

TOURISM DEVELOPMENT AND ECONOMIC GROWTH: EVIDENCE FROM THAILAND

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This paper investigates the co-movements and the causal relationships among real GDP, tourism development and the real exchange rate in a multivariate model using annual data spanning 1979 to 2007. We employ two different tourism variables—number of international tourist arrivals and international tourism receipts. The Gregory and Hansen (1996) test, which allows for one structural break, provides weak evidence of a long-run relationship between tourism development and economic growth in Thailand. In addition, we do find the structural breakpoints and they look to match clearly with the corresponding critical economic. No previous study examines the possibility that the long-run relationship between tourism development and economic growth in Thailand may have been subject to a structural break.

Keywords: Tourism Development, Economic Growth, Structural Break, Thailand.

INTRODUCTION

The Asia Pacific region has become a rapidly growing tourism destination and has even exceeded the Americas to become the world's second largest tourist-receiving region since 2001 (Lee and Chien, 2008). As part of the emerging market in tourism, Thailand embraces a rich diversity of cultures and traditions. With its proud history, tropical climate and renowned hospitality, Thailand offers great potential for the development of tourism (Tourism Authority of Thailand, 2008). Foreign tourism is Thailand's largest export industry. Sales of tourism goods and services to international visitors average US\$10.2 billion in 1998-2005 on more than 10 million annual visitor arrivals. During 1998-2005, on average, Thai tourism directly and indirectly accounted for 13 per cent of GDP, 10 per cent of employment which is approximately 3 million jobs and 12 per cent investment. Using the industry's GDP share as a measurement, Thailand is ranked 60 out of 174 countries in the World Tourism and Travel Council's Tourism Satellite Accounts (TSA).

Thailand has always been a great travel destination for business travelers and tourists from neighboring countries. Over the period 1998–2007, total number of tourist arrivals to Thailand increased from 7.76 to 14.46 million. International tourism revenue of Thailand increased from 242,177 million Baht in 1998 to 547,782 million in 2007 (see Table 1). Further analysis shows that international visitors came from countries within the neighboring Asian region, which provided nearly 53.91 per cent of all visitors in 2007. The top five of Thailand's tourist country of residences in 2007 were Korea 9.44 per cent, Japan 9.09 per cent, Malaysia 7.32 per cent, United Kingdom 5.55 per cent and China 5.47 per cent.

Table 1
International Tourism Revenue and Number of Tourists in Thailand during 1998-2007

<i>Year</i>	<i>Number of Tourists (Million)</i>	<i>Average Length of Stay (Days)</i>	<i>Average Expenditure/ Person/Day(Baht)</i>	<i>Revenue (Million Baht)</i>
1998	7.76	8.40	3,712.93	242,177
1999	8.58	7.96	3,704.54	253,018
2000	9.51	7.77	3,861.19	285,272
2001	10.06	7.93	3,748.00	299,047
2002	10.80	7.98	3,753.74	323,484
2003	10.00	8.19	3,774.50	309,269
2004	11.65	8.13	4,057.85	384,360
2005	11.52	8.20	3,890.13	367,380
2006	13.82	8.62	4,048.22	482,319
2007	14.46	9.19 ^{/P}	4,120.95 ^{/P}	547,782 ^{/P}

Note: /P=Preliminary

Source: http://www2.tat.or.th/stat/web/static_index.php, accessed 14 November 2008

In recent years, Thailand's tourism development is facing some uncertainties and challenges including Asian financial crisis in 1997, the spread of the Severe Acute Respiratory Syndrome (SARS) in 2003, the tsunami disaster in 2004 and disturbance in the 3 southern provinces. In addition to these uncertainties, the increased market competition in new destinations include Vietnam, China, India and tourism product creation in Japan, Hong Kong, and Korea were key factors of Thailand's steady tourism growth in 2005, with 11.52 million inbound visitors, a 1.15 per cent decrease from the previous year.

The World Tourism Organization (WTO) estimated that the average growth of international tourists in 2005 would be 5.5 per cent (lower than in 2004, when the growth of world tourism experienced a 10 per cent expansion), with 808 million international tourists. However, the tourism industry saw a slowdown, as a result of the world economic downturn (Tourism Situation Concerning Inbound Foreign Visitors in 2005). An implication of this implicit linkage between the tourism development and the economic growth is that economic development is laid on tourism due to its capacity in generating employment. The development of tourism as such mostly requires investment, principally in hospitality, transportation, basic health, and recreation in order to motivate the accommodation and the stay of visitors.

There are some previous studies focused on examining the relationships between tourism development and economic growth in various countries e.g. USA (Ghali, 1976), Spain (Balaguer and Cantavella-Jorda, 2002) and Taiwan (Kim *et al.*, 2006; Lee and Chien, 2008) (see Table 2). However, to the best of our knowledge, there are no empirical studies that have investigated the relationship between tourism development and economic growth in Thailand. There are some previous studies investigate the effect of tourism development. For example, Chang, Sriboonchitta

and Wiboonpongse (2009) found seasonal unit roots in tourist arrivals from East Asia with varying seasonal patterns of tourist arrivals from all countries except Singapore by applying Box-Jenkins ARIMA models. Howard (2009) investigated standard and special hazards or challenging experiences that tourists had in Thailand by using online survey which is similar to Rittichainuwat and Chakraborty (2009) who examined the tourist's concerns about perceived travel risks while traveling abroad and explore whether such perceived risks affect tourist's decisions during crises using both qualitative and quantitative research techniques and found that perceived disease risk was mitigated by travelers' prior experience with the foreign country that they had visited before. Wattanakuljarus and Coxhead (2008) suggested that growth of inbound tourism demand raises aggregate household income but worsen its distribution.

Table 2
Comparison of Empirical Results between Tourism Development and Economic Growth

<i>Samples</i>	<i>Authors</i>	<i>Empirical Method</i>	<i>Period</i>	<i>Country</i>	<i>Causal Relationship</i>
One country	Ghali (1976)	OLS	1953-1970	Hawaii	Tourism \Rightarrow growth
	Balaguer and Cantavella-Jorda (2002)	Error correction model	1975-1997	Spain	Tourism \Rightarrow growth
	Dritsakis (2004)	Error correction model	1960-2000	Greece	Tourism \Rightarrow growth
	Oh (2005)	Granger causality test	1975-2001	South Korea	Growth \Rightarrow tourism
	Kim, Chen and Jang (2006)	Granger causality test	1956-2002	Taiwan	Tourism \Rightarrow growth
	Lee and Chien (2008)	Unit root tests and Cointegration tests	1959-2003	Taiwan	Tourism \Rightarrow growth
Cross-section	Lanza, Temple and Urga (2003)	Almost ideal demand system (AIDS)	1977-1992	13 OECD countries	Tourism \Rightarrow growth
	Eugenio-Martin, Morales and Scarpa (2004)	Panel GLS	1980-1997	Latin American countries	Medium- or low-income countries: Tourism \Rightarrow growth Developed countries: Unclear
	Lee and Chang (2008)	Panel error correction model	1990-2002	OECD and non-OECD countries	OECD: tourism \Rightarrow growth Non-OECD: tourism \Rightarrow growth

Notes: Tourism \Rightarrow growth' denotes the causality running from tourism to economic growth. 'Growth \Rightarrow tourism' denotes the causality running from economic growth to tourism development. 'Tourism \Rightarrow growth' denotes bidirectional causality between tourism development and economic growth.

Source: Adopted from (Lee and Chien, 2008).

The Thai economy depends heavily on the performance of its tourism industries. These account for millions of job and a substantial fraction of export earnings and a wide range of other industries are directly or indirectly interdependent with them Wattanakuljarus and Coxhead (2008). Therefore, we focus on examining the potential relationship between Thai tourism development and economic growth. The main purpose of this paper is to investigate whether regime changes have broken down the stability of the long-run relationship between tourism development and real GDP in Thailand. We empirically examine the co-movements and the causal relationships among real GDP, tourism development, and the real exchange rate in a multivariate model. The unit root tests and the co-integration tests allowing for a structural break will be employed in the model to investigate the relation between real GDP, tourism development variables namely, international tourism receipts and the number of international tourism arrivals, and the real exchange rate.

In the analysis of tourism, economists emphasize the economic effects of tourism on the economy. The speedy growth of tourism causes an increase of household incomes and government revenues through multiplier effects, improvements in the balance of payments, and growth in the number of tourism-promoted government policies. As such, the development of tourism has usually been considered a positive contribution to economic growth (Lim, 1997). Given the aforementioned reasons, a steady stream of empirical tourism economics literature has been done in recent years, especially focusing on the issue of tourism demand.

Some research studies did not arrive at the same conclusion. Table 2 presents previous empirical results between tourism and economic growth, but we still cannot see a clear conclusion. Nevertheless, different empirical evidence shows different policy implications, which cannot only contribute to distinguishing the innate characters of the tourism industry, but can also be used as the basis for how a government can resolve the symbiotic policies of tourism businesses and economic development (Vanegas and Croes, 2003). Using two kinds of Hansen (1992) and Gregory and Hansen (1996) structural change tests, which to our knowledge have not been previously applied in this area, we examine the co-integration relationship altogether and commented whether there is instability or not between GDP and tourism development. This will provide the policy makers with concrete empirical evidence to support decision making process by considering the multiple impacts of tourism on economic development.

The issue of structural breaks in macroeconomic time series has been subject to extensive investigation. Structural breaks manifest themselves in time series data for a number of reasons. For instance, due to economic crises, policy changes and regime shifts. Perron (1989) argued that if structural breaks are not dealt with appropriately, one may obtain spurious results. However, few studies have incorporated structural breaks in testing for unit roots in stock prices. This research focuses on examining the potential relationship between Thai tourism development

and the economic growth. Specifically, we investigate whether regime changes have broken down the stability of the long-run relationship between tourism development and real GDP in Thailand. We empirically examine the co-movements and the causal relationships among real GDP, tourism development, and the real exchange rate in a multivariate model. The unit root tests and the co-integration tests allowing for a structural break will be employed in the model to investigate the relation between real GDP, tourism development variables namely, international tourism receipts and the number of international tourism arrivals, and the real exchange rate.

The remainder of this paper is organized as follows. Section 2 reviews the relationship between economic development and tourism expansion. Section 3 describes data and analyses used. Section 4 discusses the empirical results and the last section provides some concluding remarks.

LITERATURE REVIEW

Tourism Development and Economic Growth

There has been a number of empirical studies focus on investigating the relationship between tourism development and economic growth. For example, Balaguer and Cantavella-Jorda (2002) examined the role of tourism's long-run economic development in Spain. The hypothesis of tourism-led economic growth was confirmed by applying cointegration and causality tests. Consistently, the empirical results by Kim, Chen and Jang (2006) also indicated a long-run equilibrium relationship and a bi-directional causality between the two factors in examining the relationship between tourism expansion and economic development in Taiwan using a Granger causality test and cointegration approach. In addition, Ghali (1976) evaluated the contribution of Hawaii's tourism to the rate and stability of economic growth using Ordinary Least Square (OLS) method.

Furthermore, Dritsakis (2004) found the existence of a long-run equilibrium relationship among international tourism demand, income, transportation cost and real exchange rate in Greece. Recently, Lee and Chien (2008) empirically investigated the co-movements and the causal relationships among real GDP, tourism development variables and the real exchange rate using unit root tests and cointegration tests. The results suggested that the causality between tourism and economic growth is bi-directional. Furthermore, the study found the structural breakpoints which is corresponding to critical economic, political or tourist incidents.

However, in South Korea, the tourism-led economic growth hypothesis did not hold according to the research of Oh (2005) who investigated the causal relations between tourism growth and economic expansion for the Korean economy by using Engle and Granger two-stage approach and a bivariate Vector Autoregression (VAR) model. The results indicated that there is no long-run equilibrium relation between two series while the one-way causal relationship of economic-driven tourism growth

is suggested. In addition, by testing the sensitivity of causality test under different lag selections along with the optimal lag, the results confirmed that the hypothesis of tourism-led economic growth is not hold in the Korean economy.

In addition, some previous empirical studies focused on cross-section analysis rather than one country context. For example, Lanza et al. (2003) used almost ideal demand system (AIDS) investigated the long run impact of specialization in tourism of 13 OECD countries and suggested that specialization in tourism may not be deleterious for economic welfare once the terms of trade are considered. Furthermore, the long run growth may not be harmed by tourism specialization.

Eugenio-Martin, Morales and Scarpa (2004) investigated the relationship between tourism and economic growth for Latin American countries based on a panel data approach and the Arellano–Bond estimator for dynamic panels. The empirical results indicated that tourism development can contribute to the economic growth of medium- or low-income countries, while such a role is unclear for developed countries. Lee and Chang (2008) re-investigated the long-run comovements and causal relationships between tourism development and economic growth for OECD and non-OECD countries including those in Asia, Latin America and Sub-Sahara Africa. The results confirmed that tourism development has a greater impact on GDP in non-OECD countries than in OECD countries. In the long run, the study suggested unidirectional causality relationships from tourism development to economic growth in OECD countries and bidirectional relationships in non-OECD countries but only weak relationships in Asia.

Empirical Tourism Researches in Thai Context

The previous studies focus on Thai tourism have been focused on various aspects for example Chang, Sriboonchitta and Wiboonpongse (2009) evaluated changes in tourism trends by applying Box-Jenkins ARIMA models to obtain the information of inbound trips and the trends in foreign tourist arrivals to Thailand. The study found seasonal unit roots in tourist arrivals from East Asia with varying seasonal patterns of tourist arrivals from all countries except Singapore. In addition, Howard (2009) investigated standard and special hazards or challenging experiences that tourists had in Thailand by using online survey. Descriptive statistics were reported classified by demographics of the survey sample, percentage of the total sample reporting problems and major impacts and their nature, reports of what was least liked about Thailand, reports of seeing adverse impacts of tourism and their nature and satisfaction levels and plans to visit Thailand again.

Similarly, Rittichainuwat and Chakraborty (2009) examined tourists concerns about perceived travel risks while traveling abroad and explored whether such perceived risks affect tourist's decisions during crises using both qualitative and quantitative research techniques. The authors found that perceived disease risk was mitigated by travelers' prior experience with the foreign country that they had

visited before. Recently, Wattanakuljarus and Coxhead (2008) examined whether or not tourism growth will improve income distribution by expanding demand for relatively low-skilled labor in Thailand using a general equilibrium analysis. The results indicated that growth of inbound tourism demand raises aggregate household income but worsens its distribution.

However, there are no studies focused on examining the relationship between tourism development and economic growth in Thai context despite the fact that the Thai economy depends heavily on the performance of its tourism industries. The industry accounts for millions of job and a substantial fraction of export earnings and a wide range of other industries are directly or indirectly interdependent with them (Wattanakuljarus and Coxhead, 2008). Therefore, this research focuses on examining the potential relationship between Thai tourism development and the economic growth.

DATA AND EMPIRICAL METHODOLOGY

Data

All the data used are annual observations of the variables, and the estimation period is 1979–2007. Naturally, compared with monthly or quarterly data, annual data can even react to seasonal adjustment phenomena. Hakkio and Rush (1991) pointed out that when using monthly or quarterly data in an empirical analysis, increasing the number of observations does not add any robustness to the results. The nominal GDP series is transformed into real gross product in 1988 prices, using the consumer price index (CPI). The start of the sample period is 1979 which is determined by the availability of data for CPI. Terms GDP and real exchange rate (EX) used in this study are taken from the Bank of Thailand, created jointly by the Office of the National Economic and Social Development Board. Furthermore, we use two different types of tourism development variables— the number of tourist arrivals (TN) which is the number of tourists and tourism receipts (TR) which is international tourism earnings in real terms. We collect all tourism variables from the Annual Report on Tourism Authority of Thailand.

Empirical Methodology

We initially performed the augmented Dickey-Fuller (ADF) unit root test to examine the time series properties of the data without allowing for any structural breaks. The ADF test (Dickey and Fuller, 1981) is conducted using this equation:

$$\Delta y_t = \mu + \beta t + \alpha y_{t-1} + \sum_{i=1}^k c_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

where y_t denotes the natural logarithm the time series being tested; Δ is the first different operator; t is a time trend term; k denotes the optimal lag length; and ε_t is a white noise disturbance term.

In this paper, the lowest value of the Akaike information criterion (AIC) was used as a guide to determine the optimal lag length in the ADF regression. These lags augment the ADF regression to ensure that the error term is white noise and free of serial correlation. In addition, the Phillips-Perron (PP) test was used as an alternative nonparametric model to control for serial correlation. Using the PP test (Phillips and Perron, 1988) ensures that the higher-order serial correlations in the ADF equation were handled properly. That is, the ADF test corrects for higher-order autocorrelation by including lagged differenced terms on the right-hand side of the ADF equation; whereas the PP test corrects the ADF t -statistic by removing the serial correlation in it. This nonparametric t -test uses the Newey-West heteroscedasticity autocorrelation consistent estimate, and is robust to heteroscedasticity and autocorrelation of unknown form.

An important shortcoming associated with the ADF and PP tests is that they do not allow for the effect of structural breaks. Perron (1989) argues that if a structural break in a series is ignored, unit root tests can be erroneous in rejecting null hypothesis. Zivot and Andrews, here after ZA (1992) developed methods to search endogenously for a structural break in the data. We employ their model A, which allows for one structural break in the intercept in the following equation:

$$\Delta y_t = \mu + \beta t + \theta DU_t + \alpha y_{t-1} + \sum_{i=1}^k c_i \Delta y_{t-i} + \varepsilon_t \quad (2)$$

where $DU_t = 1$ if $t > TB$, otherwise zero; and model C, which allows for one structural break in both the intercept and slope coefficients in the following equation:

$$\Delta y_t = \mu + \beta t + \theta DU_t + \gamma DT_t + \alpha y_{t-1} + \sum_{i=1}^k c_i \Delta y_{t-i} + \varepsilon_t \quad (3)$$

where TB denotes the time of break; and $DT_t = t - TB$ if $t > TB$, otherwise zero.

The 'trimming region', in which we searched for TB covers the $0.15T$ - $0.85T$ period, where T is the sample size. Following Hall (1994), we selected the break point (TB) based on the minimum value of the t statistic for α . In this study, k_{max} is set equal to 12.

After determining the order of integration of each variable, we needed to test for the existence of any long-run relationship between the tourism development and economic growth of Thailand. However, the lack of evidence of cointegration in previous studies in the literature could be attributed to the ignorance of the structural break in cointegrating vector. To address this issue, we also used the Gregory and Hansen, henceforth GH (1996) test. GH postulate three alternative models similar to those proposed by ZA to capture the changes in parameters of the cointegrating vector. First, the level shift model (C), which assumes a change only in the intercept, as shown below:

$$y_t = \mu_0 + \theta DU_t + \mu_1 x_t + \varepsilon_t \quad (4)$$

where y_t and x_t are the natural log of GDP of Thailand and one of tourism development data, respectively. The second model, a level shift and change in trend (C/T), takes this form:

$$y_t = \mu_0 + \theta DU_t + \beta t + \mu_1 x_t + \varepsilon_t \tag{5}$$

The third model, which allows for changes in both the intercept and slope of the cointegration vector (C/S), is presented as:

$$y_t = \mu_0 + \theta DU_t + \beta t + \mu_1 x_t + \mu_2 x_t DU_t + \varepsilon_t \tag{6}$$

where DU_t is defined as previously in equation (2).

Intuitively, within the range of $0.15T-0.85T$, this technique searches for a particular TB , which minimizes the value of the ADF* statistic for $\hat{\varepsilon}_t$. The GH method tests the null hypothesis of no cointegration against the alternative hypothesis of cointegration with a single structural break at time TB , which is determined endogenously.

EMPIRICAL RESULTS AND DISCUSSION

As mentioned earlier, we first used the ADF and PP tests to determine the order of integration of the variables studied. The lowest value of the AIC was used to determine the optimal lag length in the estimation procedure. We do not report the details of all of the unit root tests we use here in order to conserve space, but all results are available upon request. Based on the results of the unit root tests, the ADF and PP tests indicate that real GDP does not reject the null hypothesis of $I(2)$, however, for all other variables, both unit root tests cannot reject the random walk hypothesis. We thus conclude that real exchange rate (EX), the number of tourist arrivals (TN) and tourism receipts (TR) are $I(1)$.

Table 3
The Zivot and Andrews Test Results

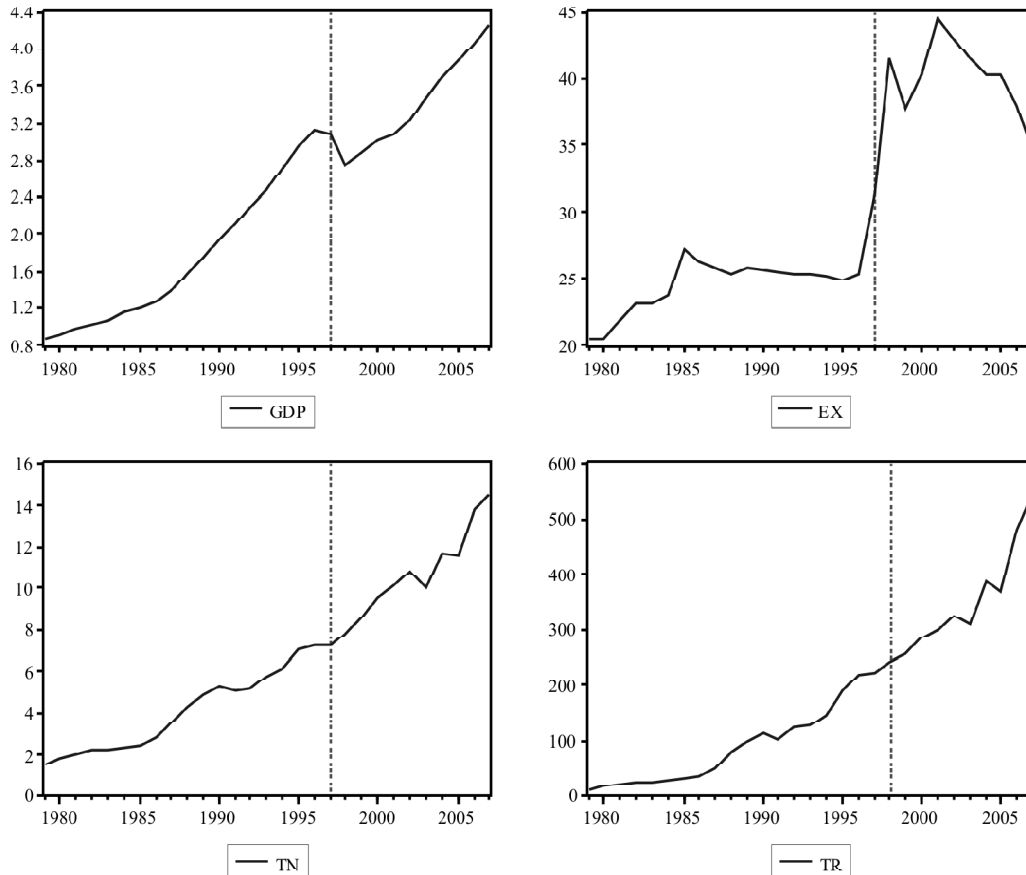
$$\text{Model A: } \Delta y_t = \mu + \beta t + \theta DU_t + \alpha y_{t-1} + \sum_{i=1}^k c_i \Delta y_{t-i} + \varepsilon_t$$

$$\text{Model C: } \Delta y_t = \mu + \beta t + \theta DU_t + \gamma DT_t + \alpha y_{t-1} + \sum_{i=1}^k c_i \Delta y_{t-i} + \varepsilon_t$$

Variable	Model	TB	q	g	a	k
GDP _t	C	1997	0.1028 (2.3595)	-0.1796 (-4.9548)	-5.5047*** (-8.7798)	9
EX _t	A	1997	0.2631 (4.5925)		-0.5530* (-4.6148)	3
TN _t	C	1997	0.1643 (3.2033)	-0.1796 (-5.8572)	-4.3151*** (-6.3960)	8
TR _t	C	1998	0.3627 (3.7493)	-0.0357 (-2.3646)	-0.6621* (-4.9582)	0

Notes: (a) *, ** and *** indicate that the corresponding null hypothesis is rejected at the 10, 5 and 1 percent significance levels, respectively. (b) Critical values for t_α at the 10, 5 and 1 per cent levels are -4.59 -5.08 and -5.57, respectively (ZA, 1992).

Figure 1: Plot of Real GDP, the Real Exchange Rate and Tourism



In the second stage, we subjected each variable to one structural break. For each series, we then carried out the ZA test and report the results in Table I. As mentioned earlier, the ADF and PP test results reveal that most variables examined in this paper followed a random walk; whereas the results of the ZA test show that all variable are now stationary. The reported *TBs* in the third column were endogenously determined by the ZA test. In addition, Figure 1 shows real GDP, the real exchange rate, the number of tourist arrivals and tourism receipts as well as their corresponding structural breaks obtained by the ZA test. It is not surprising that the endogenously-determined structural breaks in these variables occurred in the Asian crisis period 1997–1998 (see *TBs* for real exchange rate, the number of tourist arrivals and tourism receipts in Table 3).

Base on the ZA test result, all variables are stationary therefore we conducted the GH cointegration test. Table 4 shows the results of this test for the relationship between Thai tourism development and the economic growth. GH test provides

Table 4
The Gregory and Hansen Test Results
 Model C: $y_t = \mu_0 + \theta DU_t + \mu_1 x_t + \varepsilon_t$
 Model C/T: $y_t = \mu_0 + \theta DU_t + \beta t + \mu_1 x_t + \varepsilon_t$
 Model C/S: $y_t = \mu_0 + \theta DU_t + \beta t + \mu_1 x_t + \mu_2 x_t DU_t + \varepsilon_t$

<i>Model</i>	<i>TB</i>	<i>ADF*</i>	<i>k</i>
GDP-TN, EX			
C	1997	-2.8340	6
C/T	1998	-3.1597	0
C/S	2004	-3.0642	6
GDP-TR, EX			
C	1997	-4.5617	2
C/T	1998	-3.1504	8
C/S	1997	-4.6512	2
Critical values	10 per cent	5 per cent	1 per cent
C	-4.40	-4.92	-5.44
C/T	-4.78	-5.29	-5.80
C/S	-5.03	-5.50	-5.97

Note: Given the reported critical values (GH, 1996), the null is not rejected at the 5 and 1 per cent levels of significance for any pair of countries.

clear evidence of not finding cointegration even when we allow for a structural break in the relationship between GDP, TN, and EX. However, the relationship between GDP, TR, and EX reveals a structural break in ADF* at the 10% level. According to the ADF statistic criterion, the structural break years estimated on the basis of the three models are mainly in 1997 and 1998. The structural break years of 1997 and 1998 were caused by the Asian crisis, which preceded economic recessions and decreased tourism activities.

CONCLUSION

This study examines the long-run relationships between tourism development and economic growth, using annual data for the period 1979 to 2007. We used the Gregory and Hansen (1996) test, which allows for a structural break in the cointegration vector. Based on the cointegration results, we found weak evidence of long-run relationship between tourism development and GDP. Our results are also consistent with the previous findings of no cointegration between tourism development and economic growth (real GDP), including those of several countries (Po and Huang, 2008), the case of Turkey (Katircioglu, 2009) and South Korea (Oh, 2005). Finally, this finding is important for policy makers as well as academicians in the field and shows that this issue still deserves further attention from researchers for comparison purposes for Thailand.

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References

- Balaguer, J. and Cantavella-Jorda, M. (2002), "Tourism as a Long-Run Economic Growth Factor: The Spanish Case". *Applied Economics*, 34, No. 7, May, pp. 877-84.
- Chang, C. L., Sriboonchitta, S. and Wiboonpongse, A. (2009), "Modelling, Forecasting Tourism from East Asia to Thailand under Temporal and Spatial Aggregation". *Mathematics and Computers in Simulation*, 79, No. 5, January, pp. 1730-44.
- Dickey, D. A. and Fuller, W. A. (1981), "Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root". *Econometrica*, 49, No. 4, July, pp. 1057-72.
- Dritsakis, N. (2004), "Cointegration Analysis of German and British Tourism Demand for Greece". *Tourism Management*, 25, No. 1, February, pp. 111-9.
- Eugenio-Martin, J. L., Morales, N. M. and Scarpa, R. (2004), "Tourism and Economic Growth in Latin American Countries: A Panel Data Approach", SSRN.
- Ghali, M. A. (1976), "Tourism and Economic Growth: An Empirical Study". *Economic Development and Cultural Change*, 24, No. 3, April, pp. 527-38.
- Gregory, A. W. and Hansen, B. E. (1996), "Residual-Based Tests for Cointegration in Models with Regime Shifts". *Journal of Econometrics*, 70, No. 1, January, pp. 99-126.
- Hakkio, C. S. and Rush, M. (1991), "Cointegration: How Short Is the Long Run?" *Journal of International Money and Finance*, 10, No. 4, December, pp. 571-81.
- Hall, A. (1994), "Testing for a Unit Root in Time Series with Pretest Data-Based Model Selection". *Journal of Business and Economic Statistics*, 12, No. 4, October, pp. 461-70.
- Hansen, B. E. (1992), "Tests for Parameter Instability in Regressions with I(1) Processes". *Journal of Business and Economic Statistics*, 10, No. 3, July, pp. 321-35.
- Howard, R. W. (2009), "Risky Business? Asking Tourists What Hazards They Actually Encountered in Thailand". *Tourism Management*, 30, No. 3, June pp. 359-65.
- Katircioglu, S. T. (2009), "Revisiting the Tourism-Led-Growth Hypothesis for Turkey Using the Bounds Test and Johansen Approach for Cointegration". *Tourism Management*, 30, No. 1, February, pp. 17-20.
- Kim, H. J., Chen, M. H. and Jang, S. S. (2006), "Tourism Expansion and Economic Development: The Case of Taiwan". *Tourism Management*, 27, No. 5, October, pp. 925-33.
- Lanza, A., Temple, P. and Urga, G. (2003), "The Implications of Tourism Specialisation in the Long Run: An Econometric Analysis for 13 Oecd Economies". *Tourism Management*, 24, No. 3, June, pp. 315-21.
- Lee, C. C. and Chang, C. P. (2008), "Tourism Development and Economic Growth: A Closer Look at Panels". *Tourism Management*, 29, No. 1, February, pp. 180-92.
- Lee, C. C. and Chien, M. S. (2008), "Structural Breaks, Tourism Development, and Economic Growth: Evidence from Taiwan". *Mathematics and Computers in Simulation*, 77, No. 4, April, pp. 358-68.
- Lim, C. (1997), "Review of International Tourism Demand Models". *Annals of Tourism Research*, 24, No. 4, October, pp. 835-49.

- Oh, C. O. (2005), "The Contribution of Tourism Development to Economic Growth in the Korean Economy". *Tourism Management*, 26, No. 1, February, pp. 39-44.
- Perron, P. (1989), "The Great Crash, the Oil Price Shock and the Unit Root Hypothesis". *Econometrica*, 57, No. 6, November, pp. 1361-401.
- Phillips, P. C. B. and Perron, P. (1988), "Testing for a Unit Root in Time Series Regression". *Biometrika*, 75, No. 2, June, pp. 335-46.
- Po, W. C. and Huang, B. N. (2008), "Tourism Development and Economic Growth-a Nonlinear Approach". *Physica A: Statistical Mechanics and its Applications*, 387, No. 22, September, pp. 5535-42.
- Rittichainuwat, B. N. and Chakraborty, G. (2009), "Perceived Travel Risks Regarding Terrorism and Disease: The Case of Thailand". *Tourism Management*, 30, No. 3, June, pp. 410-8.
- Tourism Authority of Thailand (2008), "About Thailand".
- Vanegas, M. and Croes, R. R. (2003), "Growth, Development and Tourism in a Small Economy: Evidence from Aruba". *International Journal of Tourism Research*, 5, No. 5, September-October pp. 315-30.
- Wattanukuljarus, A. and Coxhead, I. (2008), "Is Tourism-Based Development Good for the Poor?: A General Equilibrium Analysis for Thailand". *Journal of Policy Modeling*, 30, No. 6, November-December, pp. 929-55.
- Zivot, E. and Andrews, D. W. K. (1992), "Further Evidence on the Great Crash, the Oil-Price Shock and the Unit-Root Hypothesis". *Journal of Business and Economic Statistics*, 10, No. 3, July, pp. 251-70.



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