Pertanika J. Soc. Sci. & Hum. 23 (4): 945 – 966 (2015)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

International Tourism Market Analysis in the Greater Mekong Sub-Region: A Panel Data Approach

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ABSTRACT

The Greater Mekong Sub-Region (GMS) is regarded as a single tourism market. This paper investigates international tourist visits to the GMS. We employ the panel data approach by using data from the GMS countries and their four major source countries i.e. Japan, Malaysia, China and Korea. The study concludes that capital investment is the most important factor for international tourism supply while income level is the most important factor for international tourism demand. Hence, we suggest that GMS countries should offer tourists a unique experience by presenting nature tourism and ecotourism. They can focus on attracting higher-income international tourist groups to improve their tourism markets and increase their competitiveness in tourism in order to achieve a sustainable single tourism market.

Keywords: International tourism market, simultaneous equations, regional tourism

INTRODUCTION

The Greater Mekong Sub-Region (GMS) is the Mekong River basin area. It includes Cambodia, the Yunnan and Guangxi Provinces of the People's Republic of China, Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand and Vietnam. The total population is about 260 million and is spread over an area of 2.3 million square kilometres. Overall, this region is a group of developing countries.

The tourism industry is important to the economic growth of this region. During the period 2006-2011, tourism contributed more than 10% of the national gross domestic product (GDP) in Thailand, Lao PDR and Vietnam and 22% in Cambodia. The average GDP contribution of the tourism sector in the GMS was 15.7% (Table 1).

ARTICLE INFO

Article history:
Received: 29 May 2014
Accepted: 22 June 2015

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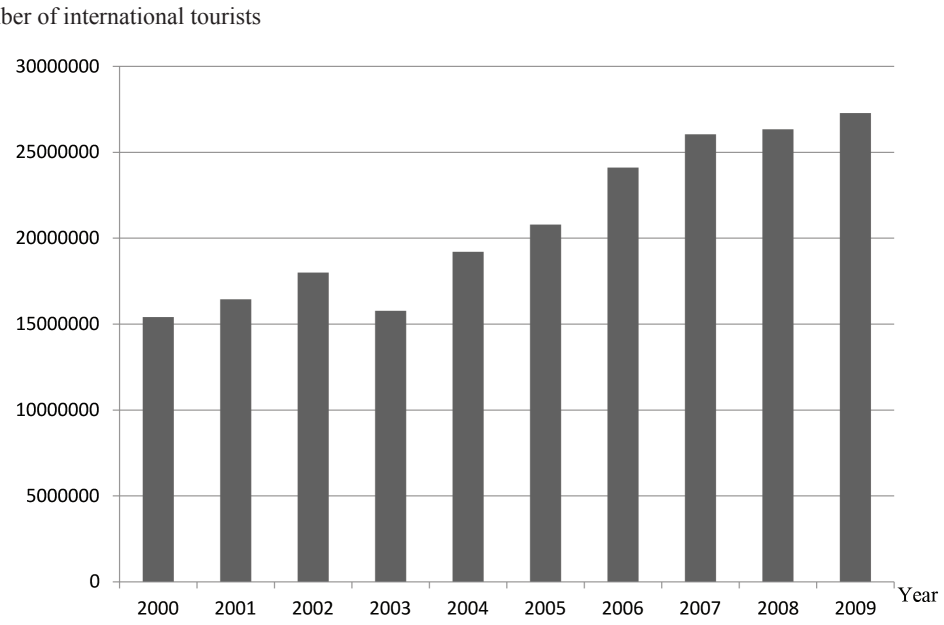
ISSN: 0128-7702

TABLE 1
Tourism Contribution as a Percentage of GDP

Countries	2006	2007	2008	2009	2010	2011	Average
Cambodia	23.7	24.6	21.4	20.4	20.3	22.1	22.1
Lao PDR	12.3	13.0	13.7	13.2	13.3	18.1	13.9
Myanmar	3.8	3.7	3.6	3.7	3.5	3.1	3.6
Thailand	16.7	16.4	16.7	15.7	14.7	16.3	16.1
Vietnam	12.9	8.0	11.1	10.9	9.3	11.8	10.7
GMS average	16.4	15.5	15.7	15.1	14.4	17.1	15.7

Note: The Yunnan and Guangxi provinces of China are not included

Source: World Travel and Tourism Council (2012)



Source: Mekong Tourism Coordinating office (2013)

Fig.1: Total number of international tourist arrivals to the GMS (2000-2009).

The international tourism market in the GMS is expanding because the number of international tourist arrivals to GMS is gradually increasing. Fig.1 shows the number of visitors to GMS increasing over the years from 15.4 million people in 2000 to 27.3 million people in 2009. However, in May 2003, the severe acute respiratory syndrome (SARS), which spread in the region, affected the number of international tourists visiting the GMS. However, there has was a recovery in 2004.

The Travel and Tourism Competitiveness Index (TTCI) 2013 ranked Thailand and Vietnam at 43th and 80th respectively in the world (Blanke & Chiesa, 2013). Moreover, the European Council on Tourism and Trade announced

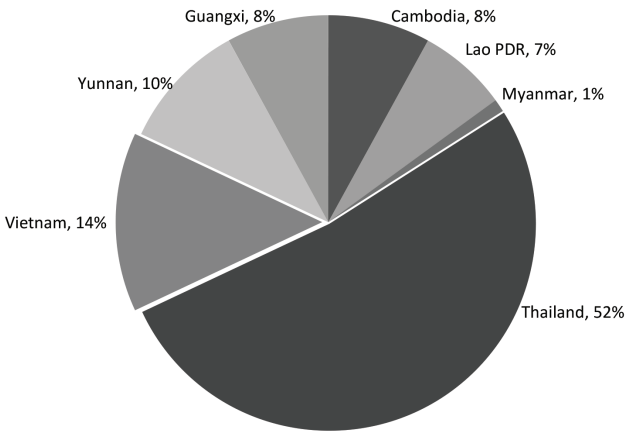
Lao PDR as the world's best tourist destination for 2013 (EUCIR-EUROPE, 2013). These indicators show that the GMS is a potential tourism region for travellers around the world.

Furthermore, Table 2 shows that there was a good balance of tourism demand in the GMS with the top 10 markets contributing 54% of the region's 22 million visitors. The Mekong Tourism Coordinating Office (2008) reported that Japan is the top tourism spending market and provides the most visitors to the GMS at nearly 8% of total tourism demand. Other markets that are recognised as major sources of international tourists are Malaysia, China and Korea. Fig.2 shows the market share of international tourist arrivals to the GMS in 2009. Thailand remains the major international tourist destination with a market share of 52%. Vietnam is the second most popular destination in the region.

TABLE 2
Top Ten Source Market of International Tourist Arrivals to GMS in 2006

Rank	Country	Number of arrivals	Total arrivals (%)
1	Japan	1,754,176	7.9
2	Malaysia	1,734,027	7.8
3	China	1,584,590	7.1
4	Korea	1,548,343	6.9
5	USA	1,041,468	4.7
6	UK	1,018,219	4.6
7	Thailand	936,013	4.2
8	Singapore	882,581	4.0
9	Australia	803,087	3.6
10	Taiwan	791,476	3.5
Total		12,093,980	54.3

Source: Mekong Tourism Coordinating Office (2008)



Source: Mekong Tourism Coordinating Office (2013)
Fig.2: Market share of international tourist arrivals to GMS in 2009.

Tourism products differ from other products in that tourism supply cannot be examined prior to purchase, cannot be stored and involves the element of travel. It is useful to consider tourism supply because it is not a single industry but a collection of interrelated industries and markets (Sinclair *et al.*, 2006: p.22). Some studies have not analysed the complexities of tourism factors that affect tourism supply, but they have taken into account the developing economics concepts, theories and methods that focus on the tourism industry and tourism supply (Stabler *et al.*, 2010: p. 58). On the other hand, Dwyer and Forsyth (1994) and Zhang and Jensen (2007) studied international tourism flows in the supply side. Every country realises that development in tourism infrastructure supports service sector expansion. Therefore, tourism supply plays a major role in tourism market development.

Tourism demand models and estimation rely heavily on secondary data and can be divided broadly into two categories: non-causal time series models and causal econometric approaches (Lee & Chang, 2008). In particular, the ordinary least square (OLS) method has been widely used in estimation. However, estimation by OLS that is based on non-static data can lead to the serious problem of spurious regression. On the other hand, many studies in the 2000s such as Narayan (2002) and Choyakh (2009) considered the co-integration methodology.

There have been few studies on tourism demand in the GMS. The studies focused on Thailand (Chiboonsri *et al.*, 2010; Kripornsak, 2011) and Lao PDR (Phakdisoth & Kim, 2007) but not on other GMS countries. Furthermore, previous studies examined tourism demand in various countries but did not examine tourism supply. The expansion of the international tourism market is affected by both supply and demand factors. Moreover, study of the international tourism market as a whole region has never been conducted. Hence, this paper aims to fill the gap by examiming supply and demand in the international tourism market in the GMS as one market by employing the panel data approach.

This study involves the analysis of factors affecting the international tourism market in the GMS to determine the relationships between international tourism supply and demand with some economic variables. The findings will be useful for policy decision-making in tourism marketing and development.

While the GMS consists of seven markets (five countries and two provinces of China), the scope of this paper concentrates only on five countries (Thailand, Lao PDR, Myanmar, Cambodia and Vietnam) because China is one of the major source countries whose people visits the GMS, and the five countries in the GMS collected tourist data from China without separating them into provinces. Therefore, this paper does not include Yunnan and Guangxi. The next

section describes the tourism development programme in the GMS; section 3 describes the data and methodology; section 4 presents the empirical results and section 5 concludes the paper.

TOURISM DEVELOPMENT PROGRAMME IN THE GMS

Economic development programme in the GMS aims to promote sustainable economic growth and development among the GMS countries by strengthening socio-economic cooperation with 11 flagship programmes (UN-ESCAP, 2008). The GMS tourism development programme is one of the 11 flagship programmes. It is a cooperation in tourism that aims to develop and promote the "Mekong as a single destination". GMS tourism development was introduced in 1992 by the member countries with the assistance of the Asian Development Bank (ADB). It focuses on economic integration in the tourism sector among the GMS countries. The six countries entered into a programme of economic integration designed to enhance economic cooperation among the countries.

The idea of the GMS as a single tourism destination means treating the international tourism markets in the GMS countries as one market. The aim of a single tourism destination is to sustain and deepen economic cooperation and integration among the GMS countries in order to face developmental challenges together and realise the common vision of an integrated, harmonious and prosperous sub-region (Greater Mekong Sub-Region Organisation, 2012).

Since 1993, the GMS's tourism economic cooperation has been coordinated by the Tourism Working Group formed by representatives of the national tourism organisations with the Agency for Coordinating Mekong Tourism Activities (AMTA) as its secretariat. The Mekong Tourism Coordination Office (MTCO), formerly known as AMTA, provides a sustained organisational capacity to address tourism issues at the sub-regional level. It is also supporting the region as a single tourism destination by promoting "Mekong Brand Tourism" (Asian Development Bank, 2005a). The "Mekong Brand" is to show incomparable beauty, diversity and spirit and bring to people a better quality of life and to increase the popularity of the gateways and tourist hubs to link the region into priority tourist zones (Asian Development Bank, 2006).

In addition, a tourism development strategy was launched in 2005. There are seven core programmes as listed in Table 3. Although the GMS countries are poor in terms of infrastructure and lack of investment, members are developing many development projects, offering many tourism products and launching many tourism strategies to promote their international tourism market.

DATA AND THE ECONOMETRIC MODEL

Data

Generally, the characteristics of the international tourism market have not been directly defined. However, in the tradition of economics, supply and demand for a commodity is the way to discuss market equilibrium (Tribe, 1995, pp. 125-127). Therefore, the basic economics theory of demand and supply can be applied to the international tourism market as well. The international tourism market comprises international tourism supply and demand.

The data of this study were derived from five GMS countries i.e. Thailand, Myanmar, Vietnam, Lao PDR, Cambodia while the four major source countries comprised Japan, Malaysia, Korea and China. The data were annual data. The sample period was from 2000 to 2011. The details of variables and data sources are as follows:

Supply. International tourism supply. Tourism supply is a composite product involving transport, accommodation, catering, natural resources, entertainment and other facilities and services, such as shops and banks, travel agents and tour operators (Sinclair & Stabler, 1997: p.58). Both theoretical and empirical research on the supply side of tourism markets is scant (Crouch, 1994).

Generally, in the empirical tourism literature, supply is assumed to be perfectly elastic (Bonhem *et al.*, 2009). Therefore, Qu *et al.* (2002); Tsai *et al.* (2006) and Bonhem *et al.* (2009) estimated the supply elasticity of hotel services to tourism supply. However, international tourism supply or the capacity for international tourists should focus on commodities as products because commodities fit the concept of the supply-side definition of Smith (1988a). Therefore, the quantity data of tourism supply can be based on the number of airline seats available for analysis because it is a tourism product commodity (Smith, 1998b, pp. 31-52). The expansion of transport passenger capacity is directly related to tourism because Prideaux (2000) found that the transport system plays a role in the tourist destination. Moreover, Albaltae and Bel (2010) confirmed that tourism is an enhancing factor in urban public transport supply.

In this paper, we focus on the number of airline seats available because air transportation services represent one of the important components of visitor expenditure in the GMS whereas the number of passengers by road and water transportation is difficult to be measured. It is possible to obtain reliable data on the capacity of passenger air carriers. Hence, the number of airline seats available is used to indicate the supply of tourism with data being provided by the World Bank.

Tourism price. According to most empirical tourism literature, supply is assumed to be perfectly elastic. Tsai *et al.* (2006) and Bonham *et al.* (2009) estimated the supply and demand elasticity of the accommodation market by using hotel room prices. Tsai (2006) and Bonham *et al.* (2009) used a simultaneous framework in

the analysis. They employed the price of hotel rooms as a factor to determine tourism supply. They found that room pricing had a relationship with visitor accommodation. Hence, tourism price was an important factor of tourism supply.

Regarding the tourism price variable, Witt and Martin (1987) used relative prices by employing the consumer price index (CPI) as a proxy of the cost of travel to the destination and the cost of living for tourists at the destination, adjusted by the exchange rate. This approach was supported by Crouch (1994) and Morley (1994). Therefore, the use of CPI is widely justified on the grounds of international tourism demand factors. However, Zhang and Jensen (2007) also used tourism price in determining the international tourism supply. This paper proxied the tourism price by using CPI adjusted by the nominal exchange rate (ER). The tourism price (*RP*) was then given by

$$RP_{it} = \frac{CPI_{At}}{CPI_{it}} ER_{iAt} \quad (1)$$

where CPI_{it} is the consumer price index of the country i (i = 1,2,...,4; Japan, Malaysia, China and Korea), CPI_{At} is the consumer price index of the country A in GMS (A = Cambodia, Lao PDR, Myanmar, Thailand and Vietnam), ER_{iA} is the ratio of the nominal exchange rate of country i to nominal exchange rate of country A and t is the time factor. CPI was collected from the World Bank and the nominal exchange rate was provided by the International Monetary Fund (IMF).

Capital investment in the tourism sector. Many countries have invested in hotel facilities and tourism infrastructure to support tourism sector expansion. Better and more hotels, restaurants, airports, roads, transportation etc. will attract more tourists to the country. Hence, investment is an important factor contributing to tourism supply especially for the GMS countries, where exiting tourism facilities cannot meet the requirements of tourism demand. Dwyer and Forsyth (1994) found that foreign investment in tourism plays a positive role in attracting international tourism flows and expenditure to the destination countries.

Nevertheless, the capital investment factor seems to be suitably measured by capital investment in the tourism sector and consists of both domestic and foreign capital investments in the tourism sector rather than foreign investment in tourism. In addition, capital investment in the tourism sector has not been used in international tourism supply research. Therefore, capital investment in the tourism sector is employed as one of the factors in the international supply model to analyse the international tourism market in this research. The data are drawn from the World Tourism Council.

Trade openness. Zhang and Jensen (2007) offered the trade openness variable to estimate international tourism flows in the supply side following international trade flow theory. The increasing quantity of tourism business, particularly in destinations where the economy is greatly driven by international business such as

Thailand, could be determined by business activity at the destination and its economic partners. Trade openness is measured as total exports plus total imports divided by the country's GDP. Zhang and Jensen (2007) found that trade openness is positive and is a significant explanatory variable on tourism supply. Total exports, total imports and GDP data in each GMS country are provided by the World Bank.

Demand. International tourism demand. The number of international tourist arrivals is employed as the quantity of international tourism demand. The numbers of international tourist arrivals are collected from the Ministry of Tourism of Cambodia, the Lao National Tourism Administration, the Ministry of Hotels and Tourism of Myanmar, the Ministry of Tourism and Sports of Thailand and the Vietnam National Administration of Tourism of Vietnam.

Tourism price. The tourism price of demand factor is used, and is similar to the tourism price of international tourism supply.

Income level. The income level is a significant factor to determine leisure spending consumption and has an important place in the domestic budget. There are many studies which have confirmed that the income factor is related to tourism demand, such as Narayan (2002) who estimated the demand for tourism in Fiji. Ouerfelli (2008) and Choyakh (2009) investigated tourism demand of European tourists in Tunisia. The results showed that the income of tourists in their home countries is positively related to international tourist demand.

Kripornsak (2011) found that the income elasticity of demand for tourism is positive and affects international tourism demand in Thailand for all 10 major tourist origins. It is elastic for rich countries and inelastic for neighbouring countries. Moreover, Chaiboonsri *et al.* (2010) reported that faster income growth for tourists from Malaysia, Japan, Korea, China, Singapore and Taiwan has a positive impact on international tourist arrivals to Thailand. Hence, the income of international tourists is used to explain and determine tourism demand functions.

Generally, the income factor is used as the main factor that affects international tourism demand. This factor is suitably measured by the disposable income level. However, due to data unavailability, real GDP per capita is used to measure the income variable in this study. Data are collected from the World Bank.

Substitute tourism price. Many research studies employed substitute tourism price as a factor in tourism demand. Choyakh (2009) found that substitute tourism price had a negative relationship with international tourist arrivals in Tunisia. Kripornsak (2011) found a significant impact of substitute tourism prices between Thailand and Malaysia and Thailand and Singapore for 10 tourist origins. It was found that Malaysia and Singapore can be either competitive or complementary destinations for the international tourists of Thailand.

For the international tourism market in the GMS, Thailand and Vietnam are two major destinations for international tourists. Therefore, Thailand is selected as the main competitor to the other GMS countries, while Vietnam is the main competitor to Thailand. A proxy for substitute tourism price in these two countries was used, which is the CPI of Thailand and Vietnam, adjusted by nominal exchange rate. The substitute tourism price was as follows:

$$SP_{it} = \frac{CPI_{St}}{CPI_{it}} ER_{iSt} \quad (2)$$

where i is source countries i, CPI_{St} is the consumer price index of country S (S = Thailand, Vietnam), CPI_{it} is the consumer price index of the source countries i (home country), t is the time factor and ER_{iSt} is the ratio of the nominal exchange rate of country i to nominal exchange rate of country S.

For example, the substitute tourism price of Japan when Japanese tourists visit Cambodia (Thailand is a competitor of Cambodia) was calculated as

$$SP_{Japan} = \frac{CPI_{Thailand}}{CPI_{Japan}} x \frac{Japanese Yen/USD}{Thai\ Bath/USD} \quad (3)$$

The sources of these data were similar to the tourism price.

Non-economic factors. There are many non–economic and qualitative factors that may influence the demand for international tourism, such as external shocks, marketing policy, political instability and other variables that depend on the knowledge of tourists. Zhang *et al.* (2009) used dummy variables for the Asian financial crisis, special promotional campaigns, severe acute respiratory syndrome (SARS) and 'tsunami' to estimate a travel demand model in Thailand. The results showed that the travel demand of international tourists to Thailand could be explained by the Asian financial crisis and SARS. Moreover, Kuo *et al.* (2008) investigated the impacts of infectious diseases including avian flu and SARS on international tourist arrivals in Asian countries. The empirical results indicated that SARS had a significant impact but not avian flu. This result is similar to Cheng (2012) because the number of Japanese and Taiwanese tourist arrivals to Hong Kong approximately decreased 20% and 40% during the SARS period respectively.

The Asian Development Bank (2005b) reported that the outbreak of SARS in 2003 in Asia, especially in the GMS, brought fear and uncertainty. The number of international tourists visiting the GMS decreased dramatically by about 12.4% from 2002 to 2003 (see Fig.1). Hence, SARS was an important non-economic factor that affected tourism demand in the GMS tourism market. For this reason, we use SARS as a dummy variable to determine the impact of qualitative factors in the analysis.

Econometric Model

The aim of this paper was to investigate factors that affect the international tourism

market of the four major source countries (Japan, Malaysia, China and Korea) visiting the GMS as a whole region. The model for the international tourism market in the GMS includes the relationships of international tourism demand and supply in a simultaneous equation model (SEM) with a panel data approach[1]. The international tourism market model for country A (A = Cambodia, Lao PDR, Myanmar, Thailand and Vietnam) can be written as follows:

$$LQS_{Ait} = \alpha_{1A} + \beta_1 LRP_{Ait} + \beta_2 LCP_{Ait} + \beta_3 LTP_{Ait} + u_{1Ait} \quad (4)$$

$$LQD_{Ait} = \alpha_{2A} + \beta_4 LRP_{Ait} + \beta_5 LGD_{Ait} + \beta_6 LSP_{Ait} + \beta_7 SARS_{Ait} + u_{2Ait} \quad (5)$$

$$LQS_{Ait} = LQD_{Ait} \quad (6)$$

$i = 1,\ldots 4$; $t = 1,\ldots,12$

Where

LQS_{Ait} = Natural log of number of airline seats available for country A at time t

LRP_{Ait} = Natural log of tourism price of country i in country A at time t

LCP_{Ait} = Natural log of capital investment in tourism sector in US dollars of country A at time t

LTP_{Ait} = Natural log of trade openness of country A at time t

LQD_{Ait} = Natural log of number of international tourist arrivals from country i to country A at time t

$LGDP_{Ait}$ = Natural log of gross domestic product per capita of country i in US dollars at time t (at the base year 2005)

LSP_{Ait} = Natural log of substitute tourism price of country i in country A at time t

i. For Thailand, the substitute tourism price of countries i is Vietnam

ii. For other GMS countries, the substitute tourism price of countries i is Thailand

$SARS_{Ait}$ = Dummy variable to capture the effect of *SARS*, taking the value 1 if t = 2003, 2004 and 0 otherwise

u_{1Ait} and u_{2Ait} = error components

Equation (6) presents the equilibrium of tourism supply and demand for international tourists from country i visiting the GMS. The quantity of tourism supply for tourists from country A was more than the quantity of tourism demand for tourists from country i visiting the GMS. The SEM of the international tourism market was similar to the equilibria of hotel (Qu *et al.*, 2002; Tsai, 2006) and the national outdoor recreation markets (Cordell & Bergstrom, 1991).

This paper allowed for the existence of individual effects that were potentially correlated with the right-hand side of the regression, such that

$$u_{1Ait} = \mu_{1Ai} + v_{1Ait} \quad (7)$$

$$u_{2Ait} = \mu_{2Ai} + v_{2Ait} \quad (8)$$

[1]Based on Conway and Kniesner (1994); Baltagi (2005); Koutroumpis (2009); Hsu *et al.* (2011); Huang and Xie, (2013), we used the one-way error component in this study.

Here, μ_{1Ai} and μ_{2Ai} are the unobserved country-specific effects that vary across countries in the GMS but are fixed within countries over time (μ_{1Ai} and μ_{2Ai} have no *t* subscript because they do not change over time). v_{1Ait} and v_{2Ait} are the white noise error terms. From equations (4) and (5), the expected signs for coefficients of explanatory variables are $\beta_1, \beta_2, \beta_3, \beta_5 > 0$ and $\beta_4, \beta_6, \beta_7 < 0$.

The basic approach to estimate SEM with panel data involves two steps: (1) to eliminate the unobserved effects from the equations of interest using the fixed effects transformation method or the first differencing method; (2) to find instrumental variables for the endogenous variables in the transformed equation (Wooldridge, 2003, pp. 520-521).

Because the unobserved effects (μ_{1Ai} and μ_{2Ai}) from equations (7) and (8) were potentially correlated with all explanatory variables in equations (4) and (5), the error terms (v_{1Ait} and v_{2Ait}) in equation (7) and (8) were assumed to be uncorrelated with the explanatory variables in both equations. However, the composite errors, (μ_{1Ai}+ v_{1Ait}) and (μ_{2Ai}+ v_{2Ait}) were potentially correlated with all explanatory variables. Hence, the unobserved effects from equations (7) and (8) for SEM estimation needed to be eliminated (Wooldridge, 2003: p. 448).

Generally, the fixed effect model allows the unobserved effects (μ_{1Ai} and μ_{2Ai}) to correlate with the explanatory variables whereas the random effect model assumes that the unobserved effects (μ_{1Ai} and μ_{2Ai}) are randomly drawn from a larger population (Gujarati, 2002, p. 650). Moreover, if *N* (the number of cross-sectional units) is small and T (the number of time series data) is large, the parameters estimated by the fixed effect model and the random effect model are not different. Hence, the fixed effect model is preferable to the random effect model (Judge *et al.*, 1985, pp. 544-547) in the empirical studies.

In conclusion, the unobserved effects of the international tourism market model in equations (7) and (8) can be eliminated by fixed effects transformation (FE) and first differencing (FD) methods. FE and FD have different efficiency properties in the presence of serial correlation and different probability limits in the panel data model (Wooldridge, 2003, p. 448). Hence, we employed both methods as a first step to eliminate the unobserved effects. The second step was to estimate instrument variables using the Two-Stage Least Square (2SLS) method.

ESTIMATION RESULTS

Tables 3-7 report the estimation results of both the 2SLS-fixed effect transformation (FE) and the 2SLS-first differencing (FD) transformation method. The estimation results of 2SLS-FE and 2SLS-FD were different. The 2SLS-FE results were selected because (1) the *F*-statistics were statistically significant for all the equations at a 1% level of significance. (2) the $\overline{R}^2$ was higher at more than 63% and (3) the sign of the coefficients for the explanatory factors were the same as the expected sign. Thus, the fixed effect transformation estimators were more robust than the first

differencing transformation estimators. Hence, we focussed on reporting the estimation results by FE.

Table 3 shows the estimation result of the international tourism market in Cambodia. It was found that the tourism supply for international tourists was significantly and positively related to capital investment in the tourism sector. However, tourism price and trade openness were not statistically significant. Moreover, the tourism demand of international tourists visiting Cambodia was significantly negatively related to tourism price and positively related to income and substitute tourism price. In contrast, SARS was not statistically significant.

TABLE 3
Estimation Result of the International Tourism Market in Cambodia

Variable	Fixed effects (2SLS)	First difference (2SLS)
Cambodia tourism supply for international tourists: Dependent variable = *LQS*		
Constant	3.7527***	0.0276
	(2.8958)	(1.218)
LRP	0.1385	-0.1160
	(0.4148)	(-0.3106)
LCP	0.4234***	0.0447
	(6.0057)	(0.1824)
LTP	0.5734	1.3155**
	(1.1477)	(2.5837)
R^2	0.7481	0.2125
F-statistics	21.25 ***	2.8993**
Durbin-Watson	1.7085	2.5865
Tourism demand of international tourists to Cambodia: Dependent variable = *LQD*		
Constant	-22.2289***	0.1093
	(-2.8186)	(1.5800)
LRP	-10.0282***	-12.6537
	(-3.2075)	(-1.5551)
LGDP	2.0251***	-2.2931
	(8.2089)	(-0.6379)
LSP	9.8875***	12.6374
	(2.9418)	(1.5121)
SARS	-0.0807	0.1027
	(-0.6679)	(0.9136)
R^2	0.8288	-1.6308
F-statistics	31.7217***	2.3806
Durbin-Watson	1.4538	2.3120

Note: t-statistics are in parentheses. *** and ** denote significant at 1 and 5 percent levels respectively.

TABLE 4
Estimation Result of International Tourism Market in Lao PDR

Variable	Fixed effects (2SLS)	First difference (2SLS)
Lao PDR tourism supply for international tourists: Dependent variable = *LQS*		
Constant	6.1770***	-0.0077
	(9.3757)	(-0.3500)
LRP	-0.2978	-0.4769
	(-1.5111)	(-1.9926)
LCP	0.4058***	0.5110***
	(9.3471)	(2.7199)
LTP	1.6994***	1.9367***
	(8.2239)	(6.6634)
R^2	0.9121	0.5606
F-statistics	70.1151***	16.5234***
Durbin-Watson	1.70644	2.7523
Tourism demand of international tourists to Lao PDR: Dependent variable = *LQD*		
Constant	16.8004***	0.0515
	(3.3353)	(1.3412)
LRP	5.7266***	-3.5668
	(5.9632)	(-1.3350)
LGDP	0.9826***	1.2540
	(3.3497)	(1.1183)
LSP	-6.1444**	3.5726
	(-4.8842)	(1.3970)
SARS	-0.0075	-0.1241**
	(-0.1519)	(-2.3170)
R^2	0.9521	0.1570
F-statistics	106.0620***	4.5565
Durbin-Watson	1.4934	1.7031

Note: t-statistics are in parentheses. *** and ** denote significant at 1 and 5 percent levels respectively.

With regard to the estimation results for the Lao PDR tourism market, Table 4 shows the tourism supply for international tourists was significantly positively related to capital investment in the tourism sector and trade openness. However, tourism price was not statistically significant. It is surprising that tourism price was positively related to the tourism demand of international tourists visiting Lao PDR, which infers that the tourism product in Lao PDR was not a normal good for international tourists. This finding is similar to Narayan's (2002); he found that tourism price has a positive relationship with demand for international tourism in Fiji. Moreover, income was also positively related to tourism demand, which was consistent with other countries. In contrast, tourism demand was negatively related to substitute tourism price but SARS was not statistically significant.

TABLE 5
Estimation Result of International Tourism Market in Myanmar

Variable	Fixed effects (2SLS)	First difference (2SLS)
Myanmar tourism supply for international tourists: Dependent variable = *LQS*		
Constant	4.0930 (1.7407)	-0.0112 (-0.2337)
LRP	0.5269 (1.3731)	0.4484*** (3.1588)
LCP	-0.8415*** (-2.9751)	-0.5053 (-1.0627)
LTP	-2.8861*** (-2.4042)	-2.7808** (-2.0483)
R^2	0.5814	0.3878
F-statistics Durbin-Watson	7.1926 2.7016	7.7087*** 2.6317
Tourism demand of international tourists to Myanmar: Dependent variable = *LQD*		
Constant	-0.8659 (-0.5229)	0.0880 (1.2749)
LRP	-0.2496** (-2.6090)	-1.2315 (-1.2340)
LGDP	1.8037*** (14.4179)	1.2118*** (2.9283)
LSP	-0.0418 (-0.3124)	0.6620 (0.6398)
SARS	-0.0098 (-0.3124)	0.1104 (1.0594)
R^2	0.9315	0.3162
F-statistics Durbin-Watson	80.5303*** 0.9649	4.6097*** 2.0130

*Note: t-statistics are in parentheses. *** and ** denote significant at 1 and 5 percent levels respectively.*

TABLE 6
Estimation Result of International Tourism Market in Thailand

Variable	Fixed effects (2SLS)	First difference (2SLS)
Thailand tourism supply for international tourists: Dependent variable = *LQS*		
Constant	6.5311*** (14.2244)	0.0069 (0.6654)
LRP	0.0580 (0.7023)	-0.0045 (-0.1664)
LCP	0.0960*** (2.9464)	-0.0024 (-0.0193)
LTP	0.3414** (2.9464)	0.1112 (0.3793)
R^2	0.6341	0.0138
F-statistics Durbin-Watson	11.3726*** 3.0124	0.2126 3.5679
Tourism demand of international tourists to Thailand: Dependent variable = *LQD*		
Constant	-4.5732 (-0.9749)	0.0133 (0.3153)
LRP	3.3156*** (2.0701)	5.2820 (0.4626)
LGDP	0.6048*** (3.1830)	0.4604 (0.3608)
LSP	-3.4266** (-2.4907)	-4.8389 (-0.4874)
SARS	-0.0249 (-0.7491)	-0.0039 (-0.0459)
R^2	0.7653	-0.1326
F-statistics Durbin-Watson	26.5178 1.1757	1.7044 1.7037

*Note: t-statistics are in parentheses. *** and ** denote significant at 1 and 5 percent levels respectively.*

The estimation result of the international tourism market in Myanmar is reported in Table 5. It shows that the tourism supply for international tourists was significantly negatively related to capital investment in the tourism sector and trade openness. However, tourism price was not statistically significant. On the other hand, the demand of international tourists visiting Myanmar was negatively related to tourism price and positively related to income. In contrast, substitute tourism price and SARS was not statistically significant.

TABLE 7
Estimation Result of International Tourist Market in Vietnam

Variable	Fixed effects (2SLS)	First difference (2SLS)
Vietnam tourism supply for international tourists: Dependent variable = *LQS*		
Constant	3.9437*** (8.1092)	0.0531*** (9.8715)
LRP	0.3472*** (3.4050)	-0.0041 (-0.1022)
LCP	0.5193*** (2.7304)	0.1545 (1.9375)
LTP	0.0029 (0.0027)	-0.2545 (-0.9690)
R^2	0.8488	0.6514
F-statistics	37.6123***	24.9061***
Durbin-Watson	0.8818	2.4686
Tourism demand of international tourists to Vietnam: Dependent variable = *LQD*		
Constant	-10.6319** (-2.1741)	0.0849*** (3.0480)
LRP	-4.0833** (-2.3666)	-2.7412** (-2.6003)
LGDP	0.8679*** (7.1344)	-0.7068 (-0.8609)
LSP	4.4216** (2.4796)	2.2653 (2.0112)
SARS	-0.0557 (-0.8368)	0.0012 (0.0283)
R^2	0.8620	0.1337
F-statistics	29.8423***	3.1795**
Durbin-Watson	1.0791	1.7289

Note: t-statistics are in parentheses. *** and ** denote significant at 1 and 5 percent levels respectively.

Table 6 shows that the tourism supply for international tourists in Thailand is significantly positively related to capital investment in the tourism sector and trade openness. However, tourism price is not statistically significant. With regard to the estimation result of international tourism demand in Thailand, tourism price was positively related to the tourism demand of international tourists visiting Thailand. Therefore, the tourism product in Thailand was not a normal good for international tourists. Moreover, income was also positively related to tourism demand, which is consistent with the other countries. In contrast, tourism demand was negatively related to substitute tourism price and SARS was not statistically significant.

The supply to international tourists in Vietnam is positively related to tourism price and capital investment in the tourism sector. However, trade openness in the model is not statistically significant. Furthermore, the demand of international tourists visiting Vietnam is negatively related to tourism price and positively related to income. In addition, tourism demand is negatively related to substitute tourism price but SARS is not statistically significant (see Table 7).

In summary, for tourism supply, capital investment in the tourism sector has a significant positive effect in all GMS countries except Myanmar. Trade openness has a significant positive effect for Lao PDR and Thailand while it is negatively related to the tourism supply of Myanmar. Tourism price is positively related to tourism supply in Vietnam. On the other hand, income has a significant positive effect for all GMS countries in terms of tourism demand. Tourism price is negatively related to international tourism demand in Cambodia and Vietnam, but is the reverse for international tourists in Lao PDR and Thailand. Substitute tourism price has a negative relationship in Thailand but has positive relationship for Cambodia, Lao PDR and Vietnam. Moreover, SARS is not statistically significant.

CONCLUSION AND POLICY IMPLICATIONS

This paper investigates the factors that affect the international tourism market in each GMS country and as a whole region. A SEM with panel data was employed to analyse international tourism demand and supply of its four major source countries. The main findings of this study are as follows.

First, for the international tourism supply of the GMS, capital investment in the tourism sector has a significant positive effect in all GMS countries except Myanmar. This could be due to the capital investment in the tourism sector in Myanmar being greater than air transportation expansion. Moreover, trade openness is positively related to Lao PDR and Thailand while it is negatively related to Myanmar. This infers that trade openness in Myanmar is gradually expanding but is not enough for the air transportation capacity in the country. The tourism price factor of tourism supply is only positively related in Vietnam. This result is consistent with Zhang and Jensen (2007) who found that tourism price has a positive relationship with international tourism flows in the supply side for OECD countries.

Second, consistent with previous studies (Chaiboonsri *et al.*, 2010; Kripornsak, 2011), income in the country of origin offers a robust explanation for tourism demand. This means that tourism products are normal goods because tourism demand increases less than proportionally as income level rises (Bull, 1991, pp. 36-37). Therefore, this paper confirms that the tourism product in the GMS is a normal good because the income level factor is positively related to international tourism demand, and the income elasticity of all

countries in GMS is less than 1% except in Myanmar because the income elasticity of Myanmar is positively related to international tourism demand by more than 1.8%. This means that the tourism product in Myanmar is a luxury good.

Third, international tourism demand in Cambodia and Vietnam is negatively related to the tourism price factor, which is consistent with demand theory. However, we found a reverse situation for international tourists in Lao PDR and Thailand. This infers that high tourism prices are not likely to discourage international tourists from visiting Lao PDR and Thailand because international tourists normally book their travel in advance. Hence, they cannot control their tourism expenditure during the tourism period. Nevertheless, this result is consistent with Narayan (2002) who found that tourism price has a positive relationship with demand for international tourism in Fiji.

Moreover, international tourism demand in Cambodia, Lao PDR and Vietnam is positively related to the substitute tourism price factor. However, it has a negative relationship in Thailand. Therefore, we can conclude that Thailand is a competitor for international tourists visiting Lao PDR, Cambodia and Vietnam. In contrast, Vietnam is a complementary destination for international tourists because international tourism demand in Thailand is negatively related to the substitute tourism price factor. In addition, SARS is not a significant factor in this analysis.

For policy implications, capital investment is a common determinant for international tourism supply and remains important for enriching the tourism sector in GMS countries, the countries should offer tourists a unique experience by presenting nature tourism, ecotourism, rural tourism and so on; such tourism development may not require huge capital investment. Income level is an important factor for international tourism demand in the GMS. GMS countries should focus on attracting higher income groups to direct their tourism markets towards a sustainable single tourism market. On the other hand, GMS countries should increase their competitiveness on tourism, the possibility of ‘’neighbourhood effects” can also be explored. For example, visitors to Thailand could also visit neighbouring countries like Myanmar, Laos and Cambodia in the same package tour and as a result, competition could turn into cooperation through positive spill-over effects. These steps would enhance cooperation in the tourism sector among GMS countries in order to achieve the facilitation of intra-GMS travel and to support the GMS countries as complementary markets in a single market.

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