

The Effects of Economic Factors on Tourism Demand for Malaysia: A Case of Asian and European Countries

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Abstract

This paper investigates the long-run relationship between the number of international tourist arrivals from the Asian and European countries and four selected variables using quarterly data from 1999 to 2014. Results of panel unit root test show all series are integrated of order one and there exist long-run panel cointegration among the selected variables. Based on Hausman test statistic, PMG is the appropriate estimator for estimating the relationship between tourism demand and the four variables. As expected, exchange rate, level of income, tourism price and substitute tourism price are important determinants for tourism demand in Malaysia. Generally, for both cases of Asian and European, the PMG estimates is very sensitive to lag order whereby high lag order gives larger impact compared to low lag order. The result of the optimal lag order model suggests that longer period of time will be taken for the tourism demand to converge to the long-run equilibrium. Thus the government and tourism authorities should continuously promoting Malaysia in order to sustain the growth of the industry.

Keywords: tourism demand, pooled mean group, error correction term, sensitivity analysis.

1. Introduction

The rapidness of tourism industry in Malaysia has making this country the top 10 destination of the world (Tourism Malaysia Annual Report, 2014). For the past decade, Tourism Malaysia has become the second largest foreign exchange income earner after the manufacturing sectors. The number of tourist arrivals have increased by 19.5 million from 7.9 million in 1999 to 27.4 million in 2014 and the total receipts have increased by 59.7 billion ringgit from 12.3 billion ringgit in 1999 to 72.0 billion ringgit in the same period respectively. However, due to economic tumultuous changes at the end of 2014 have decreased the number of international tourist arrivals to 25.7 million and the total receipts have reduced to 69.1 billion in 2015. The findings have been proven by the significant drop in the number of international tourist arrivals from 2014 to 2016 as visualized in Figure 1. This result is referring particularly for the case of Asian and European countries.

However, looking at Figure 2, it is noticeable that the negative percentage change from the global economic downturn in 2014 was not as severe as the percentage change drop from the outbreak of severe acute respiratory syndrome (SARS) in 2003 indicating that tourist arrivals are aware of the safety and security of the destination country than that of the damage borne by the economic crisis of that particular destination country. In addition, the findings also showed that the reduction percentage change of the international tourist arrivals from the Asian countries is smaller as compared to the reduction percentage change of the tourist arrivals from the European countries. This could be happening due to the negative publicity from the foreign media on safety issues in the country as well as two air tragedies involving Malaysia Airlines flights MH370 and MH17.

Despite various difficulties occurred, Malaysia is still the top important destination of the world for instance the capital city of Malaysia, Kuala Lumpur is the top ten most visited city destinations in the world because it saw 12.15 million visitors, increases 4.5% from 2014 (CNN Travel, 2017). The Ministry of Tourism Malaysia have been put forward various strategies to make tourism an important source of economic growth. These include ensuring sustainable tourist development, enhancing development of innovative tourism products and services, and ensuring comfort, safety and wellbeing of the tourists. According to United Nations World Trade Organization (UNWTO), major marketing campaign such as "Visit Malaysia Year 2014", "Malaysia Truly Asia" and "Malaysia My Second Home" were successful in promoting tourism in Malaysia to the international market around the world.

Therefore, the main objective of the study is to investigate the long-run equilibrium between tourism demand and the selected economic variables such as exchange rate, level of income, tourism price and substitute tourism price of alternative destination country. This study also looks into the speed of adjustment for each individual country and also intends to check for robustness checking by using different lag of orders for the case of Asian and European countries. The rest of the paper is organized as follows: comprehensive literature review on tourism demand using panel data is presented in Section 2 and model specification and data of the study are described in Section 3. The empirical results and findings of the heterogeneous panel data model are discussed in Section 4. Finally, a thorough discussion and conclusion are presented in Section 5.

Figure 1. Number of international tourist arrivals from Asian and European (1999-2014).

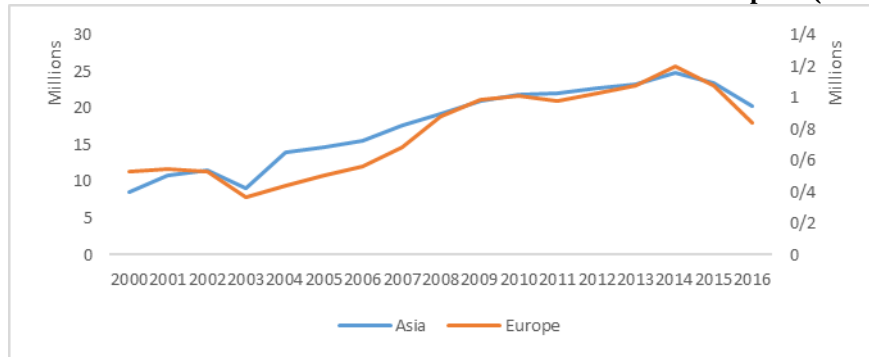
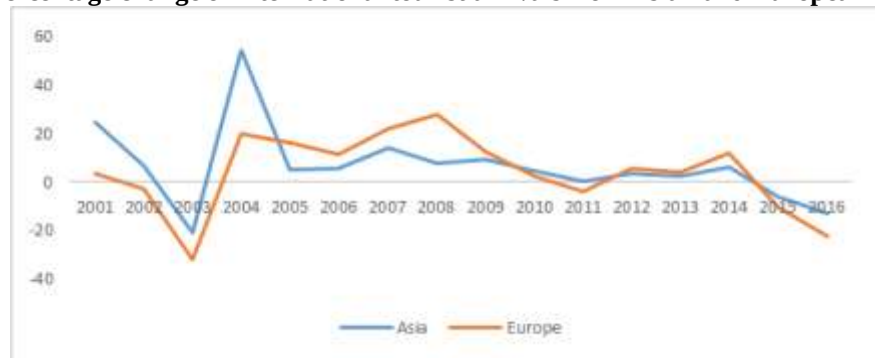


Figure 2. Percentage change of international tourist arrivals from Asian and European (1999-2014).



2. Literature Review

With regards to the growing importance of tourism industry in many countries, there have been a large number of literatures investigating the possible factors affecting tourism demand. For the past decade, tourism demand and economic factors have been the subject of studies for time series and econometric modelling. The past studies of tourism demand and these economic factors have been investigated using various econometric techniques such as ordinary least squares (OLS) method (Duang, 2010 and Lashkarizadeh *et al.*, 2010), Johansen and Juselius (JJ) cointegration method (Habibi, Rahim & Chin, 2008; Gunaratne & Lelwala, 2008; Mishra *et al.*, 2011; Georgantopoulos, 2013), autoregressive distributed lag (ARDL) method (Chaitip & Chaiboonsri, 2008; Bashagi & Muchapondwa, 2009 and Srinivasan *et al.*, 2012) among others.

The review of the empirical literatures on tourism demand include, among others by Mohd Salleh, Othman and Ramachandran (2007), Seetaram (2010), Chaiboonsri *et al.* (2010) and Jintranun *et al.* (2011) have used the number of international tourist arrivals as a proxy of tourism demand. The average length of stay and the number of tourists spent the nights at the destination country have also been included as a proxy of tourism demand but much less frequently used. Previous study by Salleh *et al.* (2010) have reviewed 107 tourism demand studies using various econometric techniques and found that income, exchange rate, tourism price and substitute of tourism price are the important determinants in explaining the behaviour of tourism demand at the destination country.

Most popular methodology used to cater the features of the time series and cross sectional at the same time is panel data analysis. The stationary or static panel data is employed for the case of a large number

of individuals and a small number of time-series observations, among others by Munoz (2006, 2007), Munoz and Martin (2007), Habibi *et al.* (2009), Gormus and Gocer (2010) and Leita0 (2010). Meanwhile, researchers such as include Allen and Yap (2009), Aslan *et al.* (2009), Chaiboonsri *et al.* (2010), Jintranun *et al.* (2011) and Guven and Mert (2016) have employed the later technique of nonstationary panel or also known as panel cointegration generally for the case of a small number of individuals and a large number of time series observations.

Jintranun *et al.* (2011) have investigated the behavior of international tourist arrivals from Austria, Denmark, Finland, Germany, Ireland, Italy, Russia, Sweden, Argentina and the UK, and the factors that contribute to the tourism demand of Thailand using generalized method of moments. All the data series are collected between the first quarter of 1997 and the third quarter of 2010. The explanatory variables used in the study are exchange rate, level of income, tourism price and transportation cost. Dummy variables are included to cater the nature of seasonality in the tourism demand for instance January to March is represented as the first season through to October to December as the last season.

Prior to estimating the long-run relationship between the variables, panel unit root test is conducted for each of the data series and the results of most of the panel unit root tests are stationary at first difference for all the five variables and the series are said to be integrated of order one or I(1). The results of panel cointegration test proved that there exists dynamic relationship between all four variables and the tourism demand for Thailand. The empirical results of the long-run coefficient showed that the number of tourist arrivals have positive and significant relationship with level of income of the country of origin. If the level of income increases by one percent, the number of tourist arrivals in Thailand increases by 1.5 percent indicating that tourism demand for Thailand will increase in the same direction with the level of income of the international tourists. This finding is consistent with those tourism demand studies by Guven and Mert (2016) for Antalya and Mallick *et al.* (2016) studies for India.

Surprisingly, tourism price and transportation cost did not follow the economic theory and Jintranun *et al.* (2011) argued that some information regarding consumer price index in the destination country is not available for the tourists to plan and save enough money to travel in time. In addition, the authors also argued that oil price is set to be the world market mechanism and thus the result may not differ between countries. The coefficient of exchange rate is significantly negative indicating that if the Thai baht strengthens by one percent against the currency of the origin country, the number of tourist arrivals are expected to decrease by 0.55 percent.

Salleh *et al.* (2010) have estimated the demand for tourism in Malaysia and found that income is significantly positively related with tourism demand from Middle East countries and relative price is expectedly negatively related to tourism demand. Similar study by Kosnan and Ismail (2012) found that income and exchange rate have positive impact on tourism demand from all the twenty four countries. Sharing common border and common language are another important factors that contribute to the tourism demand in Malaysia. Similar results were found in Leita0 (2010) and Aslan, Kula and Kaplan (2009) studies whereby all the related variables are found to be the most significant factors in determining the tourism demand for Portugal and for Turkey respectively.

Despite the abundance of literature on tourism demand analysis that employed static panel data, there is less studies on tourism demand particularly for the case of Malaysia that using nonstationary or heterogeneous panel. Othman and Mohd Salleh (2009), Habibi *et al.* (2009), Mohd Salleh *et al.* (2010) and, Ahmad Kosnan and Ismail (2012) are the only studies that modelled the tourism demand for Malaysia however these studies are not using heterogeneous panel data. For instance, there is no studies using different lag of orders for robustness checking in examining the dynamic relationship among tourism demand and economic variables particularly for the case of Malaysia. Therefore, this study would like to add to the latest literature for further understanding to the topic in the context of Malaysia.

2. Data and Methodology

The data set consists of a panel of observations for twenty-two countries from quarter 1 of 1999 to quarter 4 of 2014. The sample countries are divided into two groups: Group 1 presents combination of the selected Asian countries (China, India, Indonesia, Japan, the Philippines, Singapore, South Korea, Taiwan and Thailand) and Group 2 presents combination of the selected European countries (Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland and the UK). This study investigates the dynamic relationship between the number of international tourist arrivals and the economic variables that are exchange rate, level of income, relative price and substitute relative price. The number of international tourist arrivals to Malaysia and all the economic data are obtained from website of Ministry of Tourism Malaysia and DATASTREAM respectively. The estimation model of the international tourism demand for Malaysia from twenty-two selected countries of origin is expressed in a log-linear functional form as follows:

$$LTA_{it} = \beta_0 + \beta_1 LGDP_{it} + \beta_2 LER_{it} + \beta_3 LRP_{it} + \beta_4 LSRP_{it} + \varepsilon_{it}$$

where LTA_{it} is the number of international tourist arrivals from country of origin i at time t , LER_{it} is the nominal exchange rate of Malaysian ringgit against currency of country of origin i at time t , $LGDP_{it}$ is the real gross domestic product of country of origin i at time t , LRP_{it} is the consumer price index (CPI) of Malaysia divided by corresponding CPI of country of origin i at time t , and $LSRP_{it}$ is the CPI of substitute destination country of Malaysia, Thailand divided by corresponding CPI of country of origin i at time t and ε_{it} is the error term of country of origin i at time t .

Prior to estimates the nonstationary panel data model, panel unit root and panel cointegration are employed to investigate the order of integrated series in the panel data econometrics. According to Baltagi (2013), the consistency of the panel data estimation is that the panel estimator averages across individuals and the information in the independent cross-sectional data of the panel leads to a stronger overall signal than in the pure time series. First, panel unit root tests are employed in this study. Among the most common panel unit root tests in practice are Levin, Lin and Chu (LLC, 2002); Im, Pesaran and Shin (IPS, 2003) and; Maddala and Wu (1999). Since the LLC test is based on homogeneity of the autoregressive parameter and testing a very restrictive hypothesis which is unlikely appear in the real practical world, therefore this particular test is not included in this study. With regards to panel data that is both heterogeneous and nonstationary, the IPS test and Fisher-type tests proposed by MW are comparable and these tests are used in this study.

According to Law (2014), there are few major advantages when using panel unit root tests as compared to time series such as panel data generally allows for testing various approaches with different degrees of heterogeneity between individuals, the power of panel unit root tests increases with an increase in N (Levin and Lin, 1992) and the increases of this power is much more robust than the standard low-power of the Dickey-Fuller (DF) and Augmented DF (ADF) tests. Furthermore, an additional cross-sectional components incorporated in panel data models provide better properties of panel unit root tests as compared with the low-power standard ADF test for time series data.

The IPS unit root test allows for heterogeneity in the value of ρ_i under the alternative hypothesis and proposes an alternative testing procedure based on averaging individual unit root test statistics. The use of group-mean Lagrange multiplier (LM) statistic is employed to test for the null hypothesis of the IPS panel unit root. In order to implement the IPS unit root test, the following equation will be estimated as shown as follows:

$$\Delta Y_{it} = a_i + \rho_i Y_{i,t-1} + \sum_{k=1}^N \phi_k Y_{i,t-k} + \delta_{it} + u_{it}$$

where u_{it} is serially correlated with different serial correlation properties across cross-sectional units. The null hypothesis is that each series in the panel contains a unit root and the alternative hypothesis is that some (not all) of the individual series in the panel contains a unit root. The following hypothesis can be written as below:

$$H_0 : \rho_i = 0 \text{ for all } i = 1, 2, \dots, N$$

$$H_1 \left\{ \begin{array}{ll} \rho_i < 0 & \text{for } i = 1, 2, \dots, N_1 \\ \rho_i = 0 & \text{for } i = N_1 + 1, \dots, N \end{array} \right\}$$

The IPS formulated this model under condition of the restrictive assumption that T should be the same for all countries, requiring a balanced panel to compute the t -bar statistic and the following test statistic is defined as the average of the individual ADF statistics:

$$\bar{t} = \frac{1}{N} \sum_{i=1}^N t_{\rho_i}$$

where for each i , t_{ρ_i} is the individual t -statistic for testing $H_0 : \rho_i = 0$. For robustness checking, the panel unit root test adopted by Maddala and Wu have proposed the Fisher-type panel unit root test by combining the p -values of individual ADF test statistic for each of the countries that is written as below:

$$MW = -2 \sum_{i=1}^N \ln p_i$$

where $\ln$ refers to natural logarithm and p_i are the probability values of the computed individual ADF test statistic. MW is a non-parametric test and has a chi-square distribution with $2N$ degrees of freedom where N is the number of countries.

After order of integration has been obtained, panel cointegration test is employed to check for cointegration relationship among the variables in the study. In general, there are few cointegration tests developed in panel data including Kao (1999) test, Larsson *et al.* (2001) test and Pedroni (2000, 2004) test. Since most studies among others (Güven and Mert, 2016; Jintranun *et al.*, 2011 and Chaiboonsri *et al.*, 2010) have used the Pedroni cointegration test, thus the following model of Pedroni panel cointegration is written as follows:

$$Y_{it} = \alpha_i + \delta_t + \sum_{m=1}^M \beta_{mi} X_{mi,t} + u_{i,t}$$

where Y_{it} is the dependent variable (TA) with dimension of $NT \times 1$, X_{it} are the explanatory variables with dimension of $NT \times m$ where N is cross-sectional units, T is time period and m refers to number of explanatory variables and u_{it} are assumed to be independent across countries. Both Y_{it} and X_{it} are assumed to follow the $I(1)$ process. The suggested model is estimated using seven residual-based tests to examine the null hypothesis of no cointegration in the panel data model that allows for considerable heterogeneity. In addition, the Pedroni tests also allow for multiple regressors, for the cointegration vector to vary across different cross-sectional of the panel and allow for heterogeneity in the errors across cross-sectional units.

Specifically, the tests can be classified into two categories: first category consists of four tests such as panel ν -statistic, panel ρ -statistic, panel PP-statistic and panel ADF-statistic which based on procedure of within-dimension, whereby these four tests are calculated by pooling autoregressive coefficients across different cross-sectional of the panel for the unit root test on the residuals. On contrary, based on procedure of between-dimension, the second category consists of three tests such as group ρ -statistic, group PP-statistic and group ADF-statistic whereby these three tests are calculated by averaging the test statistics for cointegration in a time series across cross-sectional units. After examining the existence of

cointegration, by allowing for heterogeneous slopes in dynamic panels, Pesaran and Smith (1995) and Pesaran *et al.* (1999) suggest the following two different estimators: Mean Group (MG) and Pooled Mean Group (PMG). The MG estimation allows for heterogeneity of all the parameters (imposes no cross-sectional units restriction) in the following model.

$$\Delta Y_{it} = \theta_i(Y_{i,t-1} - \beta_i' X_{i,t-1}) + \sum_{j=1}^{p-1} \gamma_{ij} \Delta Y_{i,t-j} + \sum_{j=1}^{q-1} \gamma'_{ij} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it}$$

where β_i are the long-run parameters and θ_i are the equilibrium or error-correction terms. The full heterogeneity assumptions are quite strong and do not take into account of the fact that certain parameters may be the same across groups. However, the PMG constrains the long-run coefficients to be similar across groups as shown in the following equation.

$$\Delta Y_{it} = \theta_i(Y_{i,t-1} - \beta' X_{i,t-1}) + \sum_{j=1}^{p-1} \gamma_{ij} \Delta Y_{i,t-j} + \sum_{j=1}^{q-1} \gamma'_{ij} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it}$$

where the elements of β are common across countries. According to Tan (2006), the PMG is an intermediate estimator which allows the intercepts, short-run coefficients and error variances to be different across countries, while the long-run coefficients are constrained to be homogeneous.

Assume that all of the variables are I(1) and cointegrated. This means that the error terms, u_{it} is an I(0) process for all i and is independently distributed across t . The u_{it} also assumed to be distributed independently of the explanatory variables. In this study, an unrestricted error correction model (UECM) of autoregressive distributed lag, ARDL(p, q, r, s, w) is used as a base for the PMG and MG panel data analysis following Pesaran *et al.* (1999). Starting from a maximum lag of five for each variable, all combinations have been analyzed by using STATA and the best optimal panel ARDL model has been chosen based on the smallest value of Akaike information criterion (AIC). Subsequently, both estimators are estimated and the null hypothesis of long-run slope homogeneity in the coefficients is tested using Hausman test.

3. Preliminary Results

Panel unit root test and panel cointegration

The first step in the analysis is to conduct panel unit root test for all five variables. Recall that panel unit root test is used to determine the order of integration of the series and it is a pre-requisite condition for testing the presence of cointegration relationships among the variables. In this study, the panel unit root tests are carried out at level and first difference of the logarithm form of each variable with no trend. The results of the IPS, Fisher-ADF (F-ADF) and Fisher-PP (F-PP) unit root tests for each variable can be seen in Table 1. For the case of Asian countries, looking at the IPS and Fisher-ADF tests, the null hypothesis of each time series has unit root is not rejected even at 10% significance level for LTA, LER, LGDP, LRP and LSRP indicating that these series are nonstationary at level.

Unlike Fisher-PP panel unit root test, the null hypothesis of each time series has unit root is rejected at 5% significance level for LTA indicating the series is stationary at level and the series of LTA is said to be integrated of order zero, I(0). After first differencing, all the test statistics of IPS, Fisher-ADF and Fisher-PP tests are significant at 5% level for all five variables indicating that generally most of the series are stationary at first difference except for LTA and these series are said to be integrated of order one or I(1). Note that similar findings can be seen for the case of the European countries whereby all the five series are nonstationary at level and stationary at first difference indicating these series are integrated of the same order one, I(1).

Since there is an evidence of nonstationary data, the next step is to check for panel cointegration test. Looking at Table 2 for the case of Asian and European countries, the Pedroni cointegration test with no

trend and with trend show same results whereby the test statistics of panel rho-stat, panel pp-stat, panel adf-stat, group rho-stat, group pp-stat and group adf-stat have significantly rejected the null hypothesis of no cointegration at the 5% level. Therefore, there exists cointegration relationship among the variables for both combinations of countries. The finding is similar to Jintranun *et al.* (2011) and, Guven and Mert (2016) studies whereby the null hypothesis of no cointegration showed six of seven test statistics (except panel-v statistic) are rejected at 5% significance level indicating the cointegration relationship exists among the variables.

Table 1: Panel unit root test for Asian and European countries.

Asian										
Type	LTA		LER		LGDP		LRP		LSRP	
	Level									
IPS	0.819		0.993		3.924		1.510		1.871	
F-ADF	11.174		18.670		6.675		9.158		11.050	
F-PP	51.787	**	18.050		12.870		13.148		15.381	
First Difference										
IPS	-20.452	**	-11.146	**	-12.898	**	-9.996	**	-8.331	**
F-ADF	326.35	**	167.78	**	191.61	**	160.98	**	131.72	**
F-PP	449.10	**	288.56	**	301.84	**	325.15	**	311.84	**
European										
Type	Level									
IPS	1.018		0.590		-0.915		2.365		2.736	
F-ADF	4.201		3.566		9.472		1.751		1.575	
F-PP	11.349		5.004		12.154		2.431		1.356	
First Difference										
IPS	-16.660	**	-2.481	**	-4.890	**	-4.915	**	-11.989	**
F-ADF	173.50	**	18.396	**	40.291	**	44.172	**	121.65	**
F-PP	218.38	**	101.84	**	48.778	**	143.53	**	139.41	**

Note: ** denotes significance at 5% level.

Table 2: Panel cointegration test for Asian and European countries.

Type	Asian		European	
	No Trend	Trend	No Trend	Trend
Within Dimension				
Panel v-stat	0.586	-1.035	0.332	-1.472
Panel rho-stat	-4.123 **	-3.389 **	-4.440 **	-3.529 **
Panel pp-stat	-6.236 **	-6.244 **	-6.673 **	-6.581 **
Panel adf-stat	-5.905 **	-5.060 **	-6.252 **	-5.355 **
Between Dimension				
Group rho-stat	-3.472 **	-2.605 **	-3.702 **	-2.633 **
Group pp-stat	-7.107 **	-6.704 **	-7.542 **	-6.971 **
Group adf-stat	-6.425 **	-4.746 **	-6.533 **	-4.801 **

Note: ** denotes significance at 5% level

4. Empirical Results and Discussion

The presence of long-run relationship between LTA, LER, LGDP, LRP and LSRP in Asian and European countries are investigated by performing a panel ARDL model. Starting from a maximum lag of five for each variable, Table 3 shows the results of long run equilibrium of PMG and MG estimators and error

correction term for the best optimal ARDL model for each group. Note that the best model of ARDL(5,3,2,1,1) and ARDL(4,5,1,4,4) have been chosen by the smallest value of the AIC for each group respectively.

Recall that PMG imposes common long-run effects and MG estimator imposes no restrictions of the long run and short run coefficients for each group. For the case of Asian countries, it can be seen that the estimated coefficients of LER and LGDP have expected positive impact on tourism demand in the long-run for both PMG and MG estimators in the range of between 0.96 percent and 0.67 percent and between 1.03 percent and 2.02 percent respectively. While using the PMG estimator, the estimated coefficients of LRP surprisingly show significant positive impact on tourism demand for Malaysia, using the MG estimator, the estimated coefficient of LRP show insignificant negative impact on the tourism demand from the Asian countries. Meanwhile, the result of PMG estimator shows that the estimated coefficient of LSRP is negative and the test statistic is significant at 5% level however the result contradicts to that MG estimator whereby the estimated coefficient of LSRP is positive but not significant indicating that the substitute relative price gives significant impact on tourism demand using PMG estimator as compared to MG estimator.

As can be seen in Table 3, for the case of European countries, the long-run coefficient of PMG estimates of the LER is 0.815 percent that is approximately two times larger than to those of MG estimates whereby the long-run coefficient is 0.473 percent. For the estimated long-run coefficient of the PMG estimates, the results of LGDP and LRP show negative influence on the number of tourist arrivals from the European countries indicating that one percent increasing in level of income surprisingly leads to decreasing number of tourist arrivals from the European by 1.768 percent and one percent increasing in prices of goods and services lead to decreasing the number of European tourists to Malaysia by 3.264 percent. As expected, the result of MG estimates for LGDP show positive influence on the number of arrivals from the European countries and in contrast, the result of MG estimates for LRP show positive influence on tourism demand for Malaysia. It can clearly be seen that the estimated long-run coefficient of LSRP is positive for both PMG and MG estimators indicating that increases in the prices of goods and services in Thailand increases the number of tourist arrivals from the European countries to Malaysia.

In this study, it can be observed that the Hausman test statistic failed to reject the null hypothesis that the long-run slope is homogeneous indicating that PMG estimator is said to be more efficient or informative than the MG estimator. In other words, for the case of Asian and European countries, PMG is said to be the appropriate estimator for estimating the relationship between LTA and the four variables. As expected, the estimated long-run coefficients of exchange rate and level of income are found to have strong positive impact on the number of tourist arrivals from the selected Asian countries. While the estimated long-run coefficient of exchange rate is positive and test statistic is statistically significant at 5% level, the estimated long-run coefficient of level of income is surprisingly negative. Meanwhile, for the case of Asian countries, the long-run coefficient of relative price is surprisingly positive and significant but for the case of European countries, the long-run coefficient of relative price is expected negative but not significant.

Recall that the sign of substitute relative price at the alternative destination can be positive or negative. It can be observed that for the case of the European countries, the estimated long-run coefficient of the LSRP is found to be six times larger in magnitude as compared to those for the case of the Asian countries. While for the case of Asian, the result of LSRP suggests that Thailand is the complementing destination country for Malaysia and for the case of European, the result of LSRP suggests that Thailand is the competing destination country for Malaysia. Therefore, it is obvious that exchange rate, level of income, relative price and substitute relative price are important determinants of tourism demand and these findings are consistent with the empirical evidence of A. S. A. Rahim (2013), Nonthapot and Lean (2013), Zakaria *et al.* (2012) and Wang (2009).

As the econometric theory suggests, imposing homogeneity causes an upward bias in the coefficient of the lagged dependent variable, and the MG estimator suggests much faster adjustment than the PMG estimator (Pesaran *et al.*, 1999). For the case of Asian and European countries, it can clearly be seen that the coefficient of the error correction term (ECT) of PMG and MG estimates are expected negative and the test statistic is statistically significant at 5% level. For the case of Asian, the values of the ECT is ranging between -0.291 and -0.466 suggesting that any short-run deviation will take approximately between six and ten months to adjust to the long-run equilibrium. Meanwhile, similar findings can be seen for the case of the European whereby the values of the ECT is ranging between -0.302 and -0.615 suggesting that any short-run deviation will take approximately between five and ten months to revert back to the long-run equilibrium. The result of the ECT for the case of European countries is consistent with Hassan Nosier (2012) study. This rapid adjustment to the long-run equilibrium indicating that any external shocks may not severely deter the tourists for travelling to Malaysia.

Table 3: Estimated long run and error correction for Asian and European countries.

Variables	Group			
	Asian		European	
	PMG	MG	PMG	MG
Long run coefficients				
LER	0.960 * (0.520)	0.669 (0.647)	0.815 ** (0.223)	0.473 (0.354)
LGDP	1.032 ** (0.127)	2.024 (1.528)	-1.768 ** (0.662)	1.105 (1.783)
LRP	3.001 ** (0.722)	-4.154 (4.075)	-3.264 (2.862)	4.081 (3.892)
LSRP	-1.775 ** (0.522)	2.354 (3.402)	10.787 ** (1.607)	4.409 (2.708)
Error correction coefficients				
ECT	-0.291 ** (0.088)	-0.466 ** (0.072)	-0.302 ** (0.098)	-0.615 ** (0.080)
Hausman Test	4.23 [0.376]		3.20 [0.525]	

Note: ** and * denote significance at 5% and 10% level respectively, standard errors and probability in parentheses given () and [] respectively.

Table 4: Estimated PMG error correction term for individual Asian countries.

Country	Singapore	Indonesia	Thailand	Philippines	China
ECT	-0.819 ** (0.177)	-0.052 * (0.029)	-0.360 ** (0.106)	-0.061 ** (0.045)	-0.474 ** (0.202)
Country	Japan	Taiwan	South Korea	India	
ECT	-0.319 ** (0.152)	-0.424 ** (0.185)	-0.042 * (0.045)	-0.068 * (0.042)	

Note: ** and * denote significance at 5% and 10% level respectively, standard errors in parentheses.

Table 5: Estimated PMG error correction term for individual European countries.

Country	UK	France	Germany	Netherlands	Switzerland
ECT	-0.101 * (0.071)	-0.102 * (0.077)	-0.457 ** (0.102)	-0.360 ** (0.098)	-0.051 * (0.072)
Country	Italy	Denmark	Sweden	Norway	
ECT	-0.927 ** (0.210)	-0.321 ** (0.101)	0.026 (0.098)	-0.426 ** (0.114)	

Note: ** and * denote significance at 5% and 10% level respectively, standard errors in parentheses.

For the long-run relationship to be valid, the estimated coefficients of the error correction term (ECT) have to be significantly different from zero for each country. Table 4 and Table 5 presents the estimated coefficients of error correction term of the PMG estimates for each individual Asian and European countries respectively. It can be seen from Table 4, for the case of Indonesia, the Philippines, South Korea and India, the estimated coefficient of the error correction term shows very small in magnitude between the range of -0.042 and -0.068 indicating that following short term deviation takes approximately between 23 quarters/ 69 months and 15 quarters/ 45 months for tourism demand to return to the long-run equilibrium. This rapid adjustment to the long-run equilibrium suggesting any shocks that hit the tourism demand from these particular countries may take a longer period of time to return back to the long-run equilibrium. As expected, for the case of Singapore which is the second largest trading partner for Malaysia, the estimated coefficient of the ECT is -0.819 indicating that any short-run deviation only takes approximately four months to revert to the long-run equilibrium. The result of shorter period of time for tourism demand to move back to long-run equilibrium implying that any short-term shocks befallen does not severely affect the relationship between tourism demand from Singapore and the four variables. Meanwhile, the estimated coefficients of the ECT for the case of Japan, Thailand, Taiwan and China are -0.319, -0.360, -0.424 and -0.474 respectively indicating that following the short term deviation takes approximately between six and nine months to revert to the long-run equilibrium.

The speed of adjustment from the deviation in the long-run relationship between tourism demand and the four variables for the case of Switzerland is slower with the ECT values of -0.051 compared to other countries. The result indicates that about 5.1 percent of the short-term deviation from the long-run equilibrium is corrected every quarter. This result also suggests that the short-term deviation takes a longer period of time approximately 5 years to return to the long-run equilibrium. It can be observed that similar speed of adjustment can be found for the case of Italy with those speed of adjustment for the case of Singapore. The estimated coefficient of the error correction term for the other selected European countries are ranging approximately between seven months (Germany and Norway) and 30 months (the UK) to revert to the long-run equilibrium. However, this finding contradicts with Guven and Mert (2016) study whereby most of the error correction term for the case of Switzerland, the UK, France, Germany and Sweden were found quite high indicating that the speed of reaching equilibrium is very high in the long-run.

Table 6: Sensitivity analysis for Asian and European countries.

Variables	Asian			European		
	Optimal	High Lag	Low Lag	Optimal	High Lag	Low Lag
Long run coefficients						
LER	0.960 * (0.520)	1.226 ** (0.431)	0.519 (0.388)	0.815 ** (0.223)	0.961 ** (0.236)	-0.732 ** (0.202)
LGDP	1.032 **	0.995 **	1.128 **	-1.768 **	-2.721 **	1.525 *

	(0.127)	(0.101)	(0.098)	(0.662)	(0.658)	(0.802)
LRP	3.001 **	2.995 **	1.534 **	-3.264	-3.597	1.808
	(0.722)	(0.661)	(0.705)	(2.862)	(2.603)	(2.637)
LSRP	-1.775 **	-1.635 **	-1.293 **	10.787 **	11.415 **	5.478 **
	(0.522)	(0.501)	(0.525)	(1.607)	(1.553)	(2.048)
Error correction coefficients						
ECT	-0.291 **	-0.377 **	-0.359 **	-0.302 **	-0.382 **	-0.398 **
	(0.088)	(0.105)	(0.087)	(0.098)	(0.104)	(0.082)

Note: ** and * denote significance at 5% and 10% level respectively, standard errors in parentheses.

For robustness results, this study considered two comparisons of lag order that are high lag order and low lag order. A high lag order is represented by lag order of five while a low lag order is represented by lag order of one. It can be observed in Table 6 for the case of Asian and European countries, for the high lag order generally shows that the estimated long-run coefficient of the LER, LGDP, LRP and LSRP are larger in magnitude compared to the low lag order. While there is no pattern can be observed for the case of the Asian between the optimal lag, high lag and low lag orders; it is a clear pattern can be seen for the case of the European whereby the magnitude of using high lag order is larger than those of the optimal lag order followed by the low lag order for all the four variables. Looking at Table 6 for the case of both combination of countries, the speed of adjustment for each model shows negative and is statistically significant at 5% level indicating that the convergence rate of optimal lag order model is lower than that of the convergence rate of high lag order and low lag order models. The result of the optimal lag order model suggests that longer period of time will be taken for the tourism demand to converge to the long-run equilibrium.

5. Conclusion and Implications

This paper attempts to examine the long-run equilibrium for the group of eleven Asian countries and a group of eleven European countries. This study also looks into the error correction term in the short-run dynamic for each individual country and to understand the comparison of long-run PMG estimates between high lag and low lag orders. The results indicate that there exists a long-run and short-run relationship between tourism demand and all four variables. The findings have proved that exchange rate, level of income, tourism price and substitute tourism price are the main factors in encouraging tourists to travel to Malaysia.

Moreover, the error correction term shows that demand of Malaysia by the group of European tourists compared to Asian tourists are not overly sensitive to the external shock as the demand will be fairly quickly restored following a crisis event that impacted the tourism industry. In summary, the findings show that the economic variables in this study are vital factors in determining the number of tourist arrivals in Malaysia in the long-run. Therefore, information of the variables that influence the demand for international tourism is essential to policy makers in planning growth strategies for the tourism industry in Malaysia.

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