

The impacts of changing in macroeconomic factors on foreign tourism revenue and sectoral output in Thailand

Bundit Chaivichayachat

Abstract— For the long journey of Thai's economy, tourism sector is one of the major source of revenue even in the period of crisis or in the midst of the turbulence time. Especially, in the past two decades, the major economic factors including exchange rate, economic growth and political condition become more volatile but the foreign tourism revenue still growing with positive trend. Therefore, the objective of this paper is to explore the impacts of the changing in macroeconomic factors on foreign tourism revenue and sector output in Thailand after the financial crisis in 1997. In order to achieve the objective, the analytic framework was set up based on the estimation of behavioral equation and the calculation of input-output table. For the first step, the behavioral equation of foreign tourism revenue was specified and estimated by OLS together with the Engle and Granger cointegration test. Based on the annual data during 1998-2013, foreign tourists income, Thai's economic growth, exchange rate (Baht:US dollar), trade openness, number of foreign tourists and political condition were determined the foreign tourism revenue with statistically significance and also satisfied the long-run relationship concept. After the estimation of the behavioral equation, for the second step, the 2005 input-output table of Thai economy was employed to calculate the final demand and sectoral output in 180 sectors. A bridge matrix was computed to distribute the aggregate foreign tourism revenue into the sectoral foreign tourism revenue. The sectoral revenue and the Leontief's inverse matrix were used to calculate the final output. Then, the final step is the simulation of the impact of the changing in macroeconomic variables, including exchange rate, Thai's economic growth and political condition, on sectoral output. Based on the simulation for the various scenarios, the results indicate that the political instability is the major macroeconomic variable which contributes the highest negative impact on foreign tourism revenue and sectoral output. For the changing in exchange rate (Baht: US dollar) and in economic growth, these two variables generate a slice impact on foreign tourism revenue and sectoral output. Therefore, the tourism authorities of Thailand should promote confidence of the tourist during the period of political instability in order to relief the negative impact on Thai's economy.

Keywords— tourism revenue, bridge matrix, sectoral output

Bundit Chaivichayachat
Associate Professor,
Department of Economics, Kasetsart University
Bangkok, Thailand

I. Introduction

For the long journey of Thai's economy, tourism sector is one of the major sources of revenue even in the period of crisis or in the midst of the turbulence time. Especially, in the past two decades, the major economic factors including exchange rate, economic growth and political condition become more volatile but the foreign tourism revenue still growing with positive trend. Therefore, the objective of this paper is to explore the impacts of the changing in macroeconomic factors on foreign tourism revenue and sector output in Thailand after the financial crisis in 1997.

II. Model and Methodology

First, In order to achieve the objective, the analytic framework was set up based on the estimation of behavioral equation and the calculation of input-output table. For the first step, the behavioral equation of foreign tourism revenue was specified and estimated by OLS together with the Engle and Granger cointegration test. Following the empirical works of Protomo (2002), Naude and Saaymand (2004), Algier and Kanellopoulou (2009), Settanah (2011), Hankfaih, Harun and Jamaluddin (2011), Ibrahim (2011), Tsangari and Haritin (2012), the macroeconomic factors which are determined the foreign tourism revenue are;

$$TR = f(PY, EX, OP, NT, GR, SA, TR(-1)) \quad (1)$$

where TR is foreign tourism revenue (US\$), EX is exchange rate (baht per US\$), PY is world's GDP per capita (US\$), OP is trade openness (%), NT is number of foreign tourists (thousand person), GR is Thai's real GDP growth and SA is dummy of political condition (SA = 0, when political is in stability condition and SA = 1 when political is in instability condition).

Equation (1) will be estimated by applying OLS method and employing cointegration test in order to avoid the problem of spurious regression.

After the estimation of the behavioral equation, for the second step, the 2005 input-output table of Thai economy was employed to calculate the final demand and sectoral output in 180 sectors. A bridge matrix was computed to distribute the aggregate foreign tourism revenue into the sectoral foreign tourism revenue. The sectoral revenue and the Leontief's inverse matrix were used to calculate the final output. Then, the final step is the simulation of the impact of the changing in macroeconomic variables, including exchange rate, Thai's economic growth and political condition, on sectoral output.

III. Results

Based on the annual data during 1998-2013, KPSS statistic in Table 1 indicates that all of variable in equation (1) are I(1). Therefore, the cointegration test is requested before the estimated result in Table 2 is applied for policy implication. The KPSS statistic of the estimated error is 0.121668, which is smaller than the critical value at 0.05 significant level. Thus, the estimated result in Table 2 represents the long-run relationship among TR and macroeconomic factors. The result indicated that foreign tourists income, Thai's economic growth, exchange rate (Baht:US dollar), trade openness, number of foreign tourists and political condition were determined the foreign tourism revenue with statistically significance.

Based on the simulation for the various scenarios, the results indicate that the political instability is the major macroeconomic variable which contributes the highest negative impact on foreign tourism revenue and sectoral output. For the changing in exchange rate (Baht: US dollar) and in economic growth, these two variables generate a slice impact on foreign tourism revenue and sectoral output.

Table1: KPSS statistic

Null Hypothesis: Variable is stationary			
Variable	At level	First Difference	Conclusion
TR	0.190205**	0.160952++	I(1)
PY	0.136703*	0.251393+	I(1)
EX	0.375042**	0.401965++	I(1)
OP	0.163249**	0.500000++	I(1)
NT	0.178462**	0.401863++	I(1)
GR	0.130511*	0.236721++	I(1)

*** Reject Null Hypothesis at 0.1
 ** Reject Null Hypothesis at 0.05
 * Reject Null Hypothesis at 0.01
 +++ Accept Null Hypothesis at 0.1
 ++ Accept Null Hypothesis at 0.05
 + Accept Null Hypothesis at 0.01

Table2: Estimated Result

Dependent Variable: TR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21612.25	7047.058	3.066848	0.0181
PY	3.018192	0.870515	3.467135	0.0104
EX	564.6481	128.8578	4.381946	0.0032
OP	3489.632	1392.895	2.505309	0.0407
NT	0.001655	0.000265	6.239482	0.0004
GR	205.1557	78.84479	2.602019	0.0353
SA	-1534.668	771.2861	-1.989752	0.0869
TR(-1)	0.277657	0.135046	2.056014	0.0788

R-squared	0.995543	Mean dependent var	13854.41
Adjusted R-squared	0.991085	S.D. dependent var	8178.329
S.E. of regression	772.1709	Akaike info criterion	16.44082
Sum squared resid	4173736	Schwarz criterion	16.81844
Log likelihood	-115.3061	Hannan-Quinn criter.	16.43679
F-statistic	223.3532	Durbin-Watson stat	2.004858
Prob(F-statistic)	0.000000		

IV. Conclusion

Based on the results, foreign tourism revenue determined by macroeconomic factors especially the role of political condition. Therefore, the tourism authorities of Thailand should promote confidence of the tourist during the period of political instability in order to relief the negative impact on Thai's economy.

References

- [1] G. Algieri, B. and S. Kanellopoulou (2009) "An Observed Component Model to Evaluate the Determinants of Demand for Exports of Tourism," in 1st QATEM Workshop on quantitative approaches in tourism economics and management, 27 June.
- [2] Fretchling, D.C. and E. Horvath (1999) "Estimating the Multiplier Effects of Tourism Expenditures on a Local Economy Through a Regional Input-Output Model," Journal of Travel Research, 37 (4): 324-332.
- [3] Ibrahim, M.A.M.A. (2011) "The Determinants of International Tourism Demand for Egypt: Panel Data Evidence," European Journal of Economics, Finance and Administrative Sciences, 30: 50-58.
- [4] Kim, S.S., K.K.F. Wong and M. Cho (2006) "Assessing the Economic Value of A World Heritage Site and Willingness-to-pay Determinants: A Case of Changeok Palace," Tourism Management, 28 (1): 317-322.
- [5] Lind, T. and F.D. Guzman (2010) "Tourism for Pro-Poor and Sustainable Growth: Economic Analysis of Tourism Projects," MPRA Paper No. 24994, Asian Development Bank.
- [6] Pratt, S.A. (2011) "the Economic Impact of Uncertain Tourism Demand in Hawaii: Risk in a Computable General Equilibrium Model," University of Nottingham.
- [7] Seetana, B. (2010) "Assessing the Dynamic Economic Impact of Tourism for Island Economies," Annals of Tourism Research, 38 (1): 291-308.
- [8] Wei, C.K., A.B. Shuib, S. Ramachandran and S. Hermand (2013) "The Applicability of Economic Models in Estimating the Economic Impacts of Tourism in a Local Economy," University of Putra, Malaysia.