INTERNATIONAL TOURISM DEMAND IN THE GREATER MEKONG SUB-REGION: A PANEL GRANGER CAUSALITY APPROACH

by

Sakkarin Nonthapot
Khon Kaen University, Nong Khai Campus, Thailand
E-mail: saknon@nkc.kku.ac.th

and

Nattanin Ueasin
Khon Kaen University, Nong Khai Campus, Thailand
E-mail: nattanin.u@nkc.kku.ac.th

UTCC International Journal of Business and Economics IJBE

INTERNATIONAL TOURISM DEMAND IN THE GREATER MEKONG SUB-REGION: A PANEL GRANGER CAUSALITY APPROACH

by

Sakkarin Nonthapot
Khon Kaen University, Nong Khai Campus, Thailand
E-mail: saknon@nkc.kku.ac.th

and

Nattanin Ueasin
Khon Kaen University, Nong Khai Campus, Thailand
E-mail: nattanin.u@nkc.kku.ac.th

Abstract

This paper aims to examine the causal relationships among international tourists, tourism price, tourist income and substitute tourism price using panel data from five Greater Mekong Sub-region (GMS) countries (i.e. Myanmar, Cambodia, Lao PDR, Thailand and Vietnam) and their four major source markets (i.e. Japan, Malaysia, China and Korea) which provide 13 observations of annual data during 2000 - 2012. This study finds a long-run relationship among the economics factors and number of Japanese and Korean tourists. The short-run causality is unidirectional running from tourism price to the international tourists from Malaysia, Korea and China; from the tourist income to the number of Malaysian and Chinese tourists; from the substitute tourism price to the number of Malaysian and Korean tourists. The Chinese and Malaysian tourists are sensitive to both tourism prices and income. We suggest that GMS can target the higher-income group from these two source markets and maintain tourism price competitiveness for sustaining the international tourism demand in the short-run. Meanwhile, in the long-run, we suggest making GMS countries as the complementary tourism destination especially for Japanese and Korean tourists by offering them GMS common visa, GMS package tours and expansion of regional flights.

Keywords: Tourism demand, Panel causality, Panel cointegration, GMS

JEL Classification: F2, F5

1. Introduction

Tourism has an important role in the Greater Mekong Sub-region (GMS)'s economic development because the economic cooperation of the sub-region and the tourism development project was established in 1992 with support from the Asian Development Bank (ADB). The aim of the project is to support the cooperation and integration of tourism development in the region. Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, Cambodia and Vietnam entered into a program of sub-regional economic integration program that designed to promote tourism in GMS as a single market referred as "Mekong Brand Tourism" (Asian Development Bank, 2005).

In the GMS tourism sector, tourism contributed an average of more than 10% to employment during the period of 2000 - 2011. In particular, tourism contributed 22% and 15% to Cambodia and Lao PDR's employment in 2011, respectively. In addition, the average tourism contribution to employment in the entire region was about 12% in 2011 and has increased since 2000 (Table 1). Therefore, tourism's contribution is important for employment in the GMS.

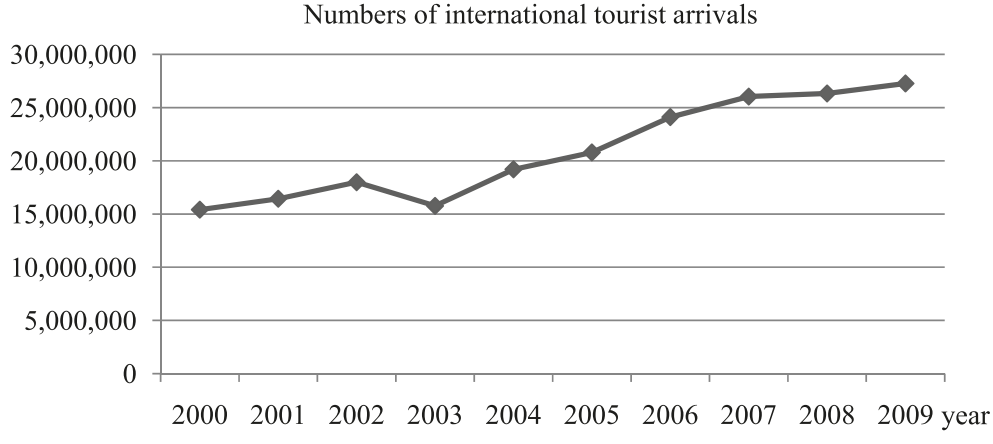
Table 1 Tourism as a Percentage of Contribution to Employment 2000 - 2011

Countries	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cambodia	13.3	16	18	15.2	19.9	21.7	20.8	21.3	19.7	19.6	19.8	22.3
Lao PDR	10.8	11.2	10.9	10.3	10.8	11.1	10.9	11.7	12.7	13.3	15.2	14.9
Myanmar	4.6	4.7	4.9	3.6	3.8	3.9	3.6	3.6	3.3	2.9	2.6	2.5
Thailand	13.3	13.6	14.2	13.3	14.2	12.6	13.5	13.4	13.7	13	11.2	11.3
Vietnam	8.6	8.9	9.3	8.3	9.6	10.2	12.3	8.9	10.7	8.4	8.3	8.3
Average	10.1	10.9	11.5	10.1	11.7	11.9	12.2	11.8	12	11.4	11.4	11.9

Note: Not including China
Source: World Travel and Tourism Council (2013)

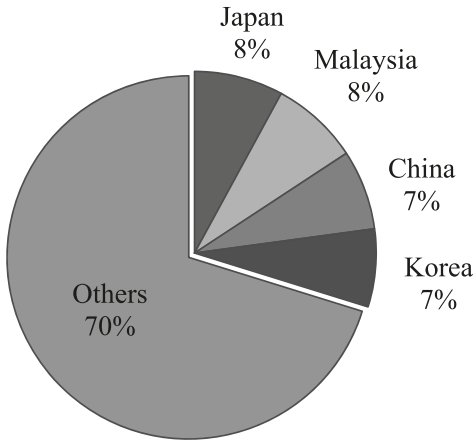
For international tourism in the GMS, the Mekong Tourism Coordinating Office (2012) reported that international tourist arrivals to GMS have gradually increased. The number of international tourist arrivals to the GMS countries has also risen over the years, from 15.4 million people in 2000 to 27.3 million people in 2009 (Figure 1). The international tourist arrivals to the GMS decreased in 2003 due to the outbreak of severe acute respiratory syndrome (SARS). Moreover, the Mekong Tourism Coordinating Office (2008) reported that Japan has the most international tourists visiting GMS at eight percent of the total. Meanwhile, other countries that are recognized as origins of major international tourist arrivals are Malaysia, China and Korea. The top four source countries contributed 30 percent of the GMS visitors. The remaining 70 percent of the GMS international tourists was widely distributed throughout a variety of other source markets (Figure 2).

Figure 1 Total Number of International Tourist Arrivals to GMS 2000-2009



Source: Mekong Tourism Coordinating Office (2012)

Figure 2 Top Four Source Markets of International Tourist Arrivals to GMS in 2006



Source: Mekong Tourism Coordinating Office (2008)

Generally, demand indicators are easily available and simple to use in terms of comparability and homogeneity. Tourism demand measures are often used to demonstrate that one region is more attractive than others because it receives more visitors, generates more tourism receipts, or encourages visitors to stay longer (Stabler et al., 2010, p.58). In addition, international tourists choose a combination of different types of tourism product. Due to Stabler et al. (2010, p.58) can refer that the tourists can visit other tourism markets in the GMS and tourism price, the income of international tourists and substitute tourism price are important factors for international tourists when deciding whether to visit the GMS. Therefore, this study examines the factors that affect international tourists demand.

The demand of international tourists in the GMS is increasing (Mekong Tourism Coordinating Office, 2012). However, the causal relationships between some important factors for the international tourism demand of the GMS as a whole region have not been empirically tested. Therefore, it is necessary to bridge the research gap and create a better understanding of the causal links in order to shed some light on policy recommendations. This study also aims to examine the causal relationships among international tourists, tourism price, tourist income and substitute tourism price.

Although the GMS consists of seven markets (five countries and two provinces of China), the scope of this paper only concentrates on five countries i.e. Thailand, Lao PDR, Myanmar, Cambodia and Vietnam because China is one of the top four visitors to the GMS. Furthermore, the five GMS countries treat China as a whole country without separating the tourists into provinces. In addition, the data on international tourists for Yunnan and Guangxi provinces are not available. The next section of the paper reviews the relevant literature; section 3 describes the data and methodology, section 4 presents the empirical results and section 5 concludes.

2. Literature Reviews

International tourists prefer a combination of different types of tourism. For example, a tourist could spend all of his/her tourism budget on visiting a tourism market; the optimal position depends upon the budget for expenses, or the income of tourists, the tourism price, and the substitute tourism price. Therefore, these economic factors reflect different types of tourism

market that follows the tourism demand (Stabler et al., 2010, p.58). Thus, the research has focused on the literature on causal relationships between international tourism demand with tourism price, tourist income and substitute tourism price.

According to Phakdisoth and Kim (2007) using the applied international tourism demand to Lao PDR found that income was not a significant factor. This finding concludes that international tourism in Lao PDR is not a luxury good. In contrast, Nonthapot and Lean (2013) found the tourism demand was consistent with many studies because the the tourism product is a luxury good in Lao PDR.

On the other hand, there have been many studies that have investigated the causal relationship between tourism and growth. The study of tourism development and economic growth utilizes traditional sources, using estimation methods that are based on investigating the casual relationship between tourism and growth. The studies of tourism development and economic growth always find the impact of tourism on long-run economic growth by using Engle and Granger causality tests based on error correction models as well as international tourism receipts and economic growth supporting both tourism and economic growth, for example, Oh (2005), Lee and Chang (2008).

Moreover, in the GMS area, Chancharat and Chancharat (2010) investigated the co-movements and casual relationships among real GDP, tourism development and the real exchange rate in Thailand. The result is consistent with the previous study because there was found to be no cointegration between tourism development and economic growth. In contrast, the tourism in Thailand was found that it enhance to economic growth sustainability due to the economic growth was affected by the number of international tourist arrivals (Nonthapot, 2013).

As mentioned above, the empirical data of some previous studies are focused on casual relationships between tourism and economic development in the GMS. They also focus on the main country or regional analysis based on time series and panel data. However, there is a lack of research on the causal relationship between international tourism demand with tourism price, tourist income and substitute tourism price. In particular, the panel causality testing for international tourism demand in the GMS as a whole region is missing in the literature.

3. Data and Methodology

3.1 Data

The data of this research are derived from the GMS countries (Lao PDR, Thailand, Myanmar, Vietnam, Cambodia). Japan, Malaysia, Korea and China are selected as major sources of international tourists for the GMS. It comprises data from 2000 to 2012 which provide 13 observations of annual data. The details of the variables are as follows:

3.1.1 International tourist arrivals: *QD*

The number of international tourist arrivals is employed as the quantity of international tourism demand. This data are collected from the Ministry of Tourism of Cambodia, the Lao National Tourism Administration, the Ministry of Hotels and Tourism of Myanmar, the Tourism and Sports Ministry of Thailand and the Vietnam National Administration of Tourism for the respective countries.

3.1.2 Tourism price: *RP*

The price variable follows the law of demand. However, the tourism price is difficult to measure because this factor should include tourist's living costs and travel costs to the host country. Therefore, the measure of tourism price is the consumer price index (CPI) adjusted by the nominal exchange rate (ER) (Witt and Martin, 1987; Choyakh, 2008; Sr., 2009).

$$RP_{it} = \frac{CPI_{jt}}{CPI_{it}} * \frac{ER_{it}}{ER_{jt}} \qquad (1)$$

Where CPI_{jt} is the consumer price index of country *j* in GMS, CPI_{it} is the consumer price index of the source country *i* (home country) and ER_t is ratio of exchange rate between country *i* and country *j* in US dollars. The consumer price index in each country is provided by World Bank report statistics and the exchange rate data are provided by the International Monetary Fund (IMF).

3.1.3 Tourist income: *GDP*

The income level of tourist is an important factor to determine leisure spending consumption and takes an important place in the domestic budget. Generally, the income factor is used as a factor affecting international tourism demand. This factor seems to be suitably measured by the disposable income level. However, because of the problem of data unavailability, gross domestic product (GDP) per capita is normally used to measure the tourist income variable. Therefore, this paper uses GDP per capita to denote the income level of country *i* (home country), which is collected from the World Bank.

3.1.4 Substitute tourism price: *SP*

Within the international tourism market in the GMS, Thailand and Vietnam are the two major destinations for international tourists. Hence, Thailand and Vietnam are the competitors for international tourism demand in the GMS. Thailand is the competitor for the other GMS countries while Vietnam is a competitor destination for Thailand. The substitute tourism price is computed as follows:

$$SP_{it} = \frac{CPI_{St}}{CPI_{it}} * \frac{ER_{it}}{ER_{st}} \qquad (2)$$

Where CPI_{St} is the consumer price index of country *S* (*S* = Thailand for Lao PDR, Myanmar, Cambodia and Vietnam and *S* = Vietnam for Thailand), CPI_{it} is the consumer price index of country *i* (home country) and ER_t is the ratio of exchange rate between country *i* and country *S* in US dollars. The sources of these data are the same as the tourism price.

Additionally, all data are transformed to natural logarithms before the analysis. We will conduct the panel cointegration test by using the Kao (1999) and panel Granger causality test for each source countries (China, Malaysia, Korea and Japan).

3.2 Panel Cointegration Test

This paper employs Kao (1999)'s panel cointegration test because Gutierrez (2003) showed that the result of Kao's panel test has higher power than Pedroni (1999)'s test when a small number of observations are included in a homogeneous panel. Kao (1999) used both DF and ADF tests for cointegration testing in panel. Kao's test is similar to the standard approach adopted in the Engle and Granger's 2-step procedures. The following system is the cointegrated

regressions for tourists from the source countries *A* (Japan, Malaysia, China and Korea) who are visiting each destination in the GMS.

$$\ln QD_{it} = \alpha_i + \beta x'_{it} + u_{it} \quad (3)$$

Where $i = 1,...,5$ (Cambodia, Lao PDR, Myanmar, Thailand and Vietnam), $t = 1,...,13$

$$x'_{it} = \left[\ln RP_{it}, \ln GDP_{it}, \ln SP_{it}\right] \quad (4)$$

Where α_i *a*re individual constant terms, β is slope parameter, u_{it} are stationary disturbance terms. Kao (1999) derives two types of panel cointegration test under the null hypothesis of no cointegration. The first is a Dickey-Fuller (DF) type and the second is an Augmented Dickey-Fuller (ADF) type. Both tests can be computed from:

$$\hat{u}_{it} = \rho \hat{u}_{it-1} + v_{it} \quad (5)$$

$$\hat{u}_{it} = \rho \hat{u}_{it-1} + \sum_{j=1}^{p} \varphi_j \Delta \hat{u}_{it-j} + v_{it} \quad (6)$$

Where the residuals $\hat{u}_{it}$ in equations (5) and (6) are obtained from equation (3). The following specification of null and alternative hypotheses is as follows:

$$\begin{aligned} H_0 &: \rho = 1 \\ Ha &: \rho < 1 \end{aligned} \quad (7)$$

Kao (1999) proposed four DF-type statistics. The first two statistics are assuming strict exogeneity of the regressors with respect to the errors in the equation, while the remaining two allow for the endogeneity of the regressors. Finally the DF statistics, which allow for endogeneity, and the ADF statistic involve deriving some nuisance parameters from the long-run conditional variances Ω. If the null hypothesis in equation (7) is rejected, then the variables have panel cointegration. The details of the Kao (1999) cointegration test procedure can be found in his paper.

3.3 Panel Granger Causality Tests

Next, we consider the direction of the causal links between international tourism demand (QD) from the source countries *A* (*A* = Japan, Malaysia, China and Korea) with tourism price (RP), international tourist's income (GDP) and substitute tourism price (SP). Following the demand theory, this study focuses on one direction causality only because the demand theory assumes that the international tourism demand cannot cause the economic factors. To identify the causality of each variable, the relationships are estimated using a panel-based vector error correction model (VECM) and the two-step procedure of Granger causality test by Engle and Granger (1987) with a dynamic error correction term. The panel VECM is augmented with a one period lagged error correction term which is obtained from the cointegrated model. The number of lags (*k*) is determined by Schwarts Information Criterion (SIC). The panel Granger causality model based on VECM in each source country to GMS is as follow:

$$\Delta \ln QD_{it} = \alpha_i + \sum_{k=1}^{q} \lambda_{1k} \Delta \ln QD_{it-k} + \sum_{k=1}^{q} \lambda_{2k} \Delta \ln RP_{it-k} + \sum_{k=1}^{q} \lambda_{3k} \Delta \ln GDP_{it-k} + \sum_{k=1}^{q} \lambda_{4k} \Delta \ln SP_{it-k} + \theta ECM_{it-1} + \varepsilon_{it} \quad (8)$$

Here, all variable are as previously defined, Δ denotes the first difference of variables, ECM_{it} are the estimated residuals (the error correction term) from the long-run model in equation (9), ε_{it} denotes disturbance terms, and q denotes the lag length selected. From the system, the panel Granger causality tests are examined by testing whether all the coefficients of $\Delta \ln RP_{it-k}$, $\Delta \ln GDP_{it-k}$ and $\Delta \ln SP_{it-k}$ are statistically different from zero as a group based on χ^2-tests and/or the θ (coefficient of the error correction term) is significant or not (denoting long-run causation). The coefficient of ECM_{it-1} shows how fast the system is adjusted to the long-run equilibrium level when the variables deviate from it.

In addition, the long-run relationship is estimated by ordinary least square (OLS) with a fixed effect estimation method because when the number of cross-sectional units (N) is small and the number of time series data (T) is large, the parameters estimated by the fixed effect model and random model are not different (Judege et al, 1985: pp 544-547). Hence, the fixed effect estimation method is used for the analysis.

$$\ln QD_{it} = \alpha_i + \beta \ln RP_{it} + \beta_2 \ln GDP_{it} + \beta_3 \ln SP_{it} + u_{it}, i = 1,...,4, t = 1,...,12 \quad (9)$$

$$u_{it} = \mu_i + \nu_{it} \quad (10)$$

$$ECM_{it} = \ln QD_{it} - \alpha_i - \beta_1 \ln RP_{it} - \beta_2 \ln GDP_{it} - \beta_3 \ln SP_{it} \quad (11)$$

Where μ_i is the unobserved country-specific effects that vary across countries in the GMS but are fixed within a country over time (μ_i has no *t* subscript because it does not change over time). ν_{it} is the remainder disturbance or white noise error term.

In contrast, when the series is not panel cointegrated, an unrestricted vector autoregressive (VAR) based Granger causality test is used in which all variables are placed as endogenous. The number of lags is also determined by the Schwartz Information Criterion (SIC) with a maximum lag of two (Lee & Chang, 2008). The optimal lag is selected with the lowest values of SIC. The VAR panel Granger causality model is as follows:

$$\Delta \ln QD_{it} = \alpha_i + \sum_{k=1}^{q} \lambda_{1k} \Delta \ln QD_{it-k} + \sum_{k=1}^{q} \lambda_{2k} \Delta \ln RP_{it-k} + \sum_{k=1}^{q} \lambda_{3k} \Delta \ln GDP_{it-k} + \sum_{k=1}^{q} \lambda_{4k} \Delta \ln SP_{it-k} + \varepsilon_{it} \quad (12)$$

The hypothesis of panel Granger causality test is as follows:

i. Ho: Tourism price of country A to GMS does not Granger cause international tourist arrivals from country A to GMS
   Ha: Tourism price of country A does Granger cause international tourist arrivals from country A
ii. Ho: Tourist income of country A to GMS does not Granger cause international tourist arrivals from country A to GMS
   Ha: Tourist income of country A does Grange cause international tourist arrivals from country A
iii. Ho: Substitute tourism price of country A to GMS does not Granger cause international tourist arrivals from country A to GMS
   Ha: Substitute tourism price of country *A* to GMS does Granger cause international tourist arrivals from country *A* to GMS

Taking the pairs (i), (ii) and (iii), if both the null hypothesis are rejected, it shows that there are causality nexus among number of international tourist arrivals from country *A* to GMS with tourism price, tourist income and substitute tourism price of country *A*. In contrast, there is no causal link among number of international tourist arrivals from country *A* to GMS with tourism price, tourist income and substitute tourism price of country *A* if this test cannot reject both null hypothesis of pairs (i), (ii) and (iii).

4. Empirical Results

Prior to panel cointegration test, all variables are tested with panel unit root tests by Fisher-type ADF and PP-test by Maddala and Wu (1999). The results from the panel unit root test are presented in Table 2. The Fisher-type unit root test using ADF and PP are presented by Choi Z- statistics (Choi, 2001). All variables are tested both in levels and first difference with a constant and without a trend. According to Table 2, for Japan, China and Korea, the unit root hypothesis cannot be rejected when the variables are taken in level. However, when all variables are tested with first difference, the hypothesis of non-stationary is rejected at 1% level of significance for Japan and Korea. In Malaysia, $\ln RP$ is I(0) but $\ln QD$, $\ln GDP$ and $\ln SP$ are I(1). Nevertheless, in China, the unit-root hypothesis for $\ln RP$ and $\ln GDP$ cannot be rejected at both I(0) and I(1). These results let us to conclude that the series are characterized as I(1) process for Japan and Korea. Therefore, we can implement a test for panel cointegration between all variables for Japan and Korea. However, for Malaysia and China, we directly test the VAR because variables are not stationary as the same level.

The second stage involves testing for the existence of a long-run equilibrium relationship for Japanese and Korean tourist arrivals, tourism price, tourist income and substitute tourism price. Kao's (1999) ADF test statistics are reported in Table 3. In accordance with Table 3, we find that international tourist arrivals, tourism price, tourist income and substitute tourism price are cointegrated both in Japan and Korea within the panel of five GMS countries at a lag length of 1 and 2 respectively.

Table 2 Panel Unit Root Test (Choi Z–statistics)

Countries	Variables	Fisher-type ADF test		Fisher-type PP test	
		Level	Difference	Level	Difference
Japan	$\ln QD$	-1.58	-5.27***	-1.01	-5.26***
	$\ln RP$	-0.18	-2.36***	-1.16	-1.74***
	$\ln GDP$	-0.31	-4.38***	-0.06	-4.47***
	$\ln SP$	-0.28	-2.93***	-0.21	-1.69**
Malaysia	$\ln QD$	0.19	-3.69***	-0.49	-5.04***
	$\ln RP$	-2.69***	5.25***	-4.69***	-7.80***
	$\ln GDP$	3.48	-4.77	4.71	-7.08***
	$\ln SP$	-3.69***	-5.74***	-3.89	-8.63***
China	$\ln QD$	4.32	-2.00**	4.89	-1.65**
	$\ln RP$	-0.51	-0.53	-1.26	-0.72
	$\ln GDP$	2.15	-1.29	4.25	-1.07
	$\ln SP$	-0.26	-2.11**	0.41	-2.30**
Korea	$\ln QD$	-0.12	-2.47***	-0.49	-3.01***
	$\ln RP$	-0.38	-2.11**	-0.88	-1.80**
	$\ln GDP$	1.12	-4.26***	0.13	-4.44***
	$\ln SP$	0.45	-1.58*	1.56	-1.54**

Note: ***, ** and * denote significant at 1%, 5% and 10% level of significance respectively.

Table 3 ADF Test Result of Kao (1999) Cointegration Test

Countries	t-statistics
Japan	-4.19***
Korea	-2.97***

Note: *** denotes significant at the 1% level of significance.

The existence of cointegration suggests that there must be Granger causality in at least one direction. Table 4 shows the short-run and long-run Granger causality results. The long-run causality results are unidirectional running from economics factors to the number of Japanese and Korean tourists at the 1% significant level. We find that international tourist arrivals, tourism price, tourist income and substitute tourism price are not Granger cause the demand of Japanese tourists visiting GMS in the short-run. Table 4 shows that the demand of Japanese tourists visiting GMS deviates from the equilibrium to return to the long-run equilibrium is approximately 61% and the demand of Korean tourists visiting GMS deviates from the equilibrium to return to the long-run equilibrium is approximately 23%.

Table 4 Results of Panel VECM and VAR Granger Causality Test

Countries	Independent Variables	Lag	Short Run (χ^2 - stats)	Long Run (t – stats)
			Dependent Variable ($\Delta \ln QD$)	ECM_{t-1}
Japan	$\Delta \ln RP$	1	0.26	-0.61***
	$\Delta \ln GDP$	1	0.95	
	$\Delta \ln SP$	1	0.85	
Malaysia	$\Delta \ln RP$	1	18.29***	-
	$\Delta \ln GDP$	1	6.69***	
	$\Delta \ln SP$	1	5.38**	
China	$\Delta \ln RP$	2	4.95**	-
	$\Delta \ln GDP$	2	7.33**	
	$\Delta \ln SP$	2	1.19	
Korea	$\Delta \ln RP$	1	8.41***	-0.23***
	$\Delta \ln GDP$	1	0.01	
	$\Delta \ln SP$	1	33.97***	

Note: *** and ** denote significant at the 1% and 5% level of significance respectively.

The Granger causality results in the short run are unidirectional running from tourism price to the tourism demand of Malaysian, Korean and Chinese tourists, from tourist income to the number of international tourist arrivals from Malaysia and China, from substitute tourism price to Korean and Malaysian tourists. Therefore, tourism price Granger causes the tourism demand of Malaysian, Chinese and Korean tourists; the tourist income factor Granger causes the tourism demand of Malaysian and Chinese tourists. Likewise, the substitute tourism price Granger causes the tourism demand of Korean and Malaysian tourists visiting GMS in the short-run.

4. Conclusions

We examine the cointegration and causal relationships among international tourists' demands of four major source countries visiting GMS, tourism prices, tourist income and substitute tourism prices within a panel of five GMS countries. Using panel methods to test for

unit roots, cointegration and Granger causality, we conclude that there is cointegration and long-run causality running from tourism price, international tourist's income and substitution tourism price to number of tourist arrivals from Japan and Korea.

We also conclude that the short-run causality is unidirectional running from the tourism price to the tourism demand of Malaysian, Korean and Chinese tourists; from the tourist income to the tourism demand of Malaysian and Chinese tourists; from the substitute tourism price to the tourism demand of Malaysian and Korean tourists.

The findings of this paper have important implications for tourism policy decision-making in GMS. Chinese and Malaysian tourists are sensitive to both tourism price and income in the short run. We suggest that GMS can target higher-income groups from these two source markets and maintain tourism price competitiveness to sustain the international tourism demand in GMS for the short-run. Furthermore, in the long-run, we suggest making GMS countries complementary tourism destinations especially for Japanese and Korean tourists by offering them a GMS common visa, GMS package tours and by expanding regional flights.

Because of the limitation of data, Yunnan province and the Guangxi Zhuang autonomous region are also a part of GMS but are not included in this study. For future study, data from these two provinces are required.

References

Asian Development Bank. (2005), *The Greater Mekong Subregion tourism sector strategy,* Asian Development Bank, Manila, Philippines.

Chancharat, Surachai & Chancharat, Nongnit. (2010), "Tourism development and economic growth: Evidence from Thailand", *International Journal of Applied Business and Economic Research,* Vol 8 (1): pp. 65-77.

Choi, I. (2001), "Unit root tests for panel data", *Journal of International Money and Finance*, Vol 20: pp. 249–272.

Engle, R.F. & Granger, C.J. (1987), "Cointegration and error correction: Representation, estimation and testing", *Econometrica*, Vol 55: pp. 251 -276.

Gutierrez, L. (2003), "On the power of panel cointegration tests: A monte carlo comparison", *Economics Letters*, Vol 80: pp. 105-111.

Judge, G.G. et al. (1985), *Introduction to the Theory and Practice of Econometrics*, 2nd eds, New York: John Wiley & Sons.

Kao, C. (1999), "Spurious regression and residual-based tests for cointegration in panel data", *Journal of Econometrics*, Vol 90: pp. 1-44.

Lee, C.C & Chang, C.P. (2008), "Tourism development and economic growth: A closer look at panels", *Tourism Management*, Vol 29: pp. 180-192.

Maddala, G. S. & S. Wu. (1999), "A Comparative study of unit root tests with panel data and a new simple test", *Oxford Bulletin of Economics and Statistics*, Vol 61: pp. 631-652.

Mekong Tourism Coordinating Office. (2008), *Mekong Tourism Office Marketing plan 2008-2011,* Retrieved from http://www.mekongtourism.org/docs/Mekong_Tourism_Marketing_Plan_%28Jan08%29.pdf

Mekong Tourism Coordinating office. (2012), *Tourism Statistics,* Retrieved from http://mekong tourism.org/website

Morley, C. L. (1994), "The use of CPI for tourism prices in demand modeling", *Tourism Management*, Vol 15 (5): pp. 342-346.

Nonthapot, S. (2013), "Tourism and economic growth of Thailand testing: new evidence from ARDL and rolling window Approaches", *International Journal of Applied business and economic research*, Vol 11 (2): pp. 251-260.

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

Phakdisoth, L.and Kim, D. (2007), "The determinants of inbound tourism in Laos", *Asean Economic Bulletin,* Vol 24 (2): pp. 225 -237.

Pedroni, P. (1999), "Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors", *Oxford Bulletin Economics Stat*istics, Vol 61: pp. 653-678.

Phillips, P. C .B. & Moon, H. R. (2000), *"*Nonstationary Panel Data Analysis: An Overview of Some Recent Developments", *Econometric Reviews,* Vol 19 (3): pp. 263 - 286

Stabler, M.J., Papatheororou, A. & Sinclaair, M. T. (2010), *The economics of tourism,* 2nd eds., NewYork: Routledge Press.

Witt, S. F. & Martin, C. A. (1987), "Deriving a relative price index for inclusion in international tourism demand estimation model: Comment", *Journal of Travel Research*, Vol 25 (3): pp. 33-40.

World Tourism Council. (2012), *Economic Impact Research.* Retrieved from http://www.wttc.org/research/economic-data-search-tool