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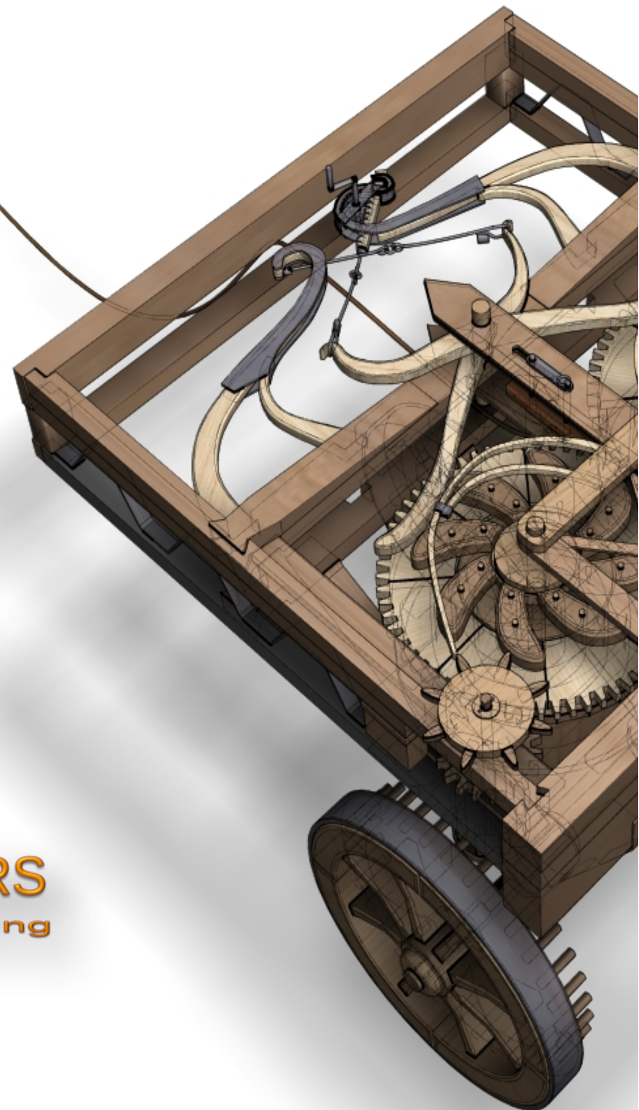

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The Effects of Financial Crises on Tourism in the Greater Mekong Sub-region: Panel ARDL Approach

Sakkarin NONTHAPOT
Indo-China Country International Trade and Economic Research Sector
Faculty of Integrated Social Sciences, Khon Kaen University, Nong Khai Campus, Thailand
sakkno@kku.ac.th

Porowes SRICHAIYO
Indo-China Country International Trade and Economic Research Sector
Faculty of Integrated Social Sciences, Khon Kaen University, Nong Khai Campus, Thailand
Porowes23397@hotmail.com

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Abstract:

This study aims to investigate the effects of financial crises on tourism revenue in the Greater Mekong Sub-region (GMS) for five countries (Cambodia Thailand Myanmar, Laos, and Vietnam). The financial crises include the 2003 financial crisis (the Federal Reserve reducing the savings interest rate), and the 2008 financial crisis (the insolvency proceedings of the Lehman Brothers). The panel dataset over the period of 1995-2015 is estimated using the Panel ARDL model with the Pool Mean Group (PMG) approach. The study indicates that the financial crises in 2003 and 2008 decreased tourism revenue in the long-run. Therefore, each GMS country should have tourism policies to handle financial crises, and preventive measures to handle financial crises should be implemented in each country.

Keywords: financial crises; tourism; greater Mekong sub-region

JEL Classification: Z3; G0; F0; F2

Introduction

The tourism industry plays a significant role in the economics of each country worldwide and all regions including the Greater Mekong Sub-region. International countries pay great attention to the tourism industry where the main national income is from tourism. If the country develops tourism to become a growing industry, it will result in economic expansion. The Greater Mekong Sub-region (GMS) has enjoyed economic cooperation since 1992 (Nonthapot 2016) and comprises six countries: Cambodia, Thailand, Myanmar, Vietnam, Laos People's Democratic Republic and People's Republic of China (Yunnan).

The attraction of tourism in the GMS affects the tourist numbers travelling to the region. Between 1995 and 2014, the number of foreign tourists who visited the tourist sites in GMS countries increased constantly. The major reason was that the countries in the GMS have a great diversity of attractions, services, culture, traditions and historical sites that attract foreign tourists. Moreover, Table 1 shows the 8 world financial crisis circumstances used

in this research, particularly the bankruptcy of Lehman Brothers, the leading international financial institution which caused a serious financial crisis that affected the world economy and tourism.

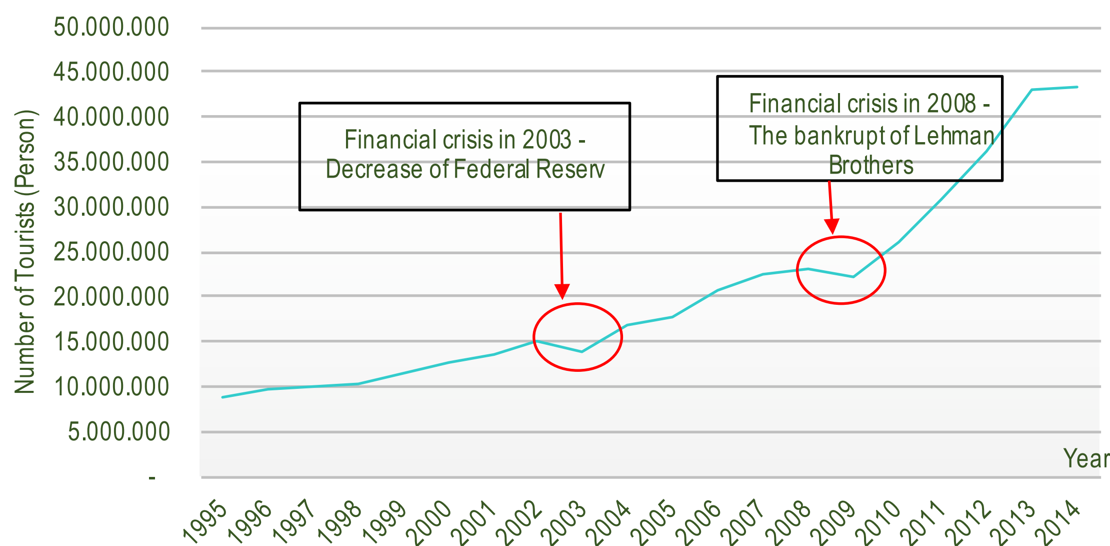
The economic crises between 2003 and 2008 caused the number of tourists travelling to the GMS countries to fluctuate although each country had the advantage of diverse tourist attractions and services, arts and culture, traditions, attractive tourist sites, nature and historical sites to attract tourists. As a result, the growth rate of tourism increased overall, but the number of tourists travelling to GMS decreased in some years. The financial crises between 2003 and 2008 affected tourism expansion in the GMS as shown in Figure 1.

Table 1. Critical circumstances resulting from the economic crises between 2003 and 2011

Month / Year	World Economic Crisis Circumstances
June 2003	Federal Reserve reduced the interest rate of the reserve fund by 1%, which was the lowest in 45 years.
January-October 2004	US - The constant high rate of house-owner at 69.2%. The largest financial flow of lenders in USA approved a large number of loans for mortgages by tricking the borrowers
February 2007	HSBC announced the reserved fund, the signal of the subprime lending problem
April 2007	New Century Financial, the largest real estate loaning company announced bankruptcy.
September 2008	The bankruptcy of Lehman Brothers, the leading international financial institution.
December 2009	Greece was in debt at 113% of GDP – almost double the limitation of the Eurozone (60%). It was the highest rate in history.
January 2010	Greece ran a budget deficit which critically resulted in the European debt crisis.
August 2011	S & P reduced USA sovereign debt and cautioned the diffusion of European debt.

Source: Pace Law Library (2012)

Figure 1. The financial crises and tourism in GMS countries between 1995 and 2014 (The World Bank, 2016)



As mentioned above, the number of foreign tourists travelling to the countries in GMS increased between 2009 and 2014 almost continuously and resulted in the growth of tourist numbers (Nonthapot, 2016). During this time, there were world financial crises as well. However, there is little research on the relationship between tourism and financial crises in each GMS country. Therefore, the study of the significance of financial crises on tourism in the Greater Mekong Sub-region is required to provide primary information for relevant agencies and interested

people in order propose guidelines for tourism promotion planning to increase the potential of the tourism industry. Suggestions can also be made on policies to increase the number of foreign tourists travelling to GMS countries in the future.

The research objective is to compare the effects of financial crises on tourism in the five countries in the Greater Mekong Sub-region: Cambodia, Thailand, Myanmar, Laos People's Democratic Republic (Lao PDR) and Vietnam in the short and long runs. The next section of the paper presents the literature review. Section 3 shows the conceptual framework. Section 4 describes the data collection and methodology. Section 5 presents the empirical results and section 6 presents the conclusions.

1. Research background

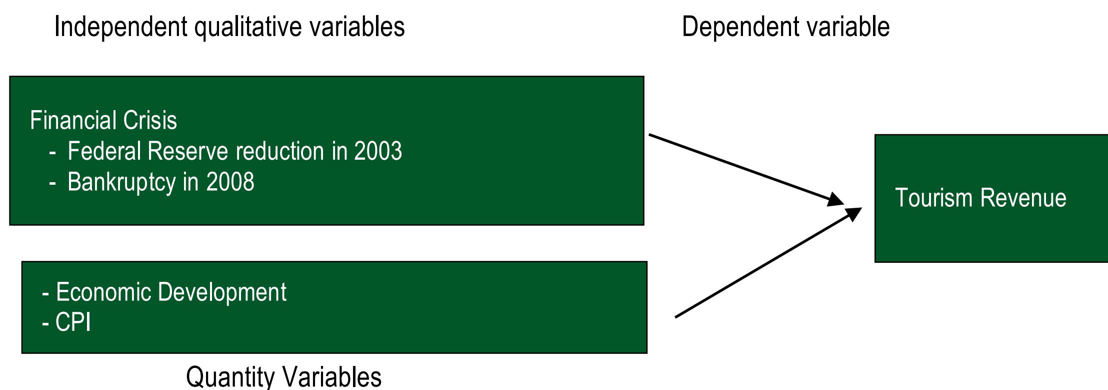
World financial crises affected tourism and the expansion of tourism (Borza 2010). Xianming Meng, *et al.* (2010) stated that economic factors can have negative effects on tourism. This is consistent with the study of Victor K. Y. Chana (2011) which reported that financial markets had negative effects on tourism. Furthermore, in the case of the Asian financial crisis, Malaysia, Singapore and Indonesia had fewer tourists during the financial crisis whereas Thailand and Philippines had no impact from the crisis (Khongrueng and Wongkhae 2014).

Generally, the study of financial crises and tourism worldwide has focused on economic development and tourism (Nonthapot 2013). Nonthapot (2014) examined the relationship between economic development and tourism by using GDP and tourism revenue from the five countries of the Greater Mekong Sub-region. The results showed that economic development is related to tourism revenue in the long-term. It was in line with the research of Maher Odeh *et al.* (2013) who applied average income to analyze the effect of tourism. Nonthapot (2016) found applying GDP as the independent variable that economic development correlated with tourism revenue directly and indirectly acted as a mediator. Junrong Liu *et al.* (2012) discovered that the Customer Price Index (CPI) was important and was related to the level of tourism in Sichuan. This was consistent with the research of Nanthakumar Loganathan *et al.* (2007) which stated that GDP and CPI were key factors affecting the number of tourists in Asian countries.

As mentioned above, there were inverse effects of financial crises on tourism. Figure 1 shows the number of foreign tourists who traveled to GMS countries between 1995 and 2014. It is clear that the number decreased in the first phase (2002-2003) which was the period that the Federal Reserve reduced the interest rate of the reserve fund of the federal government by 1%, which was the lowest rate in 45 years (Table 1). Moreover, in the second phase (2008-2009), the bankruptcy of Lehman Brothers, the leading international financial institution (Table 1) occurred. Both circumstances were examples of independent variables (crises) affecting the dependent variable (tourism revenue). Furthermore, factor of economic development was considered because it was found to directly and indirectly affect tourism revenue (Nonthapot 2016).

Conceptual research framework

Figure 2. Conceptual research framework



From Figure 2, the independent variables comprise qualitative variables and quantitative variables where (1) qualitative variables are the two circumstances of financial crisis that affected the tourism conditions in GMS and (2) the quantitative variables comprise economic development and CPI. Both qualitative and quantitative variables influenced tourism revenue (the dependent variable).

2. Data and methodology

2.1. Data

Secondary data were collected from an online database which was the Annual data of 1995-2015, for 21 sets.

1. Tourism revenue data were collected from the data of International Tourism Receipts from the statistics report of the World Bank. The World Bank defined this variable as the revenue obtained from the travel of foreign tourists to the countries in the GMS. Revenue comprised expenditures for products and services including the revenue from one-day trips and transportation, which was calculated in US dollars at the current price (The World Bank, 2016).

2. The Economic Development of the 5 countries: Cambodia, Thailand, Myanmar, Laos People's Democratic Republic and Vietnam. GDP was the independent variable related to tourism revenue (Nonthapot 2014, Nonthapot 2016). Therefore, the GDP figures for each GMS country were collected from The World Bank. Gross Domestic Product: GDP at market price used in this research refers to the total value of final products and services the country produced at a period of time at the market price.

3. Consumer Price Index: CPI data were collected from the statistics report of the World Bank. The World Bank stated that CPI reflects the changeable value of the expenditure when general consumers bought products and services. The price might be fixed or changeable. It was investigated at a certain period of time by CPI (The World Bank 2016).

4. Qualitative variable: the literature review of this research indicated that there were two financial crises as follows. (1) In 2003: the Federal Reserve reduced the interest rate of the reserve fund of the federal government by 1%, which was the lowest rate in 45 years. (2) In 2008: the bankruptcy of Lehman Brothers, a leading international financial institution. For this reason, they were selected as the qualitative variables (Borza 2010, Maher *et al.* 2013, Chan 2011).

2.2. Methodology

From the literature review in section 2, the researcher determined the relevant variables to create a model based on the relevant concepts, theories and research to define the relationship between the independent variables and the dependent variable, which is expressed in a natural logarithm functional form as follows:

$$\ln TR_{it} = \beta_o + \beta_1 \ln Y_{it} + \beta_2 \ln CPI_{it} + +\beta_3 D2003_{it} + \beta_4 D2008 + \lambda_t + u_i + \varepsilon_{it} \quad (1)$$

where *I* = 1,…5 (Cambodia, Lao PDR, Myanmar, Thailand and Vietnam); *t* =1,…,42 is the first half year of 1995 to the second half year of 2015

From Equation 1, the panel data set of the econometric model is created as follows: TR is tourism revenue of country i at time t; Y is the Gross Domestic Products of country i (base year 2005) at time t; CPI is the Consumer Price Index of country i at time t; D2003 is the financial crisis Federal Reserve reduced in $2003 = 1$ Financial crisis in 2002-2003 and $= 0$ Financial crisis in other years; D2008 is the Bankruptcy in $2008 = 1$ Financial crisis in 2008-2009 $= 0$ Financial crisis in other years.

Equation (1) is the long-panel model because $T > 20, N < 10$ (Eberhardt 2011). The existence of individual effects is potentially correlated with the right-hand side of the regression, such that $v_{it} | \lambda_t + u_i + \varepsilon_{it}$ is the fixed effects decomposition of the error term in which λ_t is the time effect, u_i is the country-specific effects that vary between GMS countries whereas, ε_{it} is the disturbance term.

As the deduced form of Equation 1, the expected signs of the coefficients of explanatory variables are $\beta_1, \beta_2 > 0$ and $\beta_3, \beta_4 < 0$.

In the next section, a panel unit root test is the first step, and then the panel co-integration test is conducted to estimate the long-run relationships of the model. Finally we estimate the above specification using the Pool Mean Group (PMG) procedure which was developed by Pesaran *et al.* (1999). The PMG method is suitable for a sufficiently large time-series dimension of the panel data by consistency and validity approaches. The PMS method will also present the long and short run coefficients. On the other hand, the PMG estimator shows the possible heterogeneous dynamic issues across countries. The PMG estimator is presented by dynamic panels which is the Autoregressive distributed lag: ARDL (p, q) model. The model also includes error correction. The specification is formulated as follows:

$$Y_{it} = \sum_{j=1}^{p-1} \gamma_y^i (y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_y^i (X_i)_{t-j} + {}^i[y_i]_{t-1} + \mu_i + \varepsilon_{it} \quad (2)$$

where $(x_i)_{t-j}$ *the (k x 1)* is the explanatory variable vectors of group *i* and μ_i represents the fixed effect. *p* and *q* may vary across countries. Hence, the PMG model is as follows:

$$\Delta Y_{it} = \theta_i (Y_{i,t-1} - \beta_i X_{i,t-1}) + \sum_{j=1}^{p-1} \gamma_y^i \Delta(Y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_y^i \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it} \quad (3)$$

where Y is the tourism revenue in each GMS country, X is the set of independent variables which includes gross domestic product and the consumer price index, γ is coefficient of dependent variables for the short run, whereas δ is the short run coefficients of the independent variables, β are the long-run coefficients, θ is the coefficient of the speed of adjustment from the short-run to the long-run, while the subscripts i and t represent the country and time, respectively.

For the advantage of the PMG model, Demetriades and Law (2006) explained that the model allows short-run coefficients which include the intercepts and the speed of adjustment from the short run to the long run coefficients while the long-run slope coefficients are restricted to be homogeneous across countries.

3. Results

The study on financial crises and tourism in the Greater Mekong Sub-regional aimed to investigate the effects of financial crises on tourism in the GMS countries as a whole region. The analysis used a panel data set with a panel unit root test and estimation by Panel ARDL. The results are as follows.

3.1. Panel Unit Root Tests

Maddala and Wu (1999) explained the use of panel unit root tests by Fisher-type ADF and PP-test. Table 2 presents the results from the panel unit root test. According to the Fisher-type unit root test using PP and the Fisher-type unit root test using PP, all variables were tested both in levels and first difference with a constant and without a trend. These two methods of panel unit root are judged by Choi Z-statistics (Choi 2001).

As shown in the results in Table 2, the unit root hypothesis can be rejected when $\ln CPI$ is taken in level by ADF and PP at the 10% and 5% levels of significance. However, when $\ln TR, \ln Y$ and $\ln CPI$ are tested with first difference, the non-stationary hypothesis is rejected at the one percent level of significance. The panel unit root test results indicate that CPI is stationary at I(0), and tourism revenue is stationary at I(1). Although the variables are not stationary as the same order, we can estimate the panel model by employing the ARDL model (Pesaran *et al.* 1999; Eberhardt 2011). This means the panel model can be estimated by ARDL panel model with a PMG approach.

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

Variables	Fisher-type ADF test		Fisher-type PP test	
	Level	Difference	Level	Difference
ln TR	-1.17	-2.95***	-0.37	-2.93***
ln Y	3.67	-3.28***	5.21	-3.71***
ln CPI	-1.33*	-9.52***	-1.67**	-3.23***

Note: ***, ** and * denote significance at the 1%, 5% and 10% levels of significance respectively.

3.2. Short Run and Long Run Estimations

The estimation results of the dynamic models are shown in Table 3 and are estimated by the ARDL panel model with a PMG approach. For the short-run, the results show that the Gross Domestic Product of GMS (ln Y) is positively related to the GMS tourism revenue at the five percent significance level. As expected, the result follows the expected sign of the model. The financial crisis caused by the Federal Reserve reducing interest rates in 2003 (D2003) had a positive effect on tourism revenue at the five percent significance level.

The factors affecting the tourism revenue of the GMS countries that deviates from the short-run equilibrium to the long-run equilibrium is approximately 27% at the one percent level of significance (ECM = - 0.27). For the long-run, the financial crisis cause by Federal Reserve reducing interest rates in 2003 is negatively related to the GMS tourism revenue at the one percent significance level. Moreover, the Bankruptcy in 2008 (D2008) is also negatively related to GMS tourism revenue at the five percent significance level. Hence, the long-run estimation results confirm that the financial crisis negatively affected the tourism revenue of the GMS.

Conclusion

- When considering the effect of Gross Domestic Product on the tourism revenue of the GMS countries, it shows that GDP, which was the variable of the total value of final products and services the GMS countries produced in a period of time at the market price, affected tourism revenue overall. This is consistent with the study of Nanthakumar Loganathan *et al.* (2007) and Nonthapot (2016) who found that GDP was an independent variable that was related to tourism revenue. It showed that GDP affected tourism in the GMS.
- When considering the effect of the financial crisis in 2003 on the Greater Mekong Sub-region, tourism revenue in the short and long runs were affected. For the short run, the financial crisis in 2003 has a positively effect on tourism revenue but the effect was only 0.11%. This is possibly because tourists generally book trips in advance. This infers that the financial crisis in 2003 had a positive effect on GMS tourism in only the short-term. In contrast, for the long-run, the financial crisis in 2003 had a negative effect on GMS tourism at 0.78%. This indicates that the financial crisis in 2003 had an influence on the behavior of tourists in this year. As a result, it reduced the tourism revenue of the GMS as a whole region. This is consistent with the hypothesis that tourism revenue has an inverse relationship with financial crisis.
- When considering the effect of the financial crisis in 2008, a qualitative variable, on the tourism revenue in the Greater Mekong Sub-region, it was found that it decreased the tourism revenue of the GMS in the long-term by 0.28%. The financial crisis in 2008 caused tourism revenue to decrease. It is possible that international tourists were influenced and affected by the financial crisis in 2008. The long-run adjustment, which is consistent with the hypothesis, is an inverse relationship with tourism revenue. It shows that the financial crisis caused a decrease in tourism revenue.

Table 3. Pool Mean group estimation results

Variables	Short run parameters
Constant	2.85***
	(3.56)
Δ ln Y	0.79**
	(2.03)

Δ ln CPI	1.12
	(1.34)
ΔD 2003	0.11**
	(2.12)
ΔD 2008	-0.01
	(-1.01)
ECM	-0.27***
	(-3.71)
Variables	Long run parameters
Δ ln Y	-0.22
	(0.20)
Δ ln CPI	0.46
	(1.76)
ΔD 2003	-0.78***
	(-4.18)
ΔD 2008	-0.28**
	(-2.14)

Note: 1) t-statistics are in the parentheses. The asterisk *** and ** denote significance at the 1% and 5% levels of significance respectively; 2) The Estimations are done by using xtpmg order in Stata which pooled mean group; 3) The lag structure is ARDL (1, 1, 1, 1, 1), and the order of variables is ln TR, ln Y, ln CPI, D2003 and D2008.

The results of the study indicate that the financial crises affected the decision of tourists, which resulted in decreased tourism revenue. Each GMS country should develop tourism policies to handle financial crises. Preventive measures to handle financial crisis in the countries should be implemented. In order to encourage tourism in the GMS, tourism package combining neighboring countries is required to promote tourism to the region as one destination. A strategy by the tourism sector of the GMS countries to attract tourists to the Greater Mekong Sub-region is required. Tourism strategies and clear policy to promote tourism should be considered by determining the target groups of tourists and tourism types, and developing public relations materials on the notable tourist attractions of each country and area-based development for Mekong tourism.

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