An Econometric Analysis of Sport Tourism in Thailand

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Abstract

South East Asia Games (SEA) is a sports game participated by 11-countries around South East Asia. The participating countries include Malaysia, Singapore, Indonesia, Thailand, Laos, Vietnam, Brunei, Myanmar, Philippines, and Cambodia. In year 2007, Thailand hosted the 24th SEA Games at Nakhon Ratchasima. It is an honor for Thailand being the host of the competition as this gave Thailand an opportunity to promote their country's uniqueness and attractions. This paper highlights the empirical evidence of tourist arrival in Thailand which relates to the SEA games event. The economic factors, short-run and long-run effects of its determinants were examined using Autoregressive Distributed Lag (ADRL) approach. The results suggest that there are no determinants that have significant impact on tourist arrival in the long run, except for the dummy variable which represent SEA games. The dummy variable is significant at the level of 1-percent. Similarly, in the short run, the obtained results revealed that the dummy variable is a significant determinant of tourist arrival in Thailand. These results indicate that, the determinant of tourist arrival particularly based on the SEA games does exist. Whereas, the economic factors such as national income by participating countries of the SEA games and exchange rate are not important factors influencing tourist arrival in Thailand. Hence, by hosting major sport events such as SEA games will positively boost the tourism industry for the host country.

Key words: Sport tourism, Short-run effects, Long-run effects, Tourist arrival.

Introduction

Sport events have become an important means for the economic development of local community, region or country. In general, sports tourism is all forms of active and passive involvement in sporting tourism, participated casually or in an organized way for non-commercial or business/commercial reason that necessitates one to travel away from home and work locality (McHone and Rungeling, 2000). Sports tourism is defined as sport-based travel away from the home environment for a limited time, where sport is characterized by unique rule sets, competition related to physical prowess, and a playful nature (Gibson, 1989).

According to Zauhar and Kurtzman (1997), there are two factors that influence people to make a travel as discussed in sports tourism development, namely pull factor and push factor. Push factor refers to the release life from rotating the same activities every day, while pull factor is the attraction of that place. Many tourists visited Thailand in year 2007 as Thailand was the host for SEA Games for that year. Tourists who wanted to support their team in the SEA Games are the push factor while the pull factor was Thailand being an interesting venue to visit.

SEA Games is a sports game with 11 participating countries around South East Asia, and Thailand is one of its member. It was an honor for Thailand to host the game as besides from hosting, they were also able to publicize their country's uniqueness to the world, or at least to the participating countries. According to Mendriatta (2010), to be awarded the title and immense honor of the host city of a 'major international sporting event' can have a profound effect on the city, region and nation as well as the athlete. This can also change the profile of that place, and the lives of people in that place (Mendriatta, 2010). As the sport events could potentially contribute as a main factor in enhancing the number of tourist arriving at the host country, thus the tourist demand model was adopted and developed in order to examine the hypothesis for this study.

By constructing the tourism demand model, this study attempts to investigate the determinant factors of tourism demand model by taking into account the SEA Games event.

Materials and Methods

This study employed the GDP data of participating countries, Thailand exchange rate, dummy variable which represents the SEA Games event, and tourists' arrival, gathered over the period of 1985 to 2010. Published data on these variables were made available by the Department of Statistics, Thailand and the International Financial Statistics (IFS) online service. Specifically, this study evaluates the long-run elasticity and short-run causality as well as examining the determinant of tourism demand model for Thailand particularly in the case of SEA Games.

The cointegration techniques by Engle and Granger (1987) or Johansen (1988) and Johansen and Juselius (1990) are the commonly used techniques in empirical economics to study the existence of long-run equilibrium relationship in levels between variables. These methods involve a pre-testing step for unit roots in order to determine the variables order of integration in the model. In particular, these requires all the variables under study to be integrated in the same order of one, that is I(1). In practice, however, not all variables have a unit root. Some variables are stationary in level, I(0), while others might have two unit roots, I(2), or stationary in second differences. If the orders of integration of the variables under study are different, this will then cast doubt on the accuracy and validity of the estimation results obtained from the above cointegration testing procedures.

However, Engle and Granger (1987) points out that if the time series is non-stationary, one can include lagged dependent and independent variables using a sufficiently complex dynamic specification such as the Autoregressive Distributed Lag (ARDL) model to ensure the residual stationary. As such, in this study, ARDL bounds testing approach proposed by Pesaran *et al.* (2001) is used to allow the regressors to have a different order of integration, either I(1) or I(0), in estimating the functions. The bound test which is based on the estimation of an Unrestricted Error Correction Model (UECM) is applicable irrespective of whether the underlying regressors are purely I(0), I(1) or mutually cointegrated. Furthermore, the ARDL model is more robust and performs better for small sample size than standard cointegration methods (Pesaran and Shin, 1999).

The variables employed in this study are in natural logarithmic form. The dependent variable is tourist arrival. The development of ARDL function is as follow:

$$\text{Tourist arrival} = f(\text{GDP, exchange rate, dummy}) \qquad (1)$$

$$\text{Tourist arrival} = \text{GDP}^{\beta 1}.\text{exchange rate}^{\beta 2}.\text{dummy}^{\beta 3} \qquad (2)$$

To illustrate the ARDL modeling approach, we then express Eq. (3) in log-linear form as follow:

$$ln\text{tourist arrival} = \beta_0 + \beta_1 ln\text{GDP} + \beta_2 ln\text{exchange rate} + \beta_3\text{dummy} + \varepsilon_t \qquad (3)$$

The ARDL approach involves estimating the error correction version of the ARDL model for variables under estimation (Pesaran *et al.* 2001). From Eq. (3), the ARDL model of interest then can be written as follow:

$$\begin{aligned}\Delta\, ln\text{tourist arrival}_t = {} & \beta_0 + \beta_1 ln\text{GDP}_{t-1} + \beta_2 ln\text{exchange rate}_{t-1} + \beta_3\text{dummy} \\ & + \sum_{i=0}^{p}\alpha_4\ \Delta\, ln\text{tourist arrival}_{t-i} + \sum_{i=0}^{p}\alpha_5\ \Delta\, ln\text{exchange rate}_{t-i} \\ & + \sum_{i=0}^{p}\alpha_6\ \text{dummy}_{t-i} + \varepsilon_t \qquad (4)\end{aligned}$$

where Δ denotes a first difference operator; *ln* represents natural logarithmic transformation; β_0 is intercept and ε_t is a white noise error term.

There are two steps involved in testing the cointegration relationship in the tourism demand model. First, the model above is estimated by OLS technique. Second, the null hypothesis of no-cointegration H_o: $\beta_1 = \beta_2 = \beta_3 = 0$ is tested against the alternative H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ by the means of *F*-test. Two sets of critical value bounds for the *F*-statistics are generated by Narayan (2005). If the computed *F*-statistic fall below the power bound critical value, the null hypothesis of no-cointegration cannot be rejected. Contrary to that, if the computed *F*-statistic lies above the upper bound critical value, the null hypothesis is rejected, implying that there is a long-run cointegration relationship amongst the variables in the model. Nevertheless, if the calculated value falls within the bounds, inference is inconclusive.

Results and Discussions

This section presents and discusses the empirical analysis on the relationship of ARDL models as mentioned in the methodology. The complete analysis involves bound test to analyze the relationship of short run and long run analysis. The methods adopted in the literature in previous years mainly concentrate on cases in which the underlying variables are integrated of order I(1) (Pesaran *et al.*, 2001). The ARDL approach has some advantages over the other approaches. First, the series used do not have to be I(1) (Pesaran and Pesaran 1997). Second, even with small samples, more efficient cointegration relationships can be determined (Ghatak and Siddiki, 2001). Finally, Laurenceson and Chai (2003) states that the ARDL approach overcome the problems resulting from non-stationary time series data, leads to spurious regression coefficient that are bias towards zero.

The model for the bound test cointegration relationship is presented in Table 1. There is an evidence of cointegrating relationship in the model, between all parameters used and tourist arrival, given that the computed *F*-statistic (4.58) lies above the upper bound critical value at 5% level of significance. This result suggests that there is a long run relationship of this tourism demand model in Thailand.

After analyzing the bound test for cointegration, the next step is to estimate the coefficient of the long run relationships. The lag length (ρ) in Eq. (1) and Eq. (2) were determined by Schwartz Bayesian Criteria (SBC) criterion following the suggestion of Pesaran and Pesaran (1997). Therefore, the SBC indicates that ρ = 1 are the most appropriate lag length for this model. The long run test result reveals that tourist arrival is positively (0.39) and significantly (at level 1 percent) affected from dummy variable (Table 2). This means that the host country of the SEA Games will potentially receive positive effect in terms of tourist arrival to their country. Similarly, the lag tourist arrival by one year and two years are both significant at the level of 1 percent. However, lag tourist arrival by two years gave more influential impact on tourist's decision with a coefficient of 1.53. It suggests that the decision made by tourist to travel to Thailand is determined by the previous number of tourist that has visited Thailand.

Lastly, the result in Table 3 illustrates the error correction representation for selected ARDL model of tourist arrival. This is also known as the short run dynamic coefficient estimation. Similar to the long run, this model indicates that there is no significant determinant of GDP and exchange rate on tourist arrival in the short run, despite the sign effect for both models are positively correlated with coefficient 0.02 and 0.03 respectively. Therefore, if there are any changes in GDP from participating countries and exchange rate in the short run, these will not affect the number of tourist arrival. On the other hand, the dummy variable (i.e. SEA Games event) is significant in determining the tourist arrival in Thailand.

The error correction model (denoted ECM(-1) in Table 3) is found to be negative and statistically significant for this model. This term indicates the speed of adjustment process to restore equilibrium following a disturbance in the long run equilibrium relationship. A negative and significant error correction term implies how quickly variables return to equilibrium. For instance, the model of tourist arrival implies that 12% (ECM coefficient = -0.12) of the disequilibrium of the previous year's shocks able to readjust to the long run equilibrium in the current year.

Conclusions

In this paper, we have examined the tourist demand model in a case of Thailand. This model analyses the relationship between all parameters (i.e. GDP, exchange rate and dummy variable) and tourist arrival. This model uses the ARDL approach developed by Pesaran and Pesaran (1997) and Pesaran *et al.* (2001).

The results of the ARDL bound testing confirmed the presence of cointegration in the model of tourist demand in Thailand. Over the long run, the previous year of tourist arrival played an important indicator to influence the number of tourist arrival in the future. In addition, the SEA Games event shows a significant determinant in boosting the tourism industry by the host country. This is supported by Mendiratta (2010), claimed that a country can get multiplier effect in the tourism industry by hosting any major sport event. Finally, the results revealed that GDP and exchange rate do not give any significant impact on the tourism demand model.

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Table 1: Bound Test Results for Long Run Relationship

Critical value of the *F*-statistic: intercept and no trend						
	90% level		95% level		99%level	
T30	*I*(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)
	2.68	3.58	3.27	4.31	4.61	5.99
Types of Commodity			Calculated *F*-statistic			
Tourist arrival			4.58**			

Notes: ** Significant at 5 percent. Critical values are taken from Narayan (2005).

Table 2: Estimates for Long Run Elasticities

Dependent variable: Tourist arrival			
Regressor	Coefficient	Standard error	P-value
Intercept	16.6***	0.39	0.00
Tourist arrival (-1)	0.58***	0.16	0.00
Tourist arrival (-2)	1.53***	0.22	0.00
GDP	0.18	0.01	0.23
Exchange rate	0.03	0.05	0.52
Dummy	0.39***	0.03	0.00

Notes: *** Significant at 1 percent, * Significant at 10 percent.

Table 3: Estimates for Short Run Elasticities

Dependent variable: Tourist arrival			
Regressor	Coefficient	Standard error	P-value
Intercept	-18.53***	0.22	0.00
GDP	0.02	0.01	0.14
Exchange rate	0.03	0.05	0.43
Dummy	0.11**	0.04	0.01
ECM(-1)	-0.12***	0.24	0.00

Notes: *** Significant at 1 percent, * Significant at 10 percent.