Kasetsart Journal of Social Sciences 39 (2018) 393–400

Contents lists available at ScienceDirect

Kasetsart Journal of Social Sciences

journal homepage: http://www.elsevier.com/locate/kjss

Does international trade promote international tourism demand? Evidence from Thailand's trading partners

Wipaporn Chaisumpunsakul [a, 1], Piriya Pholphirul [b, *]

[a] Kasikorn Bank, Thailand
[b] Graduate School of Development Economics, National Institute of Development Administration, Bangkok 10240, Thailand

ARTICLE INFO

Article history:
Received 30 November 2016
Received in revised form 13 May 2017
Accepted 29 June 2017
Available online 24 July 2017

Keywords:
international tourism demand,
international trade,
Thailand

ABSTRACT

The purpose of this study was to analyze the relationship between international trade and international tourism demand in Thailand. Using a dataset of 207 trade partnership countries of Thailand, it was found that the degree of trade openness was positively correlated with international tourism demand. A percentage increase in trade share to GDP contributed about 0.046 percent of short-term foreign tourism demand and 0.807 percent of long-term tourism demand in Thailand. The import volume from origin countries' tourists to Thailand also increased the short-term tourism demand by 0.029 percent and the long-term tourism demand by 0.592 percent in Thailand. These results can be supportive of government strategies that aim to enhance the country's trade volume as well as stimulate Thailand's international tourism demand.

Introduction

Tourism, as a service industry, plays an important role in the development of many countries and has been expanding significantly in recent years. This expansion subsequently yields several benefits for related businesses, such as hotels and resorts, travel agencies, restaurants, and souvenir shops. These businesses attract foreign money and generate income that is then distributed throughout the country. Thailand is one example of a major tourist destination in the region. In 2015, international tourism revenue of Thailand was THB 1,119 billion (accounting for 5.8% of GDP). In particular, tourists from China contributed the most to this revenue (THB 389 billion), followed by Malaysian tourists (THB 86 billion), Russian tourists (THB 69 billion), United Kingdom tourists (THB 66 billion), and Australian tourists (THB 65 billion). According to data obtained from the Department of Tourism, Ministry of Tourism and Sport, there were around 30 million tourists visiting Thailand in 2015, and this figure is increasing. Revenue generated from international tourists has increased 23 percent from 2014, which is more than the increase in the number of tourists (19% per year). This fact also points to an increase in tourist spending per person (6.2%) (see Table 1).

Apart from international tourism, international trade (imports and exports) significantly contributes to the economic growth of a nation. Directly associated with the agricultural and industrial sectors, international trade is also linked to the service sector, including international tourism. Moreover, examining the relationship between international trade and the number of international tourist arrivals from each of Thailand's important trading partners (Table 2), countries having a high trade value with Thailand tend to have a high number of tourists visiting the country. Examples include Japan, China, the United States of America, and Singapore.

* Corresponding author.
E-mail addresses: wipaporn.chk@gmail.com (W. Chaisumpunsakul), pholphir@hotmail.com (P. Pholphirul).
Peer review under responsibility of Kasetsart University.
[1] Co-first authors.

http://dx.doi.org/10.1016/j.kjss.2017.06.007

Table 1
Descriptive statistics of all variables used

Variable	Observation	Mean
Number of tourist arrivals (arrival)	2,691	54,240
Number of tourist arrivals in previous year (arrival)	2,484	52,683
Income per capita of tourists (USD)	2,339	11,381
Relative prices	2,191	1,064
Ratio of international trade value to GDP of Thailand	2,691	0.01
Ratio of import value to GDP of Thailand	2,691	0.003
Ratio of export value to GDP of Thailand	2,691	0.003
Population size of origin countries (person)	2,678	30,500,000
Distance between Thailand and tourists' origin countries (kilometer)	2,691	9,084

Sources: Authors' computations

Table 2
Correlation between number of tourist arrivals and ratios of international trade value, import value, and export value to GDP of Thailand

	Ratio of international trade value to GDP of Thailand	Ratio of import value to GDP of Thailand	Ratio of export value to GDP of Thailand
Number of tourist arrivals from Southeast Asia	0.7894	0.8435	0.6983
Number of tourist arrivals from South Asia	0.9792	0.9318	0.9637
Number of tourist arrivals from East Asia	0.8576	0.8523	0.8252
Number of tourist arrivals from Middle East	0.4065	0.3436	0.5557
Number of tourist arrivals from Africa	0.8679	0.7531	0.8222
Number of tourist arrivals from North America	0.9360	0.9367	0.9352
Number of tourist arrivals from South America	0.9341	0.9107	0.8925
Number of tourist arrivals from Australia	0.9928	0.9785	0.9898
Number of tourist arrivals from Europe	0.8070	0.7448	0.7606

Sources: Authors' computations

At present, the value of international trade is increasing, providing numerous opportunities for businesses in other sectors in the economy, especially for firms doing international business. As a result, international travel increases in response to increasing international business operations among companies in different countries. Moreover, since business travel is one of the purposes of international tourists, a study of international tourists has recently involved the study of international trade value as a factor that affects international tourism demand.

The Thai economy eminently relies on international trade and is also popular among international tourists. Thus, activities related to international trade can help attract tourists and promote international tourism for the country. This study aimed to explain the impact of international trade on international tourism demand. Correspondingly, it attempted to determine whether international trade does indeed positively affect international tourism demand, as reported in studies of other countries. If so, then the promotion of international trade between Thailand and another country should serve as a strategy to attract more tourists from that specific country. The results of this study could suggest policy implications for the growth and development of Thailand.

Concepts and Principles

Theories that point to the connection between international trade and international tourism demand are grounded on three principles:

Principle 1: International trade stimulates business travel (Turner & Witt, 2001) and contributes to networking at the individual, business, and national levels. Besides this, international trade bolsters a network effect, which reduces international transaction costs as well as promoting travel and exchanges among countries (White, 2007).

Principle 2: International trade boosts product advertisements that attract consumers' attention and create awareness of both a product and its country of origin. Accordingly, consumers' attention and recognition stimulate the desire to travel to the home country of that product (Kulendran & Wilson, 2000).

Principle 3: To facilitate related activities, international trade encourages a country to develop essential infrastructure, for example, transportation and communication systems. Improvement of infrastructure in turn helps attract more tourists (Santana, Ledesma, & Perez, 2011).

A review of the relevant principles leads to the conclusion that international trade is positively associated with international tourism demand thanks to the fact that it helps reduce the transaction costs of international travel (Leitao, 2010) and the search cost of the destination country.

Figure 1 shows how international trade affects the number of international tourists by reducing transactional costs, promoting travel and, subsequently, pleasure. Moreover, international trade helps attract the attention of consumers in other countries, which in turn promotes tourism. Recently, studies of international tourism demand have included international trade as one of the factors affecting the demand. Figure 1 explains the relationship as below.

Habibi, Rahim, Ramchandran, and Chin (2009) studied international tourist demand in Malaysia and discovered that an increase of one percent in international trade tended to cause an increase in the number of international tourist arrivals to Malaysia by 0.02 percent in the short term and 0.22 percent in the long term. This result is consistent with the research of Leitao (2010), which focused on the international tourism demand in Portugal and found that an increase of one percent in international trade tended to cause an increase in the number of

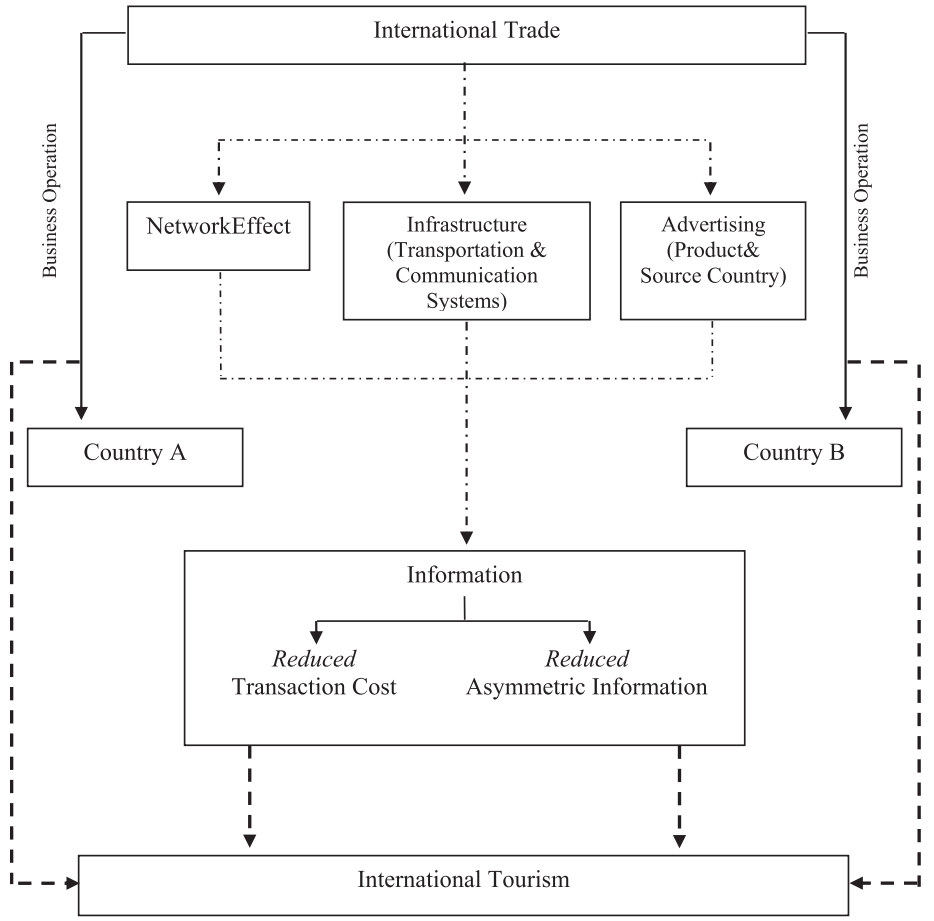

Figure 1 Impacts of international trade on international tourism demand

international tourist arrivals to the country by 0.042 percent on average. Similarly, Surugiu, Leitao, and Surugiu (2011) examined international tourism demand in Romania and found that an increase of one percent in international trade tended to cause an increase in the number of international tourist arrivals to the country by 0.466 percent on average.

Methodology

This paper applied the model used in the studies of Habibi et al. (2009) and Leitao (2010) on international tourism demand in Malaysia and Portugal, respectively. The econometric model is shown below:

$$\begin{aligned} lnTOUR_{i,t} = {} & \beta_0 + \beta_1 lnTOUR_{i,t-1} + \beta_2 lnGDPPC_{i,t} + \beta_3 lnPR_{i,t} + \beta_4 lnTrade_{i,t} + \beta_5 lnPop_{i,t} \\ & + \beta_6 lnDist_i + \alpha_1 SA_i + \alpha_2 EA_i + \alpha_3 ME_i + \alpha_4 AF_i + \alpha_5 NAM_i + \alpha_6 SAM_i + \alpha_7 AUS_i \\ & + \alpha_8 EUR_i + \gamma_1 (SA_i \; x \; lnTrade_{i,t}) + \gamma_2 (EA_i \; x \; lnTrade_{i,t}) + \gamma 3 (ME_i \; x \; lnTrade_{i,t}) \\ & + \gamma_4 (AF_i \; x \; lnTrade_{i,t}) + \gamma_5 (NAM_i \; x \; lnTrade_{i,t}) + \gamma_6 (SAM_i \; x \; lnTrade_{i,t}) \\ & + \gamma_7 (AUS_i \; x \; lnTrade_{i,t}) + \gamma_8 (EUR_i \; x \; lnTrade_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} lnTOUR_{i,t} = {} & \beta_0 + \beta_1 lnTOUR_{i,t-1} + \beta_2 lnGDPPC_{i,t} + \beta_3 lnPR_{i,t} + \beta_4 lnIM_{i,t} + \beta_5 lnPop_{i,t} \\ & + \beta_6 lnDist_i + \alpha_1 SA_i + \alpha_2 EA_i + \alpha_3 ME_i + \alpha_4 AF_i + \alpha_5 NAM_i + \alpha_6 SAM_i + \alpha_7 AUS_i \\ & + \alpha_8 EUR_i + \gamma_1 (SA_i \; x \; lnIM_{i,t}) + \gamma_2 (EA_i \; x \; lnIM_{i,t}) + \gamma_3 (ME_i \; x \; lnIM_{i,t}) \\ & + \gamma_4 (AF_i \; x \; lnIM_{i,t}) + \gamma_5 (NAM_i \; x \; lnIM_{i,t}) + \gamma_6 (SAM_i \; x \; lnIM_{i,t}) \\ & + \gamma_7 (AUS_i \; x \; lnIM_{i,t}) + \gamma_8 (EUR_i \; x \; lnIM_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$$\begin{aligned} lnTOUR_{i,t} = {} & \beta_0 + \beta_1 lnTOUR_{i,t-1} + \beta_2 lnGDPPC_{i,t} + \beta_3 lnPR_{i,t} + \beta_4 lnEX_{i,t} + \beta_5 lnPop_{i,t} \\ & + \beta_6 lnDist_i + \alpha_1 SA_i + \alpha_2 EA_i + \alpha_3 ME_i + \alpha_4 AF_i + \alpha_5 NAM_i + \alpha_6 SAM_i + \alpha_7 AUS_i \\ & + \alpha_8 EUR_i + \gamma_1 (SA_i \; x \; lnEX_{i,t}) + \gamma_2 (EA_i \; x \; lnEX_{i,t}) + \gamma_3 (ME_i \; x \; lnEX_{i,t}) \\ & + \gamma_4 (AF_i \; x \; lnEX_{i,t}) + \gamma_5 (NAM_i \; x \; lnEX_{i,t}) + \gamma_6 (SAM_i \; x \; lnEX_{i,t}) \\ & + \gamma_7 (AUS_i \; x \; lnEX_{i,t}) + \gamma_8 (EUR_i \; x \; lnEX_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad (3)$$

All three models are differentiated by the international trade value that is used for estimating international tourism demand in Thailand. Model 1 includes the total bilateral trade value between Thailand and a tourist's country of origin ($Trade_{i,t}$), while Models 2 and 3 divide the international trade into import value (Model 2) and export value (Model 3) between Thailand and a tourist's country of origin, respectively.

$TOUR_{i,t-1}$ describes the impact the number of international tourist arrivals in the previous year has on the number of tourists in the current year. This method was adapted from a study by Garin-Munoz (2007) that rationalized the analysis of the number of tourists in the past in line with the following two reasons: 1) since tourists are risk-averse, traveling to previously visited destinations is preferred as it certainly leads to lower risks and more convenience than does traveling to new, unfamiliar places; and 2) having knowledge of their destinations also helps reduce other possible risks. For instance, tourists often gain knowledge or familiarity with a place during their holiday trips, and the impressions they get persuade them to return to the places they visited previously. Moreover, their impressions or knowledge about particular destinations are thereafter shared with families and friends, which consequently helps them to reduce possible risks of traveling to that destination. Therefore, "word of mouth" might have a more significant impact on tourists' decisions than do advertisements, suggesting that one's decisions on destinations to visit in the current year are influenced by the places visited in previous years (Song, Kevin, & Chon, 2003). Therefore, the number of international tourist arrivals in the previous year should have a positive relationship with the number of tourists in the current year ($\beta_1 > 0$).

$GDPPC_{i,t}$ includes GDP per capita, which represents the income levels of foreign tourists who visited Thailand. Assuming that visiting Thailand is normally desirable, the demand to visit the country should increases if tourists' income increases. The income variable, thus, should have a positive association with the number of tourists ($\beta_2 > 0$). On the other hand, if the estimation shows the GNI per capita is negative, traveling to Thailand will be considered as an inferior good.

$PR_{i,t}$ refers to the comparison between the Consumer Price Index (CPI) of Thailand and that of a tourist's country of origin, adjusted according to currency exchange rates. Therefore, the PR index can show the relative price that reflects the cost of living of tourists who visit Thailand. According to the Law of Demand, the coefficient should have a negative connection with the number of foreign tourists ($\beta_3 < 0$).

$Trade_{i,t}$, $IM_{i,t}$, and $EX_{i,t}$ represent actual international trade ratios, specifically the trade ratio, import ratio, and ratio compared to national income, respectively. Studies in other countries suggested that these variables are positively associated with international tourist demand. Hence, in this paper, the coefficients should have a positive relationship with the number of international tourist arrivals ($\beta_4 > 0$).

$Pop_{i,t}$ refers to the population of a tourist's' country of origin. The population of the country of origin should have a positive relationship with the number of international tourist arrivals ($\beta_5 > 0$). $Dist_i$ reflects the distance between Thailand and a tourists' country of origin, which should have a negative association with the number of international tourist arrivals ($\beta_6 < 0$). Table 3 explains the fundamentals and aspects of these variables.

In addition, the models use a dummy variable to analyze a tourist's country of origin in different regions. To demonstrate, Region = 0 if country i is a member of the Association of Southeast Asian Nations (ASEAN), SA = 1 if country i is in South Asia, EA = 1 if country i is in East Asia, ME = 1 if country i is in Middle East, AF = 1 if country i is in Africa, NAM = 1 if country i is in North America, and SAM = 1 if country i is in South America. This region variable is used to control the number of tourists from different regions.

This study used panel data from 207 trading partners of Thailand. The dataset used in this paper was from 1998 to 2010 and was compiled from different sources. Trade volume was collected from UN-Comtrade. GDP per capital, relative price, number of population were collected from World Development Indicators. Distances were collected from Google Map, and the number of tourists were collected from Thailand's Department of Tourism.

A basic statistical test was conducted for all the variables. In Table 4, the average numbers of tourists and number of tourists in the previous year per country equal 54,239 and 52,683, respectively. The average GDP per capita of tourists equals US$11,381 per tourist. The distance between Thailand and a tourist's country of origin, on average, equals 9,084 km.

Results

This part analyzes the correlation between international trade ratio, import and export ratio, and the number of tourists from other continents or regions. Shown in Table 2, the international trade ratio and import and export ratios have the highest positive correlation values with the number of tourists from Australia (0.9928, 0.9785, and 0.9898, respectively). In contrast, the international trade ratio and import and export ratios are the least correlated with the number of tourists from the Middle East (0.4065, 0.3436, and 0.5557, respectively). To control variables that affect the correlations, this study estimated international tourism demand in Thailand by applying econometric models with the techniques Pooled Ordinary Least Square, Fixed Effects (FE) Panel Data, and Random Effects (RE) Panel Data.

However, the estimations in the aforementioned models might be affected by serial correlation, heteroscedasticity, and endogeneity problems with some variables. To avoid these issues, we adopted the model called the Dynamic Panel Data Estimator or GMM-SYS estimator (Arellano & Bover, 1995; Blundell & Bond, 1998, 2000) to reduce any possible effects via a differential equation. Furthermore, the GMM-SYS estimator model is also capable of tackling the endogeneity problem. Finally, since the data on international tourism demand of many countries equals "zero," which can cause the variable to be left-censored to zero and affect the normal distribution of the

Table 3
Estimation of international tourism demand using total international trade value of Thailand

Variable	Pooled data	Fixed effect	Random effect	Tobit	GMM
Constant	0.542	10.512	0.542*	0.542*	–
$lnTOUR_{t-1}$	0.943***	0.685***	0.943***	0.943***	0.269***
lnGDPPC	0.049**	0.402*	0.049**	0.049**	0.412
lnPR	−0.023***	−0.009	−0.023***	−0.023***	−0.11
lnTrade	0.046**	0.091	0.046**	0.046***	0
lnPop	0.031**	−0.58	0.031***	0.031***	−0.033
lnDist	−0.070**	–	−0.070***	−0.070***	–
SA (South Asia = 1)	−0.13	–	−0.13	−0.13	–
EA (East Asia = 1)	−0.279***	–	−0.279***	−0.279***	–
ME (Middle East = 1)	−0.577***	–	−0.577***	−0.577***	–
AF (Africa = 1)	0.028	–	0.028	0.028	–
NAM (North America = 1)	−0.105	–	−0.105	−0.105	–
SAM (South America = 1)	0.338	–	0.338***	0.338***	–
AUS (Australia = 1)	0.03	–	0.03	0.03	–
EUR (Europe = 1)	−0.039	–	−0.039	−0.039	–
SA × lnTrade	−0.029	−0.042	−0.029	−0.029	−0.054
EA × lnTrade	−0.067**	−0.437***	−0.067***	−0.067***	−0.335
ME × lnTrade	−0.122***	0.102	−0.122***	−0.122***	0.283
AF × lnTrade	−0.005	0.034	−0.005	−0.005	0.302
NAM × lnTrade	−0.043*	0.129	−0.043***	−0.043***	0.637
SAM × lnTrade	0.057	0.112	0.057**	0.057***	0.313
AUS × lnTrade	−0.024	0.086	−0.024*	−0.024*	0.199
EUR × lnTrade	−0.032*	0.072	−0.032**	−0.032**	0.159
Long-run parameter					
lnGDPPC	0.86	1.276	0.86	0.86	–
lnPR	−0.404	–	−0.404	−0.404	–
lnTrade	0.807	–	0.807	0.807	–
lnPop	0.544	–	0.544	0.544	–
lnDist	−1.228	–	−1.228	−1.228	–
R-square adjusted	0.872	0.836	0.864	0.824	0.813

Remarks: 1. * = p < .1, ** = p < .05, *** = p < .01. 2. This model analyzed time-trend and included other control variables. 3. Long-run parameter was calculated by: $lnGDPPC = \beta_2/(1-\beta_1)$, $lnPR = \beta_3/(1-\beta_1)$, $lnTrade = \beta_4/(1-\beta_1)$, $lnPop = \beta_5/(1-\beta_1)$, $lnDist = \beta_6/(1-\beta_1)$

data, this research employed a Tobit model to prevent such coefficient bias.

This study estimated international tourism demand in Thailand using the country's degree of openness to international trade. As shown in Table 3, the demand tends to change in the long term rather than in the short term. When travel costs decrease by one percent, the number of tourists tends to increase by 0.023 and 0.404 percent in the short run and long run, respectively. For international tourists, tourism in Thailand is regarded as a normal good as the income elasticity of demand is positive in both the short and long terms, being 0.049–0.402 in the short term and 0.860–1.276 in the long term (assuming that GNI per capita increases by one percent). Regarding other factors, it was found that an increase of one percent in the number of tourists in the previous year caused the number of tourists in the following year to increase by 0.269–0.943 percent, implying that tourists who visited Thailand the year before tended to visit the country again the following year.

Considering bilateral trade value between Thailand and a tourist's country of origin, we found that a one-percent increase in trade openness between Thailand and that country tended to increase the number of international tourist arrivals to Thailand by 0.046 percent in the short term and 0.807 percent in the long term. This result was in line with the research by Habibi et al. (2009) and Leitao (2010) which studied tourism demand with Malaysia and Portugal, respectively.

Furthermore, classifying the international trade value between Thailand and tourists' countries of origin by continents or regions showed that trade openness or an increase in international trade values between Thailand and countries in East Asia, the Middle East, South America, North America, Europe, and Australia tended to be associated with the number of tourist arrivals. This was less so with trade openness between Thailand and ASEAN member countries.

Next, estimating international tourism demand in Thailand using import value (Table 4), this study found that there was low inelastic demand in the short term (around −0.024), while there was higher inelastic demand (around −0.490) in the long term. In other words, a one-percent decrease in the travel cost tended to increase the number of international tourist arrivals by, on average, 0.024 in the short term and by 0.490 percent in the long term. Furthermore, there was international tourists' income elasticity of demand of approximately 0.045–0.356 in the short term and approximately 0.918–1.245 in the long term. To simplify, a one-percent increase in income per capita of the country tended to cause the number of tourists to increase by, on average, 0.045–0.356 percent in the short term and by 0.918–1.245 percent in the long term.

Continuing, this paper examined the relationship between imports and tourism. It was found that a one-percent increase in the value of Thailand's import from a

Table 4
Estimation of international tourism demand using value of import from tourists' countries of origins

Variable	Pooled data	Fixed effect	Random effect	Tobit	GMM
Constant	0.828**	9.436	0.828**	0.828**	–
$lnTOUR_{t-1}$	0.951***	0.714***	0.951***	0.951***	0.299***
lnGDPPC	0.045**	0.356*	0.045**	0.045**	0.36
lnPR	−0.024***	−0.042	−0.024***	−0.024***	−0.176
lnIM	0.029**	0.049	0.029*	0.029*	−0.042
lnPop	0.024*	−0.525	0.024**	0.024**	0.181
lnDist	−0.108***	–	−0.108***	−0.108***	–
SA (South Asia = 1)	−0.069	–	−0.069	−0.069	–
EA (East Asia = 1)	0.01	–	–	–	–
ME (Middle East = 1)	−0.389**	–	−0.389***	−0.389***	–
AF (Africa = 1)	−0.019	–	−0.019	−0.019	–
NAM (North America = 1)	0.064	–	0.064	0.064	–
SAM (South America = 1)	0.086	–	0.086	0.086	–
AUS (Australia = 1)	0.139	–	0.139**	0.139**	–
EUR (Europe = 1)	0.12	–	0.120*	0.120*	–
SA × lnIM	−0.019	−0.051	−0.019	−0.019	0.069
EA × lnIM	–	–	0.01	0.01	−0.375
ME × lnIM	−0.086***	0.088	−0.086***	−0.086***	0.218
AF × lnIM	−0.023	−0.087	−0.023*	−0.023*	−0.029
NAM × lnIM	−0.022	0.138*	−0.022**	−0.022**	0.29
SAM × lnIM	−0.009	0.01	−0.009	−0.009	−0.062
AUS × lnIM	−0.012	0.139	−0.012	−0.012	0.089
EUR × lnIM	−0.011	0.033	−0.011	−0.011	0.1
Long-run parameter					
lnGDPPC	0.918	1.245	0.918	0.918	–
lnPR	−0.49	–	−0.49	−0.49	–
lnIM	0.592	–	0.592	0.592	–
lnPop	0.49	–	0.49	0.49	–
lnDist	−2.204	–	−2.204	−2.204	–
R-square adjusted	0.820	0.808	0.827	0.820	0.815

Remarks: 1. * = p < .1, ** = p < .05, *** = p < .01. 2. This model analyzed time-trend and included other control variables. 3. Long-run parameter was calculated by: $lnGDPPC = \beta_2/(1-\beta_1)$, $lnPR = \beta_3/(1-\beta_1)$, $lnTrade = \beta_4/(1-\beta_1)$, $lnPop = \beta_5/(1-\beta_1)$, $lnDist = \beta_6/(1-\beta_1)$

tourist's country of origin tended to cause the number of international tourist arrivals in Thailand to increase by 0.029 percent on average in the short term and by 0.592 in the long term. Moreover, dividing Thailand's import by continents or regions, we found that Thailand's imports from countries in North America tended to increase the number of tourists from such countries more than did import from Southeast Asian countries (ASEAN), by 0.138 percent.

In contrast, the effect of Thailand's import from countries in Central Asia, Africa, and North America on the number of international tourist arrivals to Thailand was smaller than the effect of Thailand's import from ASEAN member countries. In addition, the impact of Thailand's import from countries in South Asia, the Middle East, Europe, and Australia on the number of international tourist arrivals in Thailand was not significantly different from the effect of Thailand's imports from ASEAN member countries.

The model also examined the impact of Thailand's exports of a tourist's country of origin on international tourism demand in Thailand (Table 5). In a similar way, we found inelastic demand of around −0.018 in the short term and −0.474 in the long term. To simplify, a one percent decrease in the travel cost tended to increase the number of international tourist arrivals by, on average, 0.018 in the short term and by 0.474 percent in the long term.

With regard to other factors, it was found that a one-percent increase in the number of tourists in the previous year was likely to increase the number of tourists in the following year by 0.259–0.962 percent on average. Correspondingly, a one-percent increase in the population of a tourist's country of origin was likely to cause the number of international tourist arrivals to Thailand to increase by only 0.031 on average and by as much as 0.816 percent in the long term. Nevertheless, a one-percent increase in the distance between Thailand and a tourist's country of origin tended to cause a decrease in the number of international tourist arrivals by, on average, 0.066 percent in the short term and by 1.737 percent in the long term. Moreover, considering Thailand's exports to a tourist's country of origin, it was discovered that an increase in exports from Thailand to a tourist's country of origin did not have any significant impact on the number of tourists in both the short and long terms.

Dividing Thailand's export to countries in different continents or regions, the findings suggested that Thailand's exports to countries in South America, North America, Europe, Australia, and Africa tended to increase the number of tourists from such countries more than did imports from Southeast Asian countries (ASEAN).

In contrast, Thailand's exports to countries in Central Asia, the Middle East, and North America tended to be associated with the number of tourist arrivals to Thailand less than did Thailand's exports to ASEAN member countries by 0.072, 0.049–0.237, and 0.014 percent in the cases

Table 5
Estimation of international tourism demand using value of exports to tourists' countries of origin

Variable	Pooled data	Fixed effect	Random effect	Tobit	GMM
Constant	0.15	10.275	0.15	0.15	–
	−0.302	*−6.984*	*−0.205*	*−0.198*	–
$lnTOUR_{t-1}$	0.962***	0.695***	0.962***	0.962***	0.259***
lnGDPPC	0.046**	0.404***	0.046**	0.046**	0.29
lnPR	−0.018***	−0.006	−0.018***	−0.018***	−0.114
lnEX	0.007	−0.08	0.007	0.007	0.066
lnPop	0.031***	−0.582	0.031***	0.031***	−0.68
lnDist	−0.066**	–	−0.066**	−0.066**	–
SA (South Asia = 1)	−0.026	–	−0.026	−0.026	–
EA (East Asia = 1)	−0.235**	–	−0.235***	−0.235***	–
ME (Middle East = 1)	−0.414**	–	−0.414**	−0.414**	–
AF (Africa = 1)	0.218	–	0.218**	0.218**	–
NAM (North America = 1)	−0.018	–	−0.018	−0.018	–
SAM (South America = 1)	0.902***	–	0.902***	0.902***	–
AUS (Australia = 1)	0.104	–	0.104**	0.104**	–
EUR (Europe = 1)	0.021	–	0.021	0.021	–
SA × lnEX	−0.001	0.135	−0.001	−0.001	−0.059
	−0.02	*−0.084*	*−0.016*	*−0.015*	*−0.152*
EA × lnEX	−0.049	−0.237**	−0.049***	−0.049***	−0.345
	−0.031	*−0.115*	*−0.012*	*−0.012*	*−0.224*
ME × lnEX	−0.072**	0.223	−0.072***	−0.072***	0.319
	−0.034	*−0.149*	*−0.027*	*−0.026*	*−0.315*
AF × lnEX	0.034	0.193	0.034**	0.034**	0.326
	−0.051	*−0.137*	*−0.014*	*−0.014*	*−0.299*
NAM × lnEX	−0.014	0.247**	−0.014*	−0.014*	0.393
	−0.024	*−0.12*	*−0.008*	*−0.008*	*−0.247*
SAM × lnEX	0.134***	0.269***	0.134***	0.134***	0.230**
	−0.036	*−0.09*	*−0.035*	*−0.033*	*−0.111*
AUS × lnEX	0	0.210*	0	0	0.156
	−0.03	*−0.112*	*−0.011*	*−0.011*	*−0.228*
EUR × lnEX	−0.009	0.245**	−0.009	−0.009	0.096
	−0.017	*−0.119*	*−0.012*	*−0.012*	*−0.139*
Long-run parameter					
lnGDPPC	1.211	1.325	1.211	1.211	–
lnPR	−0.474	–	−0.474	−0.474	–
lnEX	–	–	–	–	–
lnPop	0.816	–	0.816	0.816	–
lnDist	−1.737	–	−1.737	−1.737	–
R-square adjusted	–	0.841	–	–	–

Italic values indicate Standard Error.
Remarks: 1. * = p < .1, ** = p < .05, *** = p < .01. 2. This model analyzed time-trend and included other control variables. 3. Long-run parameter was calculated by: lnGDPPC = $\beta_2/(1-\beta_1)$, lnPR = $\beta_3/(1-\beta_1)$, lnTrade = $\beta_4/(1-\beta_1)$, lnPop = $\beta_5/(1-\beta_1)$, lnDist = $\beta_6/(1-\beta_1)$

of countries in the Middle East, East Asia, and North America, respectively.

Conclusion

The results showed that international tourism demand in Thailand was inelastic in the short term. However, the elasticity of the demand was likely to be higher in the long term, implying that travel cost has a greater impact on tourism demand in the long term than in the short term. Tourism in Thailand was classified as a normal good from an economics point of view due to the positive income elasticity of demand in both the short and long terms. Moreover, income elasticity of demand tended to be higher in the long term than in the short term. That is to say, the higher the per capita income of a country, the higher the likelihood that tourists in that country will travel to Thailand.

Regarding other factors, international tourists who visited Thailand in a previous year are likely to travel to the country in the following year. The results also suggested that the population size of a country had a minimal positive impact on the number of international tourist arrivals, but such impact tended to be greater in the long run. In addition, the distance between Thailand and a tourist's country of origin tended to cause a smaller negative impact on the number of tourists in the short term than in the long term.

Regarding the impact of international trade, this paper discovered that international trade and import values between Thailand and its trading partners had a significant, positive effect on an increase in the number of tourist arrivals and that such impact tended to be greater in the long term than in the short term. Nevertheless, Thailand's exports were found to not have any significant impact on the number of international tourist arrivals.

Classifying tourists' countries of origin by continents or regions, we found that the values of imports and exports between Thailand and countries in North America, and the value of Thailand's exports to South America and Africa tended to have the largest positive impact on the number of international tourist arrivals in Thailand.

The findings in this study offer implications for public policy. Even though imports cause a negative impact on the trade balance of Thailand, they seems to have a significant positive impact on the number of tourists traveling to the country, which in turn leads to a positive effect on the country's revenue. Therefore, it is essential that the Thai government deliver a policy that promotes both imports and exports between Thailand and countries in North America, and it is recommended that Thailand's exports to countries in South America and Africa be increased. All in all, international trade between Thailand and countries in these continents/regions helps to increase tourist arrivals.

Conflict of interest

There is no conflict of interest in this research article.

References

Arellano, M., & Bover, O. (1995). Another looks at the instrumental variable estimation of error-components models. *Journal of Econometrics, 68*, 29–51.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics Review, 87*, 115–143.

Blundell, R., & Bond, S. (2000). GMM estimation with persistent panel data: An application to production functions. *Econometrics Review, 19*, 321–340.

Garin-Munoz, T. (2007). German demand for tourism in Spain. *Tourism Management, 28*(1), 12–22.

Habibi, F., Rahim, K. A., Ramchandran, S., & Chin, L. (2009). Dynamic model for international tourism demand for Malaysia: Panel data evidence. *International Research Journal of Finance and Economics, 23*, 207–217.

Kulendran, N., & Wilson, K. (2000). Is there a relationship between international trade and international travel. *Applied Economics, 32*, 1001–1009.

Leitao, N. C. (2010). Does trade help to explain tourism demand? The case of Portugal. *Theoretical and Applied Economics, 17*(3), 63–74.

Santana, M., Ledesma, F. J., & Perez, J. V. (2011). Tourism and trade in OECD countries: A dynamic heterogeneous panel data analysis. *Empirical Economics, 41*(2), 533–554.

Song, H., Kevin, F., & Chon, K. (2003). Modeling and forecasting the demand for Hong Kong tourism. *Hospitality Management, 22*(4), 435–451.

Surugiu, C., Leitao, N. C., & Surugiu, M. R. (2011). A panel data modeling of international tourism demand: Evidences for Romania. *Economic Research, 24*(1), 134–145.

Turner, L. W., & Witt, S. F. (2001). Factors influencing demand for international tourism: Tourism demand analysis using structural equation modeling, revisited. *Tourism Economics, 7*(1), 21–38.

White, R. (2007). Immigrant-trade links, transplanted home bias, and network effects. *Applied Economics, 39*(7), 839–852.