0)
	ln PLA	-0.29 (0)	-2.50 (0)	-5.57* (0)	-5.50* (0)
	ln ARR	-1.88 (0)	-0.81 (0)	-4.35* (0)	-4.63* (0)
Germany	ln GDP	-1.00 (0)	-1.98 (1)	-3.40* (0)	-3.32* (0)
	ln PLA	-1.61 (0)	-4.04* (0)	-7.10* (0)	-6.97* (0)
	ln ARR	-2.18 (0)	-2.22 (0)	-5.93* (0)	-6.00* (0)
Greece	ln GDP	4.20 (0)	0.47 (0)	-3.50* (0)	-6.12* (0)
	ln PLA	-3.91*(7)	-5.19* (7)	-6.86* (1)	-6.91 (1)
	ln ARR	-1.01 (0)	-2.86 (0)	-6.10* (0)	-5.99* (0)
Hong Kong	ln GDP	-2.32 (0)	-2.29 (1)	-4.41* (1)	-4.73* (1)
	ln PLA	-1.27 (0)	-3.91* (0)	-6.27* (0)	-6.15* (0)
	ln ARR	-1.68 (0)	-1.56 (0)	-4.99* (1)	-5.63* (1)
Italy	ln GDP	-2.90 (0)	-1.54 (0)	-3.89* (0)	-4.14* (0)
	ln PLA	-1.31 (1)	-3.61* (0)	-8.39* (0)	-8.27* (0)
	ln ARR	-0.66 (0)	-1.81 (0)	-5.25* (0)	-5.21* (0)
Malaysia	ln GDP	-0.61 (0)	-1.62 (0)	-4.35* (0)	-4.27* (0)
	ln PLA	-1.84 (0)	-2.56 (0)	-6.93* (0)	-6.80* (0)
	ln ARR	-0.36 (0)	-2.87 (0)	-5.44* (0)	-5.35* (0)
Mexico	ln GDP	-0.85 (0)	-2.65 (2)	-4.58* (0)	-4.48* (0)
	ln PLA	-0.97 (2)	-3.46 (0)	-6.64* (1)	-6.52* (1)
	ln ARR	-1.39 (0)	-1.29 (0)	-5.26* (0)	-5.30* (0)

Table 2: Continue

Countries	Variables	Level I(0)		First Difference I(1)	
		Intercept	Intercept and trend	Intercept	Intercept and trend
Portugal	ln GDP	-1.66 (4)	-2.48 (1)	-3.92* (3)	-4.39* (3)
	ln PLA	-2.07 (0)	-3.31 (0)	-7.84* (0)	-6.02* (1)
	ln ARR	-2.01 (1)	-1.61 (1)	-3.97* (0)	-4.02* (0)
Spain	ln GDP	-0.25 (1)	-3.06 (1)	-3.16* (2)	-2.50* (0)
	ln PLA	-2.22 (7)	-4.16* (2)	-3.56* (6)	-4.18* (6)
	ln ARR	-2.22 (0)	-2.17 (0)	-4.47* (0)	-4.39* (0)
Thailand	ln GDP	-1.31 (1)	-1.59 (1)	-2.74* (0)	-2.89* (0)
	ln PLA	-1.75 (0)	-2.54 (2)	-5.48* (0)	-4.21* (7)
	ln ARR	-2.26 (4)	-1.66 (0)	-4.86* (0)	-5.11* (7)
Turkey	ln GDP	-0.34 (0)	-1.88 (0)	-5.97* (0)	-5.99* (0)
	ln PLA	-0.68 (0)	-3.14 (0)	-8.13* (0)	-8.15* (0)
	ln ARR	-0.05 (0)	-2.54 (0)	-5.79* (0)	-5.66* (0)
United Kingdom	ln GDP	1.05 (0)	-4.95* (1)	-3.25* (0)	-3.90* (1)
	ln PLA	-1.71 (1)	-3.95* (7)	-5.30* (7)	-5.08* (7)
	ln ARR	-0.32 (0)	-2.74 (1)	-3.61* (0)	-3.65* (2)
USA	ln GDP	-0.42 (1)	-3.39 (1)	-3.97* (0)	-3.88* (0)
	ln PLA	-1.66 (0)	-3.26 (2)	-4.93* (0)	-4.83* (0)
	ln ARR	-1.14 (2)	-1.26 (2)	-5.19* (0)	-5.19* (0)
Netherland	ln GDP	0.10 (2)	-3.83* (1)	-3.47* (1)	-3.92* (3)
	ln PLA	-1.00 (1)	-3.18 (2)	-3.10* (1)	-11.49* (0)
	ln ARR	-1.03 (0)	-1.24 (0)	-4.02* (0)	-4.04* (0)
Singapore	ln GDP	-1.48 (0)	-1.50 (0)	-4.32* (0)	-4.44* (0)
	ln PLA	-2.13 (0)	-4.56* (0)	-5.41* (1)	-5.32* (1)
	ln ARR	-1.51 (0)	-1.97 (0)	-6.71* (0)	-6.74* (0)

Note: ln GDP is the logarithm of the rate of growth of Gross Domestic Product (GDP), ln PLA is the logarithm of PLA for Foreign Direct Investment (PLA) and ln ARR is the logarithm of ARR for the development of tourism industry economic growth (ARR). Numbers in parentheses is the length of lag that are being used in ADF test (as determined from the set of SIC to a maximum of 7) for the rejection of serial correlation in the residuals. ADF unit root test is estimated with intercept and with intercept and trends. *Significant at 5% level of significance (95% confidence level)

Table 3: Results of cointegration test: Bound test approach

Countries	F-Statistic	Countries	F-statistic
Austria	54.56117*	Spain	11.13784*
Canada	72.05035*	Turkey	165.9423*
French	265.9487*	United Kingdom	174.9683*
Germany	25.00501*	USA	78.75745*
Greece	56.21792*	China	6.001093*
Italy	37.37782*	Hong Kong	458.2219*
Mexico	36.11438*	Malaysia	197.1848*
Netherlands	357.1018*	Singapore	154.2496*
Portugal	136.7065*	Thailand	774.4746*

Nota: Value of UCB at 5% = 5.473, Value of LCB at 5% = 4.267, *Significant level at 5%

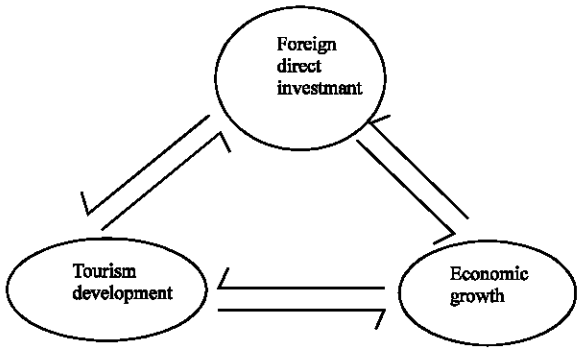

Fig. 1: Pattern of relation ships between variables

Singapore as well as GDP of China, the United Kingdom and the Netherlands also found to be stationary at level and denoted as I (0) when utilizing the model with intercept and trend. As a conclusion, ARR, GDP and the PLA variables in the study are stationary at I (0) an I (1) as shown in Table 2.

Using Bound test the results of cointegration test have shown the existence of cointegration between variables for all countries as indicated by the value of F statistic which is exceeding the critical value of UCB. The details are given in Table 3.

Granger causal analysis: Results of the Granger causal analysis will indicate the direction relationship between variables studied. There are three forms of relationships between variables that is of bidirectional or two way relations, one-way and no relationship at all. Roughly this relationship is illustrated in Fig. 1.

Bilateral relations between the two variables are when both variables are the causal to one another. From Fig. 1, if there is bidirectional relation between tourism development and economic growth, this means tourism development is the determinant to economic growth and at the same time economic growth is also

Table 4: Result of ARDL approach for Granger causality analysis

Countries	ΔLPLA	ΔLARR	ΔLGDP	Δconstant	ECT	F-statistic
Austria		57.907***	-53.681***	435.287***	-1.000***	10.018***
	0.002		0.845*	-0.006	-0.239**	3.127*
	$-0.785E^{-3}$**	0.079*		0.398	-0.065**	1.559
Canada		-35.410*	19.895	56.981	-1.000***	10.733***
	-0.001		1.005**	1.246	-0.246	2.264
	$0.578E^{-3}$	0.135**		-0.213	-0.074**	2.349*
French		56.235**	37.172	-759.536	-0.226***	5.335***
	0.003**		1.427	1.046	-0.032	5.361***
	$-0.315E^{-3}$	0.101**		-0.441	0.026	3.052**
Germany		-2.163	-22.220*	674.699**	-1.255***	14.880***
	0.003		9.104	-23.334	-0.321**	2.557*
	$-0.422E^{-3}$	0.011***		1.689***	-0.066***	4.103**
Greece		-1.807	-0.091	49.548	-1.000***	8.787***
	0.002		0.004	1.692	-0.110*	1.356
	0.028	3.780		-58.118	-0.177	0.823
Italy		12.987	-17.926	275.768	-0.358**	2.214
	0.001		0.290	-4.871	-0.182	0.720
	$-0.668E^{-3}$**	0.033*		2.103***	-0.096***	4.700***
Mexico		-6.412*	103.212**	-312.864	-1.000***	11.716***
	-0.007*		-0.021	0.878	-0.080	1.776
	0.002**	0.025		1.721	-0.079*	2.727*
Netherlands		-16.828	24.296	-368.842	-1.000***	5.480***
	-0.001		2.520**	-9.961	-0.312*	3.918**
	$0.270E^{-3}$	0.077***		2.927***	-0.155***	4.251**
Portugal		-4.339	-0.157	84.687	-1.000***	10.090***
	-0.002		$0.457E^{-3}$	1.786***	-0.108***	9.727***
	-0.102	1.858		-22.950	-0.188**	2.835*
Spain		13.505	-4.587	407.268**	-0.591***	4.396**
	0.002		0.065	1.785	-0.200*	2.311*
	$-0.277E^{-3}$	0.060		0.212	$-0.893E^{-4}$	4.013**
Turkey		-2.899	-6.340	-157.997	-1.246***	16.239***
	-0.001		0.733**	-2.444	-0.036	2.690*
	-0.002	0.310**		5.420	-0.246	4.064**
United		40.717	17.710	-422.034	-1.000***	10.537***
Kingdom	0.002*		1.346**	-1.489	-0.138	3.285**
	$-0.310E^{-3}$	-0.140**		0.376	-0.039	2.629*
USA		-13.579	31.577**	-685.059**	-1.000***	5.220***
	-0.002		0.229	-3.198	-0.203*	1.549
	$-0.753E^{-4}$	0.072		0.200	-0.011	0.927
China		-56.95***	8.002***	733.93***	-0.713***	8.018***
	-0.004***		0.064**	6.271***	-0.481***	4.302**
	$-0.272E^{-6}$	-0.041		2.389*	0.040**	2.239
Hong Kong		-24.106**	-0.254	84.694	-1.000***	11.549***
	-0.007**		$0.941E^{-3}$	1.745*	-1.02	3.134**
	-0.113	1.720		-16.066	-0.346***	4.760***
Malaysia		-6.687***	0.253	107.650***	-0.531***	4.177**
	$0.215E^{-3}$		0.020**	1.029	-0.065	1.859
	0.021	8.475**		-34.009	-0.180	2.582*
Singapore		-5.840	0.070	98.137	-0.698***	4.560**
	-0.004		0.014***	2.166***	-0.138***	4.865***
	0.118	20.620***		-78.188**	-0.210**	5.191***
Thailand		-2.442	0.606	47.939	-0.643***	5.761***
	$0.550E^{-3}$		0.002	0.721	-0.044	0.918
	0.125	2.249		-29.843	-0.224**	3.303**

***,**,*Significant at 1%, 5% and 10% level of significance, respectively

determinants to tourism development. One-way relationship shows one variable is the determinant to other variable but not vice versa. In the context of tourism development and economic growth, a one-way relationship means that tourism development in the cause of economic growth but economic growth is not the cause of tourism development. While no relationship indicates that each variable has no relationship with any other variable.

According to Granger causal analysis, research findings as presented in Table 4 can be summarized in Table 5. Overall, the relationship pattern between variables is quite clear. The most important relationship is between ARR and GDP, followed by ARR and PLA relation, While the relationship between PLA and GDP is least important.

In the case of bidirectional relationship, the ARR and GDP variables are the most important. Seven countries

Table 5: Summary of relationships pattern between ARR, GDP and PLA

Two way or bidirectional relationships					
ARR⇔GDP		ARR ⇔ PLA		PLA ⇔ GDP	
United Kingdom		French		Austria	
Turkey		Mexico		Mexico	
Malaysia		China			
Netherland		Hong Kong			
Singapore					
Canada					
Austria					
One way relationship					
ARR ⇔ GDP		ARR ⇔ PLA		PLA ⇔ GDP	
ARR → GDP	ARR ← GDP	ARR → PLA	ARR ← PLA	PLA → GDP	PLA ← GDP
French	China	Austria	United Kingdom	Italy	USA
Germany		Canada			Germany
Italy		Malaysia			
No relationship					
ARR-GDP		ARR-PLA		ARR-PLA	
Greece		Germany		Canada	
Hong Kong		Greece		Perancis	
Mexico		Italy		Greece	
Portugal		Portugal		Hong Kong	
Spain		Spain		Malaysia	
Thailand		Thailand		Portugal	
USA		Turkey		Spain	
		USA		Thailand	
		Netherland		Turkey	
		Singapore		UK	
				Netherland	
				Singapore	

have two-way relationship namely the United Kingdom, Malaysia, Singapore, Austria, Canada, Netherlands and Turkey. This means that the country's tourism development and economic growth have complementary roles. The development of tourism helps in promoting economic growth and at the same time the general economic growth also supports the development of tourism industry. The second important two-way relationship is for variables PLA and ARR which involve four countries, namely France, Mexico, China and Hong Kong. While the least important for two-way relationship is for the PLA and GDP variables that only involve two countries, Austria and Mexico.

For one-way relationship, it is not involve many countries. In France, Germany and Italy it is found tourism development lead to economic growth in those countries. This is possibly due to tourism industry in these countries are already established and developed thus, tourism contribution to GDP is significant and help their economic growth. While in China, GDP is the determinant to ARR. This situation may be due to the country's tourism industry is still growing and requires rapid economic development to stimulate tourism industry development. Other variables that have a one-way relationship is PLA is the determinant to ARR which involve three countries, that is Austria, Canada and Malaysia and GNP as determinant to PLA also involves three countries, Germany, the USA and China.

Absence of any relationship between variables is quite clear for GDP and PLA involving 12 countries, including Malaysia. Other countries are Canada, France, Greece, Hong Kong, Portugal, Spain, Thailand, Turkey, United Kingdom, Netherlands and Singapore. This situation may be due to the value of PLA inflow into those country is relatively small as compared to their GDP. This is followed by the absence of any relationship between ARR and PLA variables that involve 10 countries, namely Germany, Greece, Italy, Portugal, Spain, Thailand, Turkey, USA, Netherlands and Singapore. This might indicate that the inflow of PLA into the country is possibly less invested in the tourism industry and at the same time the development in tourism industry is not attractive enough encourage the inflow of PLA to these countries. While the absence of relationship between ARR and GDP is only involved eight countries, China, Greece, Hong Kong, Mexico, Portugal, Spain, Thailand and USA.

This empirical study aims to examine long-run and causal relationship between tourism development (ARR) which is proxied by tourist arrivals, foreign direct investment (PLA) and economic growth (GDP) in selected major tourist destinations represented by

Austria, Canada, China, France, Germany, Greece, Hong Kong, Italy, Malaysia, Mexico, Portugal, Spain, Thailand, Turkey, United Kingdom, United States, Netherlands and Singapore.

For this purpose, cointegration analysis and causal test are done. The first step is to test unit root. The test results clearly show the data have unit root and stationary after first difference. There are also data that is stationary at level. Overall, the data set is stationary at level and the first difference and denoted as I (0) and I (1).

Since the data are stationary at different stages (at level and first difference), the method to be utilized with such data is the ARDL cointegration approach. In addition this approach is fit to be applied to small data samples (Salleh *et al*., 2007).

Research findings prove the existence of long-term relationships between the variables studied. Due to the presence of long-term relationship, it is necessary to do causality test. Findings from the causality tests have shown there are several different types of relationships exist between the three variables.

CONCLUSION

Overall it is found that variables that have important relationships are between ARR and GDP and between ARR and PLA. While the relationship between the PLA and the GDP is not so important. The least importance of the relationship between GDP and PLA may be due to relatively the amount of PLA those countries studied is not large enough to stimulate the economic growth of the countries concerned. At the same time the economic development of those countries was not attractive enough to motivate the inflow of PLA. Similarly, the relationship between PLA and ARR is also not important. Such insignificant relationship is may be because of the PLA data available does not demonstrate a specific amount of PLA invested in the tourism industry. If there is a better and detailed data for PLA is available, the findings might be different. It can be concluded that there is a fairly strong relationship between variables ARR of GDP as compared to the relationship between variables ARR and the PLA and the relationship between the PLA and the GDP variables.

REFERENCES

Alhajhoj, H., 2007. Exports and economic growth in Saudi Arabia: A VAR model analysis. J. Applied Sci., 7: 3649-3658.

Biswas, J., S. Shrotriya, Y. Rajput and S. Sasmal, 2011. Impacts of ecotourism on bat habitats in caves of Kanger Valley National Park, India. Res. J. Environ. Sci., 5: 752-762.

Borensztein, E.J., J. De Gregorio and J.W. Lee, 1998. How does foreign direct investment affect economic growth. J. Int. Econ., 45: 115-135.

Contractor, F.J. and S.K. Kundu, 1995. Explaining variation in the degree of internationalization across firms: the case of the hotel industry. J. Int. Manage., 1: 87-123.

Corte-Jimenez, I. and M. Pulina, 2006. A further step into the ELGH and TLGH for Spain and Italy. FEEM Working Paper No. 118.06. http://ideas.repec.org/p/fem/femwpa/2006.118.html

Dickey, D.A. and W.A. Fuller, 1979. Distribution of the estimators for autoregressive time series with a unit root. J. Am. Stat. Assoc., 74: 427-431.

Dunning, J.H. and M. McQueen, 1981. The eclectic theory of international production: a case study of the international hotel industry. Managerial Decis. Econ., 2: 197-210.

Engle, R.F. and C.W.J. Granger, 1987. Cointegration and error correction: Representation estimation and testing. Econometrica, 55: 251-276.

Feridun, M., 2004. Foreign direct investment and economic growth: A causality analysis for cyprus, 1976-2002. J. Applied Sci., 4: 654-657.

Ghorbani, M., H. Mansoori and S. Hamraz, 2009. Reinvestigation of relationship between macroeconomic indexes and energy consumption in Iran. J. Applied Sci., 9: 1578-1582.

Granger, C.W.J., 1988. Causality, cointegration and control. J. Econ. Dyn. Control, 12: 551-559.

Hadiwibowo, Y., 2010. Capital inflows and investment in developing countries: The case of Indonesia. Int. J. Applied Econ. Finance, 4: 220-229.

Javed, Z.H. and A. Sahinoz, 2005. To visualize relationship between economic growth, government spending and money supply: Evidence from Turkey. J. Applied Sci., 5: 569-574.

Johansen, S., 1988. Statistical analysis of cointegration vectors. J. Econ. Dynam. Control, 12: 231-254.

Johansen, S. and K. Juselius, 1990. Maximum likelihood estimation and inference on cointegration-with applications to the demand for money. Oxford Bull. Econ. Stat., 52: 169-210.

Kaplan, M. and T. Celik, 2008. The impact of tourism on economic performance: The case of Turkey. The Int. J. Applied Econ. Finance, 2: 13-18.

Kulendran, N. and K. Wilson, 2000. Modeling business travel. Tourism Econ., 6: 47-59.

Kundu, S.K. and F.J. Contractor, 1999. Country location choices of services multinationals-an empirical study of the international hotel sector. J. Int. Manage., 5: 229-317.

Mohd Azlan, S.Z., A.K. Zulkefly and M. Aminudin, 2003. Foreign direct resurfacing (PLA) and economic growth: Empirical evidence. Analysis, 10: 223-249.

Musgtaq, K., A. Gafoor and Abeduallah, 2007. An examination of calorie demand relationship in Pakistan. Pak. J. Nutr., 6: 159-162.

Othman, R. and N.H.M. Salleh, 2006. The main contributors of tourist arrival from the Asia and Pacific. Int. J. Manage. Stud., 13: 97-216.

Othman, R. and N.H.M. Salleh, 2010a. An analysis on the relationship of tourism development and economic growth: A comparison of international markets J. Ekonomi Malaysia, 44: 93-100.

Othman, R. and N.H.M. Salleh, 2010b. The relationship between the tourism industry development and economic growth of selected Asean countries. Int. J. Manage. Stud., 17: 171-188.

Othman, R., N.H.M. Salleh and A.H. Jaafar, 2007. The importance and contribution of tourism industry to the Malaysian economic growth. Akademika, 11: 82-92.

Pesaran, M.H. and Y. Shin, 1995. Autoregressive distributed lag modeling approach cointegration analysis. DAE Working Paper Series No. 9514. Department of Econometrics, University of Cambridge.

Pesaran, M.H. and Y. Shin, 1999. An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis. In: Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium, Chapter 11, Strom S. (Ed.). Cambridge University Press, Cambridge, New York.

Pesaran, M.H., Y. Shin and R.J. Smith, 1996. Testing the existence of long-run relationships. DAE Working Paper Series No. 9622. Department of Econometrics, University of Cambridge.

Pesaran, M.H., Y. Shin and R.J. Smith, 2001. Bound testing approaches to the analysis of level relationship. J. Appl. Econ., 16: 289-326.

Phillips, P.C.B. and P. Perron, 1988. Testing of unit roots in the time series regression. Biometrika, 75: 335-346.

Richardson, T.H., 2010. Cannabis use and mental health: A review of recent epidemiological research. Int. J. Pharmacol., 6: 796-807.

Salleh, N.H.M, R. Othman and S. Ramachandran, 2007. Malaysia's tourism demand from selected countries: The ARDL approach to Cointegration. Int. J. Econ. Manage., 1: 345-363.

Salleh, N.H.M. and R. Othman, 2011. Causality analysis of economic growth, tourism development and foreign direct investment: Empirical study at selected major international tourist destinations. Technical Report of Short-Term Fund of Faculty of Economics and Management, Universiti Kebangsaan Malaysia.

Salleh, N.H.M., C.Y. Cheah and R. Othman, 2011a. Estimating tourism demand from China market to Malaysia. Proceedings of the IEEE International Summer Conference of Asia Pacific Business Innovation and Technology Management, July 10-12, 2011, Dalian China, pp: 149-153.

Salleh, N.H.M., R. Othman and T. Sarmidi, 2011b. An analysis of the relationships between tourism development and foreign direct investment: An empirical study in selected major Asian countries. Int. J. Bus. Social Sci., 2: 250-257.

Sathya, T. and C. Sekar, 2012. Mangrove eco-system and their multifunctionalities: An analysis of the provision of economic and environmental livelihoods to the fishermen communities in the South-East Coast of India. Trends Agric. Econ., 5: 31-47.

Tang, S., E.A. Selvanathan and S. Selvanathan, 2007. FDI and tourism in China. Tourism Econ., 13: 25-29.

UNCTAD, 2007. FDI and tourism: The development dimension. United Nations Conference on Trade and Development, http://www.unctad.org/en/docs/diaeia 20086_en.pdf.

Yacob, M.R., A. Radam and S.B. Rawi, 2009. Valuing ecotourism and conservation benefits in marine parks the case of Redang island Malaysia. The Int. J. Applied Econ. Finance, 3: 12-21.