AN ANALYSIS OF INTERNATIONAL TOURISM DEMAND IN THAILAND

Suparporn Sookmark

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ABSTRACT

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This study examines the factors that influence the behavior of international tourists-in Thailand from an economic perspective. The focus is on the tourists from 6 regions, covering 25 countries of origin as the highest number of international tourist arrivals to Thailand. A number of important economic factors, income, price, and exchange rate, are studied regarding international tourism demand in the short-run and long-run by using the panel data model of the Generalized Method of Moment (GMM) method. The results of tourism demand in the short-run show that the number of previous tourist arrivals to Thailand was the main factor in determining their next visit to Thailand; in the long-run, Thailand is a high-end market for international tourism.

The forecasting analysis of international tourist arrivals to Thailand for January 2008-December 2010 was based on the seasonal Autoregressive Integrated Moving Average (SARIMA) and the Ordinary Least Square (OLS) techniques. The SARIMA was important because of its emphasis on the seasonality factor, which helped to explain the change in tourism demand in the short-run; on the other hand, the OLS takes into account other related factors, such as tourists receiving information or news about the destination of the country at the time of travel.

The forecasting results of the SARIMA show that the growth of tourist arrivals from East Asia is expected to be the strongest among the six main regions, especially tourist arrivals from China, where the ASEAN market shows an increasing trend.

Malaysia, Singapore, and Vietnam are expected to increase regarding the number of tourist arrivals during the forecasting period.

On the other hand, the OLS technique, with dummy factors of news shocks, shows that the effect of news shocks from the Tsunami disaster was sensitive in every market of study and the effect of South Thailand's insurgency was sensitive for tourism demand only in the market of the Americas as defined for this study.

The policy suggestions and implications that emerged from the results are: 1) government and suppliers in the tourist industry should co-operate in improving their services and quality standards; 2) policy makers and suppliers must closely monitor all tourism service providers to ensure that they do not charge unreasonable prices for their products and services; 3) policy makers should develop more policies on tourism safety and security; 4) they should promote tourist activities; and 5) they should develop the tourism industry in order to cope with the increasing demand.

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TABLE OF CONTENTS

LIST OF TABLES

Tables **Page**

LIST OF FIGURES

Figures **Page**

CHAPTER 1

INTRODUCTION

1.1 Introduction

The importance of tourism to the Thai economy is widely recognized. It is the main source of foreign revenue and an important part of current accounts. In addition, it also provides a significant contribution to the Gross Domestic Product (GDP) employment. According to the Tourism Authority of Thailand (TAT) statistics during 2003-2009, revenue from international tourism increased from $US 7,112.25 million in 2003 to $US 16,874.43 million in 2009.

During 2003-2009, tourism industry contributed 8.2 percent to the GDP. This share consisted of the value contributed from tourist activities at about 5.1 percent and the direct and indirect employment that the tourism industry generated, which was around 4.6 million jobs, accounting for 8.7 percent of the total employment of the country. Although the effect of the world economic crisis in 2005, mainly because of crude oil imports, was a decrease in the GDP and trade deficits, the international tourism industry in Thailand was not effected by the crisis, it still recorded a current account surplus of $US 1.7 billion during the first quarter of 2005, mainly from revenues from tourism.

The Tenth Economic and Social Development Plan, covering the period 2007-2011, includes a master plan to stimulate the economy by promoting domestic and international tourism, specifically to increase international arrivals. The government has been playing a very important role in stimulating the growth and development of the tourism industry and has been involved in marketing by launching several tourism promotional campaigns.

The growth of tourism in Thailand has been steady over the last two decades. In 1980, total international tourist arrivals were 7.8 million, increasing to 14 million in

2009. Over a period of 20 years, arrivals to Thailand increased at an average of 14.9 percent annually.

Thailand is endowed with an abundance of natural and cultural tourism products and beautiful beach destinations. Its unique culture and traditions considerably add to many of the attractions for tourists. These attributes combine to draw millions of tourists who come for holiday, leisure, or adventure. In many travel magazines and lifestyle surveys, Thailand is consistently ranked in the top ten for its beaches, entertainment and dining, value of products, recreational facilities, and shopping. The World Tourism Organization in 2007 ranked Thailand as the world's eighteenth international tourist destination. A survey by Lonely Planet, which is particularly popular among young visitors, shows that Thailand is a top-rated destination in terms of value and food. It is credited with the "Most Exciting Outdoor Market."

1.2 Rationale of the Study

In 2000, Thailand attracted 9.51 million international tourists, which generated a revenue of 285,272 million baht and reached 547,782 million baht in 2007 with 14.46 million tourists. Due to the importance of the tourism sector to the economy, the government has put much effort into stimulating the growth of the tourism industry. In regard to the total tourist arrivals to Thailand, it seems that the number of foreign visitors has accelerated rapidly in the last decade. For these reasons, thoroughly examining all aspects of the tourist demand and economic growth is tremendously significant for the government. It is important for the economy; policy makers should pay attention to this demand. In contrast to the important role of the tourist demand in Thailand, little attention has been paid to quantitative analysis of this demand so far, and it is the intention of this study to analyze the international tourist demand model by using an econometric technique.

This study differs from previous empirical tourism studies in Thailand in that it employs a stabilities technique with a panel data model of tourism demand, which have never been studied before. Specifically, the econometrics approach has been used to analyze and forecast international tourist arrivals to Thailand, which would be

beneficial to policy makers in terms of increasing the effectiveness of the strategic plan to develop the tourism industry and action plans to promote Thailand as a tourist destination.

1.3 Objectives of the Study

The main purpose of this study is to examine the factors that influence the behavior of international tourists in Thailand from an economic perspective so that the results can be used as a guideline for Thai policy makers in boosting tourism demand.

The tourism demand in this study covers three parts, as follows:

1) To identify the important factors that affect tourism demand for Thailand and to estimate their impacts both in short-run and long-run

2) To forecast the international tourism demand for Thailand during the period 2008 to 2010 by using the time-series seasonal model

3) To analyze the impact of news shocks on the international tourism demand

1.4 Contributions of the Study

The results of the study will provide information to increase the effectiveness of the strategic plan to develop the tourism industry and action plans to promote Thailand as a tourist destination. Major users of the results would be the Tourism Authority of Thailand (TAT) and the Ministry of Tourism and Sports. In essence, an area of this research that would contribute to the programs of TAT is the analysis of tourism from the demand perspective. An analysis of the economic factors that influence international tourist arrivals to Thailand would increase the knowledge base needed to stimulate tourism growth, as well as provide a basis for future research on tourism forecasting. Assessing the effect of news shocks on tourism demand is particularly important regarding the effort to promote Thailand as a tourist destination in various markets.

The government’s perception of the need to increase demand has often been the main obstacle to an effective tourism strategy. As the number of international

tourists continues to increase, pressure will increase on the resources required to support visitor demand. Major infrastructure and services are faced with increasing pressures due to growing tourist demand. If the number of international tourists continues to increase as predicted, the carrying capacities of the existing service sector and infrastructure may soon become inadequate to satisfy the needs of tourists and the local population.

1.5 Scope of the Study

The scope of this study focuses on the following:

1 The data are from secondary sources from 1991 to 2007.

2 The tourists in this study are from 6 regions, covering 25 countries of origin and accounting for 83.75 percent of the total arrivals to Thailand in 2007. The 25 countries selected for this study are the top 25 number of tourist arrivals in Thailand in year 2007, which is the highest number of international tourist arrivals to Thailand.

Table 1.1 International Tourist Arrivals from 25 Countries of Origin

Regions	Countries
1. The Americas	The United State of America and Canada
2. Europe	The United Kingdom, Sweden, France, Germany, the Netherlands, Switzerland, Norway, Italy, Denmark and Finland
3. East Asia	Japan, Korea, China, Hong Kong, and Taiwan
4. ASEAN	Singapore, Malaysia, Vietnam, Philippines, and Indonesia
5. South Asia	India
6. Oceania	Australia and New Zealand

3 The variables in this study are as follows:

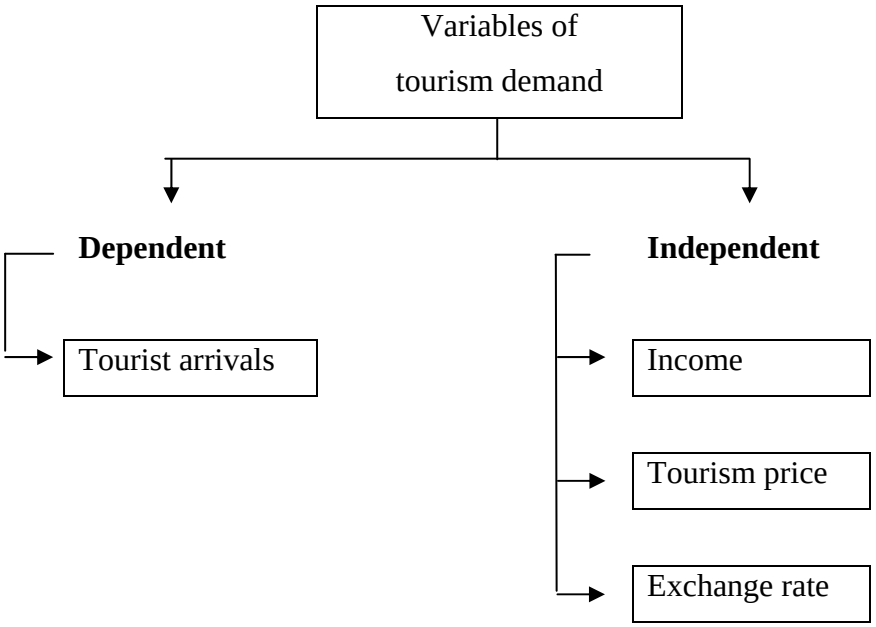

Figure 1.1: The Variables of Tourism Demand Analysis

1) Dependent variable is international tourist arrivals to Thailand

2) Independent variables:

(1) Income: this variable refers to gross domestic product (GDP) per capita of each country in real terms, using constant prices. It is used to explain whether the tourist's income plays an important role in explaining tourist arrivals to Thailand.

(2) Tourism price: this variable represents the cost of goods and services purchased by tourists in Thailand. It is measured by relative prices. The relative price variable is given by the ratio of the consumer price indices (CPI) of the destination, which is Thailand, and the origin countries. The base year is 2000. Relative price indicates the difference in the percentage change of price between the two countries show as in the following:

$$\text{Relative price} = \frac{\text{CPI}(\text{Destination})}{\text{CPI}(\text{Origin})}$$

(3) Exchange rate: This variable measures the effective prices of goods and services in Thailand. The exchange rate refers to the ratio of the baht and the currency of each country of origin.

1.6 Methodology

In this study, the three models are used to explore the international tourism demands in Thailand.

1 The Generalized Method of Moment (GMM) model

This model has not been previously used to study the tourism demand in Thailand. The economic variables in this model are income, price and the exchange rate affecting tourist arrivals to Thailand. The study shows, in chapter 3, which is the analysis of such important economic factors as income, price, and exchange rate, that affecting tourism demand. The Generalized Method of Moment (GMM) model is used to identify the important factors of tourism demand and to forecast their impact. The result of this forecasting method will present information on international tourism demand in long run. However, forecasting the number of tourist arrivals must also consider seasonality. The response to shock in the short run must be evaluated. This is addressed in the next objective, in which the seasonal time series model is used to forecast demand.

2 The Seasonal Autoregressive Integrated Moving Average (SARIMA) model

This model is use to forecast international tourism demand to Thailand using time-series techniques on tourism forecasting. The model tries to present international tourism demand in the short run by considering seasonality. The economic variable adopted in this model then is the number of monthly international tourist arrivals to Thailand from 1991 to 2007 based on the forecast for the period 2008-2010. The forecast using this model must be more accurate. The Seasonal Autoregressive Integrated Moving Average (SARIMA) model for this study is discussed in chapter 4. This study shows the response to shocks in the short run used to forecast tourism demand.

3 The Ordinary Least Squares (OLS) estimation

This study uses this model to study the shock of tourism demand. The responded on shock must be evaluated. The study describes the effects of news shocks of natural disasters, public health hazards, and criminality and terrorism on tourism demand in Thailand. The news shocks from a natural disaster, such as the Tsunami, public health problems such as the avian influenza, and the insurgency in southern Thailand are expected to have an effect on individual decisions regarding travel in Thailand, as discussed in chapter 5.

1.7 Organization of the Study

In order to cover the objectives of the study in analyzing tourism demand and forecasting inbound tourists to Thailand, the study is divided into six chapters, as follows.

Chapter 1 describes the background, rationale, and objectives of the study, and the contribution and scope of study are delineated. Chapter 2 reviews the literature relevant to the demand of tourists traveling in Thailand, describes the situation of tourism in Thailand, and discusses the demand side of tourism. Chapter 3 consists of the analysis of the important economic factors affecting tourism. The GMM model is used to identify the important factors of tourism demand and to forecast the number of international tourist arrivals to Thailand for the period 2008-2010. The result of this forecasting method presents international tourism demand in the long run. Chapter 4 introduces the time series model for tourism demand; ARIMA and SARIMA are adopted for the study. Forecasting the number of tourist arrivals must also consider seasonality. The response to shock in short run must be evaluated. The study will apply the seasonal time series model to forecast the tourism demand for the period of January 2008 to December 2010. Chapter 5 describes the effects of news shocks regarding natural disaster, public health hazards, and criminality and terrorism. Chapter 6 contains the conclusions, policy recommendations, and suggested future research areas.

CHAPTER 2

REVIEWS

The characteristics of international tourism are described through the literature review in three sections: 1) tourism demand; 2) tourism demand forecasting; 3) and news shocks on tourism demand. An additional section reviews the international tourism demand in Thailand.

2.1 Literature Review

2.1.1 Tourism Demand

Most previous empirical studies used tourist arrivals, departures, tourism receipts, and expenditures as dependent variables of their analysis. Reviews of the literature on tourism demand by Crouch (1994); Witt and Witt (1995); Lim (1997, 1999) and Li, Song and Witt (2005) suggest a substantial agreement regarding both tourism demand measures and the variables that are important in explaining international tourism flows. The study is supported by Witt and Witt (1995), who found that about 59 percent of tourism demand models used these variables. Other possible variables are tourist expenditure (32%), average length of stay (6%) and number of nights (3%).

Accordingly, the estimated demand function for tourism underlines the importance of selected variables in tourism demand studies. The discussion follows.

2.1.1.1 Dependent Variables

Tourism demand can be measured in terms of the number of tourist arrival, tourism expenditure, average length of stay, and other variables. The quantity of tourism demand was most frequently measured in terms of arrival or departure numbers: as this was often the only type of demand data available (Crouch, 1994). However, tourist arrivals have been used as a dependent variable in most studies on

tourism demand. This is supported by Witt and Witt (1995), who found that about 75 out of 118 studies on the demand for tourism used total tourist arrivals as a proxy for demand. Similarly, Li (2004) found that 37 out of 45 articles published chose tourist arrivals as the dependent variable. Norlida (2008) found that 59 percent of the tourism demand models had used tourist arrivals.

2.1.1.2 Independent Variables

Macroeconomic based proxies are often utilized in actual research (Lim and McAleer, 2001a). Classical economic theory suggests that the major determinants for tourism are the income of tourists and the price of goods and services. In line with this, Lim (1997) found that income and price were the most commonly used explanatory variables for tourism demand.

1) Income

The effects of income and price are the most popular variable of foreign travel demand because economic theory suggests these both are essential to the tourism demand function (Lim and McAleer, 2002; Dritsakis, 2004; and Muñoz, 2006). The survey of Lim (2004) of 100 empirical studies on tourism modeling found that income was the most important explanatory variable, at about 81 percent. Following the basic principle of demand, the relationship between the quantity demand for a good or service and income can be either positive or negative depending on the type of good or service under consideration. Consumers will buy more of a normal good or less of an inferior good when their income increases. Tourism is considered a normal good (Mohammad, 1993).

Specifically, income has been one of the important explanatory variables in the theory of tourism demand (Garín-Muñoz, 2004; Gu and Kavanaugh, 2006; Kauffman, 2007) based on the Marshallian demand function (Varian, 1992; Zaratiegui, 2002). Theoretically, with the increase in origin country income, the demand for tourism is expected to increase, holding all other factors constant.

Most common proxies for income that are used in tourism research are national income in the form of gross domestic product (GDP) and gross national product (GNP), disposable income, personal disposable income, per capita private consumption, real per capita GDP, and per capita total expenditure (Goh Ka Leng, 2003). GDP and GNP are used frequently in the demand functions related to

travel (Lee, 1996; Uysal and Crompton, 1984). Specially, Qiu and Zhang (1995), who modeled inbound vacation demand, found that both GDP and GNP were good measures of income.

2) Price

Price is another important factor that is incorporated frequently into the travel demand functions. It is the major relevant explanatory variable in understanding tourism demand (Nordstrom, 2005). Economic theory, based on the basic Marshallian demand function, ensures that price must be included in any demand study (Varian, 1992; Nicholson, 2005). However, the study of tourism price is particularly difficult. In international tourism, price consists of numerous components. The destination price, the cost of goods and services bought at the destination, or living costs at the tourist destination would normally account for the major portion of the total price. In basic economic demand theory, the price of a good or service is negatively related to the quantity demanded by consumers. In the context of foreign travel demand, as the prices of goods and services in a destination country increase, tourists are expected to make fewer visits to the destination, other things being constant.

The price of other items, including transportation to the destination, travel insurance, the opportunity cost of travel time, or change in exchange rates, may be important and can affect total arrivals (Barry and O'Hagan, 1972; Crouch, 1992; Lim, 1997a). Most studies show that the cost of living at the tourist destination is a measure of price. Goh Ka Leng, 2003 found that 86 percent of the studies had included the cost of goods and services, i.e., own price, at the destination in calculating the price variable, while 46 percent factored cost of travel into the demand equation, and approximately 50 percent used both approaches.

Tourism price refers to the price of all goods and services consumed by tourists at the destination, but most countries do not have a price index for goods and services consumed by tourists. The best alternative is the general Consumer Price Index (CPI) of that particular country. Hence, a consumer price index (CPI) was used instead as a proxy measure in most studies (Lee, 1996; Uysal and Crompton, 1984; Vogt and Wittayakorn, 1998).

The calculation of tourism price is based on the consumer price index (CPI) of the destination divided by the CPI of the country of origin (Salman, 2003; Lim, 2004; Dritsakis, 2004). The calculation is shown in this equation:

$$\text{Relative price} = \frac{\text{CPI}(\text{Destination})}{\text{CPI}(\text{Origin})}$$

3) Exchange Rate

The rapid changes in exchange rates are noticed more readily by potential foreign travelers than changes in the country's price levels. A depreciation in the currency of the destination country relative to the currency of the origin country is translated as an increase in the origin country's purchasing power. Hence, the destination country is expected to enjoy an increasing demand, all other factors remaining constant. In the past, the effect of exchange rate changes often was accounted for indirectly by converting the destination price variable (Kliman, 1981). However, the recent practice is to include exchange rate as an independent variable (Crouch, 1994). Chadee and Mieczkowski (1987) found that the exchange rate variable is an equivalent measure of the change in destination price.

2.1.2 Tourism Demand Forecasting

Several studies have provided a review of past tourism demand forecasting and a comprehensive analysis of forecasting model selection in terms of error magnitude and directional change error (Witt and Witt, 1995; Witt, Song, and Louvieris, 2003). Previous tourism demand studies examined various forecasting models for both inbound and outbound tourism for different destinations in different time periods.

Martin and Witt (1989) and Sheldon (1993) compared the accuracy of seven forecasting methods for simulating visitor flows among twenty-four origin-destination pairs. They found that exponential smoothing was the second most accurate model in terms of mean absolute percentage error (MAPE). Also, advance forecasting models have been widely used for tourism demand forecasting in the past four decades with

the dominance of the integrated autoregressive moving-average models (ARIMAs) proposed by Box and Jenkins (1970).

Lim and McAleer (1999) and Goh and Law (2002) have examined the traditional Box-Jenkins multiplicative seasonal autoregressive integrated moving average model (ARIMA). Chu (1998) compared the univariate time series models and seasonal ARIMA model with the Naive model and the sine wave nonlinear model. Kulendran and Shan (2002) compared the forecasting performances of univariate time-series models, the seasonal ARIMA model, the basic structural model (BSM), the autoregressive model (AR), and the no-change model. Kulendran and King (1997), Kulendran and Witt (2001), and Turner and Witt (2001) compared the forecasting performances of both econometric and univariate time-series models, as well as the no-change model, the multiplicative seasonal ARIMA, and exponential smoothing. Kulendran and Witt (2003) compared the forecasting performance of the leading indicator approach with the econometric model and univariate time-series models. Preez and Witt (2003) compared the forecasting performance of the multivariate model and univariate ARIMA model within the state space modeling approach.

The selection of the most accurate forecasting model for a particular destination often involved assessing the out-of-sample forecasting performance of these models based on the measure of accuracy mean absolute percentage error (MAPE) or root mean squared percentage error (RMSPE). No single forecasting method was the best forecasting model across different situations.

2.1.3 News Shocks on Tourism Demand

Many studies on international tourism demand or demand forecasting have used variables such as Gross Domestic Product (GDP) in the country of origin, the consumer price index (CPI), income, transportation cost, and crime rate in predicting tourism demand (Kim and Qu, 2002; Witt and Witt, 1995; Uysal and Crompton, 1985). The predictions for international tourism demand are well summarized in some studies (Crouch, 1994; Lim, 1999; Witt and Witt, 1995).

There is need, however, to seriously consider arriving at an accurate forecasting result by understanding and capturing the effects of unexpected news

shocks on the tourism industry. Although the theories and applications of news impacts have been widely applied in research on international trade, economics, and finance, there has been no serious effort to examine or estimate the impact of news shocks on tourism demand for any tourist destination (Kim and Wong, 2006). Examples of the impact on tourist travel demand would be concerns over the safety and health of tourists, including terrorism, natural disaster, disease, and political instability (Crouch, 1994). In empirical studies that forecast international tourism demand, variables relating to tourists' safety and health were use as dummy variables and found to be statistically significant (Hiemstra and Wong, 2002). Mazzocchi and Montini (2001) investigated the impact of an earthquake on international tourist arrivals in the Umbria region of central Italy during September 1997. They found a large discrepancy between actual totals and forecast values in the number of visitors during the same period one year after the earthquake occurred. Blake and Sinclair (2003) explored the effects of shock on the September 2001 compared to the previous 12 months. The decline in international tourism was attributed to security and health concerns, as evidenced by the effects of the terrorist attacks on tourists in Kosovo in 1999, the effect of the foot-and-mouth disease outbreak in the United Kingdom in 2001, and the effects of the SARS outbreak in East Asia during the second half of 2002 through the first half of 2003.

2.2 Review of International Tourism Demand in Thailand

This section describes the most relevant characteristics of international tourism demand in Thailand.

2.2.1 Previous Situation

The total number of international tourists reached 14,464,228 in 2007. Figure 2.2 shows the yearly international tourist arrivals between 1997 and 2007. In fact, the most significant increase since 1997 by 7,221,345 to 14,464,228 in 2007 with a 15.6% increase in the number of arrivals with respect to the cumulative yearly. It can be observed that tourism increased between 1997 and 2007. Declines occurred in 2003

and 2005. The most important decline took place in 2003 with the SARS crisis that year, followed by another decline in 2005 following the Tsunami in December 2004.

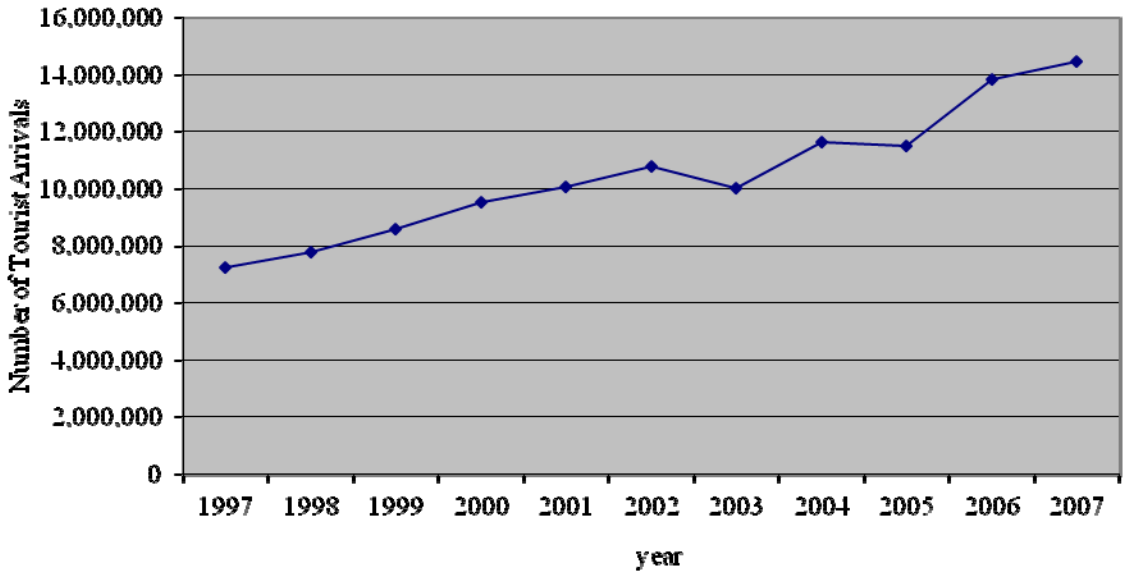

Figure 2.1 International Tourist Arrivals to Thailand (1997-2007).
Source: Tourism Authority of Thailand, 1997-2007

2.2.2 Overall Situation

International tourists in Thailand are of diverse nationalities. Table 2.1 shows the relative importance of each of the origin markets according to 2007 to 2009 data on arrivals. In terms of composition, the traditional tourism market for international tourism is highly concentrated in a few countries of origin.

Using the 14.5 million international visitors in 2009 as a reference point, Asia-Pacific arrivals grew at 7.6% a year. Malaysia, Japan, Korea, China, and the United Kingdom represented the top five origins of international arrivals, with a 12.42, 7.10, 4.37, 5.49, and 5.95 percent share, respectively, of the total.

Table 2.1 Tourist Arrivals by Country of Origin in 2007-2009

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
Malaysia	1,540,080	10.65	1,805,332	12.38	1,757,813	12.42
Japan	1,277,638	8.83	1,153,868	7.91	1,004,453	7.10
Korea	1,083,652	7.49	889,210	6.10	618,227	4.37
China	907,117	6.27	826,660	5.67	777,508	5.49
United Kingdom	859,010	5.94	826,523	5.67	841,425	5.95
U.S.A.	681,972	4.71	669,097	4.59	627,074	4.43
Australia	658,148	4.55	694,473	4.76	646,705	4.57
Singapore	604,603	4.18	570,047	3.91	563,575	3.98
Germany	544,495	3.76	542,726	3.72	573,473	4.05
India	536,356	3.71	536,964	3.68	614,566	4.34
Laos	513,701	3.55	621,564	4.26	655,034	4.63
Taiwan	427,474	2.96	393,176	2.70	362,783	2.56
Sweden	378,387	2.62	392,274	2.69	350,819	2.48
France	373,090	2.58	398,407	2.73	427,067	3.02
Hong Kong	367,862	2.54	337,827	2.32	318,762	2.25
Russian	277,503	1.92	324,120	2.22	336,965	2.38
Vietnam	237,672	1.64	338,303	2.32	363,029	2.57
Indonesia	237,592	1.64	247,930	1.70	227,205	1.61
Philippines	205,266	1.42	221,506	1.52	217,705	1.54
Netherlands	194,434	1.34	193,541	1.33	205,412	1.45
Canada	183,440	1.27	180,900	1.24	169,482	1.20
Italy	171,328	1.18	159,513	1.09	170,105	1.20
Switzerland	146,511	1.01	143,065	0.98	148,269	1.05
Finland	143,266	0.99	155,143	1.06	156,000	1.10
Denmark	141,110	0.98	149,683	1.03	144,834	1.02
Others	1,772,521	12.25	1377989	9.73	2305930	15.81
Total	**14,464,228**	**100.00**	**14,149,841**	**100.00**	**14,584,220**	**100.00**

Source: Ministry of Tourism and Sports, Thailand

Table 2.1 presents Malaysia as maintaining its position as Thailand's top contributor with 1,540,080 persons in 2007, 1,805,332 in 2008, and 1,757,813 in 2009 , edging out Japan's 1,277,638, 1,153,868, and 1,004,453 in 2007, 2008, and 2009 respectively. However, Malaysia's numbers increased on average to 8% per year, while Japan's growth stagnate average was at 3%. Many of the arrivals from Malaysia come from cross-border traffic for reasons of work or visiting friends and relatives. Korea, China, and the United Kingdom were third through fifth. Arrivals from Scandinavian countries continued to grow.

Table 2.2 shows that the tourism situation of the East Asian markets in 2009 expanded highly when compared to 2008. The total number of arrivals was 7,076,190, with 3,968,579 of those numbers coming from ASEAN markets. Japan had the highest arrivals of 1,004,453 within East Asia, and Malaysia had the highest arrivals of 1,757,813 within ASEAN. China, Laos, and Korea also had significant numbers of tourist arrivals of 777,508, 655,034 and 618,227, respectively.

Table 2.2 International Tourist Arrivals from East Asia in Thailand by Nationality

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
East Asia	**7,611,931**	**100**	**7,601,638**	**100**	**7,076,190**	**100**
ASEAN	*3,520,051*	*46.24*	*3,971,429*	*52.24*	*3,968,579*	*56.08*
Brunei	8,987	0.12	9,055	0.12	8,353	0.12
Cambodia	99,945	1.31	85,790	1.13	96,586	1.36
Indonesia	237,592	3.12	247,930	3.26	227,205	3.21
Laos	513,701	6.75	621,564	8.18	655,034	9.26
Malaysia	1,540,080	20.23	1,805,332	23.75	1,757,813	24.84
Myanmar	72,205	0.95	71,902	0.95	79,279	1.12
Philippines	205,266	2.70	221,506	2.91	217,705	3.08
Singapore	604,603	7.94	570,047	7.50	563,575	7.96
Vietnam	237,672	3.12	338,303	4.45	363,029	5.13
China	907,117	11.92	826,660	10.87	777,508	10.99
Hong Kong	367,862	4.83	337,827	4.44	318,762	4.50

Table 2.2 (Continued)

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
Japan	1,277,638	16.78	1,153,868	15.18	1,004,453	14.19
Korea	1,083,652	14.24	889,210	11.70	618,227	8.74
Taiwan	427,474	5.62	393,176	5.17	362,783	5.13
Others	28,137	0.37	29,468	0.39	25,878	0.37

Source: Ministry of Tourism and Sports, Thailand

Europe was growing at the total number of 4 million visitors in 2009. The United Kingdom had the highest arrivals of 841,425, followed by Germany with 573,473 and France with 427,067. The Scandinavian visitors also had more than 100,000 arrivals, as presented in Table 2.3

Table 2.3 International Tourist Arrivals from Europe in Thailand by Nationality

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
Europe	**3,905,271**	**100.00**	**3,984,614**	**100.00**	**4,059,988**	**100.00**
Austria	81,391	2.08	80,561	2.02	85,786	2.11
Belgium	72,018	1.84	76,132	1.91	80,420	1.98
Denmark	141,110	3.61	149,683	3.76	144,834	3.57
Finland	143,266	3.67	155,143	3.89	156,000	3.84
France	373,090	9.55	398,407	10.00	427,067	10.52
Germany	544,495	13.94	542,726	13.62	573,473	14.12
Italy	171,328	4.39	159,513	4.00	170,105	4.19
Netherlands	194,434	4.98	193,541	4.86	205,412	5.06
Norway	108,941	2.79	124,600	3.13	121,575	2.99
Russian	277,503	7.11	324,120	8.13	336,965	8.30
Spain	82,111	2.10	80,369	2.02	75,362	1.86

Table 2.3 (Continued)

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
Sweden	378,387	9.69	392,274	9.84	350,819	8.64
Switzerland	146,511	3.75	143,065	3.59	148,269	3.65
United Kingdom	859,010	22.00	826,523	20.74	841,425	20.72
East Europe	148,302	3.80	164,029	4.12	181,247	4.46
Others	183,374	4.70	173,928	4.36	161,229	3.97

Source: Ministry of Tourism and Sports, Thailand

In 2009, the number of tourists traveling from the Americas to Thailand was a total of 853,381 arrivals in 2009 and 909,017 arrivals in 2008, and total market shared was 6.03 and 6.23, respectively. The highest number of tourist arrivals of 627,074 came from the USA and the second highest of 169,482 arrivals from Canada as shown in Table 2.4

Table 2.4 International Tourist Arrivals from the Americas in Thailand by Nationality

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
The Americas	**920,366**	**100.00**	**909,017**	**100.00**	**853,381**	**100.00**
Argentina	6,704	0.73	7,132	0.78	7,458	0.87
Brazil	15,056	1.64	16,805	1.85	17,650	2.07
Canada	183,440	19.93	180,900	19.90	169,482	19.86
USA	681,972	74.10	669,097	73.61	627,074	73.48
Others	33,194	3.61	35,083	3.86	31,717	3.72

Source: Ministry of Tourism and Sports, Thailand

Table 2.5 presents the number of tourists traveling from South Asia in 2009. The tourism situation in South Asia was expanding with a satisfactory growth rate of 5.84%, and the total number of tourist arrivals was 826,437. The highest number of arrivals from this group was India with 614,566 tourist arrivals. The second, third, and fourth highest were Pakistan with 63,260 arrivals, followed by Bangladesh with 53,420 and Sri Lanka with 47,138, respectively.

Table 2.5 International Tourist Arrivals from South Asia in Thailand by Nationality.

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
South Asia	**709,811**	**100.00**	**711,290**	**100.00**	**826,437**	**100.00**
Bangladesh	44,789	6.31	46,682	6.56	53,420	6.46
India	536,356	75.56	536,964	75.49	614,566	74.36
Nepal	19,546	2.75	20,589	2.89	25,499	3.09
Pakistan	46,656	6.57	49,169	6.91	63,260	7.65
Sri Lanka	44,327	6.24	38,993	5.48	47,138	5.70
Others	18,137	2.56	18,893	2.66	22,554	2.73

Source: Ministry of Tourism and Sports, Thailand

Generally, Oceania had retained its growth rate of 5.21% with a total number of 737,459 visitors. Australia had the highest number at 646,705, while New Zealand came second with 88,398, as presented in Table 2.6

Table 2.6 International Tourist Arrivals from Oceania in Thailand by Nationality

Number of persons

Country of Nationality	2007	% share	2008	% share	2009	% share
Oceania	**764,072**	**100.00**	**794,331**	**100.00**	**737,459**	**100.00**
Australia	658,148	86.14	694,473	87.43	646,705	87.69
New Zealand	104,195	13.64	97,894	12.32	88,398	11.99
Others	1,729	0.23	1,964	0.25	2,357	0.32

Source: Ministry of Tourism and Sports, Thailand

2.2.3 Current Situation and Policies

According to the preliminary tourism data in 2010 from the Ministry of Tourism and Sports, international visitor arrivals in January – November showed a good growth of 12.63% to 14,039,523. South Asia showed the highest growth of 22.78%, followed by Middle East (21.73%), Africa (16.07%), East Asia (15.14%), and Europe (8.15%). Key contributing factors to the growth of international visitor arrivals were the improved overall global economic conditions and government policies and marketing recovery campaigns that facilitated a quick short-term tourism recovery. The tactical and strategic campaigns included numerous activities at global travel trade shows and regional road shows, hard-sell marketing events, partnerships with airlines and tour operators, and government policy measures such as reduced aircraft landing and parking charges, etc. The main principles of the tourism policy as established by the Ministry of Tourism and Sports, include:

1) Develop as well as promote sustainable tourism with the least environmental, natural, social and cultural impact so as to preserve the existing national resources for the benefits of later generations

2) Enhance the quantitative expansion of the tourism industry through the development as well as management of potential tourism resources in a manner that generates extreme benefits

3) Develop an integrated management of information, public relations, and customer relations through the use of information technology

CHAPTER 3

PANEL DATA MODEL OF TOURISM DEMAND

The objective of this chapter is to estimate the international tourism demand for Thailand by using the important economic factors such as income, price and exchange rate that affect tourism demand. The Generalized Method of Moment (GMM) was used to identify the important factors of tourism demand and to forecast the number of international tourist arrivals to Thailand for the period 2008-2010. The result of this forecasting method attempts to present international tourism demand in the long run.

3.1 Theoretical Framework

In the demand approach, a tourist seeks to maximize utility through an objective function. The theoretical Lancastrian model provides the demand approach to tourism. Tourism demand is affected principally by income and prices and information about the extent to which changes in demand result from each of these variables; this is also important for policy makers. It is helpful to examine the effects of each of these variables separately.

The empirical results of previous econometric models often were viewed in terms of elasticity of demand, which is defined as the percentage change in the quantity of tourism demands with respect to a percentage change in each of the demand determinants. An elasticity greater than one, i.e. where the demand is elastic, implies that the demand for tourism services responds proportionately more than the change in the independent variable. Similarly, in the case of a rise in income with constant relative prices, the effect on most types of tourism and most tourist destinations is likely to be positive. Thus, an increase in income results in a rise in tourism purchases, similar to the effect of increasing income on the demand for most

other goods and services; that is, it is a normal good because demand for it is positively related to income. However, it is possible for a rise in income to bring about a fall in demand, such as for tourism in mass market destinations, implying that this form of tourism is an inferior good.

On the other hand, an elasticity of less than one, that is, demand is inelastic, implies that the demand for tourism services responds proportionately less than the change in the independent variables.

3.1.1 Income Effect

Income relates to all potential buyers of a generating area regardless of their preferred tourism destination. A great deal of research measuring the effect of income changes on total tourism demand from a generator has been carried out.

The strength of the effect that income change has on demand can be measured by income elasticity of demand, defined as the ratio of percent change in demand to percent change in disposable income, as in the following equation:

$$E_y = \frac{\%\, change\, in\, tourism\, demand}{\%\, change\, in\, disposable\, income}$$

It is normal to expect income elasticity of demand to be positive for most goods and services; the demand for basic goods and services should be income-inelastic $(E_y < 1)$, whilst that for luxury items should be elastic $(E_y > 1)$.

The estimated income elasticities of demand commonly were found to be positive and greater than one (Crouch, 1994). This finding led most researchers to conclude that foreign travel is a luxury good, an item that rises proportionally more with increases in income. However, negative income elasticity has also been observed, which denotes inferior tourism destinations (Chadee and Mieczkowski, 1987).

3.1.2 Price Effect

The effects of price change are more complex in tourism than are the effects of change in income. Two particular price conditions are of note:

3.1.2.1 Substitutes of price effects

3.1.2.2 Relative prices between destinations and relative price differences between destinations and generating areas

In international tourism, exchange rate variations are usually the major contributor to relative price differences. As with income changes, the effects of price changes on demand can be measured with elasticities, in this case, price elasticity of demand through the formula:

$$E_p = \frac{\%\, change\, in\, quantity\, of\, tourism\, product\, demanded}{\%\, change\, in\, tourism\, product\, price}$$

The standard law of demand in economics holds that for most products E_p will be negative, that is, there is an inverse relationship between a product's price and the demand for that product. A E_p figure numerically greater than -1 indicates elastic demand (sensitivity of demand response exceeding the percentage of any price change) and a E_p figure numerically less than -1 indicates price inelasticity, or relatively unresponsive demand. Cross price elasticity is defined as:

$$E_{cp} = \frac{\%\, change\, in\, demand\, for\, product\, A}{\%\, change\, in\, price\, of\, product\, B}$$

where A and B are close substitutes and one might expect E_{cp} to be positive and probably >1.

3.2 Research Methodology

The theoretical framework for classic demand theory suggests that demand is affected by changes in income, price, and consumer preferences. Therefore, the major economic variables, such as income, tourism prices, and exchange rate, are used to explain international tourism demand for Thailand.

3.2.1 Variables and Data Sets

This study uses the important variables suggested by the literature on tourism demand. The details for each variable are discussed as follows.

Number of tourist arrivals is used as a proxy for tourism demand in this study. The data of 25 major countries from 6 main regions were selected, as shown in Table 3.1. The data set corresponds with the annual tourist arrivals during the 17-year period from 1991 to 2007 (t = 1991,…, 2007). The total data set consists of 425 observations.

Table 3.1 The Selected 6 Main Regions of International Tourist Arrivals to Thailand

Regions	Countries
1 The Americas	The United State of America and Canada
2 Europe	The United Kingdom, Sweden, France, Germany, Netherlands, Switzerland, Norway, Italy, Denmark and Finland
3 East Asia	Japan, Korea, China, Hong Kong and Taiwan
4 ASEAN	Singapore, Malaysia, Vietnam, Philippines and Indonesia
5 South Asia	India
6 Oceania	Australia and New Zealand

The data on the tourist arrivals to Thailand are from the Tourism Statistic Report organized by Tourism Authority of Thailand (TAT).

3.2.1.1 The independent variables in this study are the lagged dependent variable, income, price, and exchange rate. Details are as follows.

1) Lagged dependent variable

The reason for including previous consumption is that knowledge about the destination spreads as people talk about their holiday, thereby reducing the uncertainty for potential visitors to that destination. Thus, in a panel data model of international tourism demand, the lagged dependent variable must be

interpreted as habit formation or as interdependence preferences to capture the dynamic effects of the influence factor on tourist demand.

2) Income variable

This variable refers to gross domestic product (GDP) per capita of each country in real terms, using constant prices. It is used as a proxy variable for income and is used to explain whether tourists' income plays an important role in explaining tourist arrivals to Thailand. The source of data in each country are from the IMF International Financial Statistics.

3) Tourism price

This variable represents the cost of goods and services purchased by tourists in Thailand. It is measured by relative prices. The relative price variable is given by the ratio of the consumer price indices (CPI) of the destination, which is Thailand, and the origin countries. The base year is 2000. The logarithm of relative price (*lrp*) indicates the difference in the percentage change of price between the two countries.

$$lrp = \log\left\{\frac{CPI\,(Thailand)}{CPI\,(origin)}\right\}$$

$$= \log CPI\,(Thailand) - \log(origin)_i \qquad i = 1,2,3,...,25$$

The data on CPI of each country are from the IMF International Financial Statistics.

4) The nominal exchange rate

The nominal exchange rate measures the effective prices of goods and services in Thailand. It is expressed in terms of the number of units of origin currency needed to purchase Thai baht. The exchange rate refers to the ratio of the baht and the currency of each origin country. The data on the exchange rate of each country are from the IMF International Financial Statistics, the World Bank, and the Bank of Thailand**.**

3.2.2 Model Specification

The panel data estimation of annual tourist arrivals used in this study has two main advantages. Firstly, the use of annual data avoids the seasonality problem, which is dominant in this sector. Secondly, the utilization of a pooled time series or cross sectional data set enables a higher degree of freedom than with time series or cross sectional data, and one can control for omitted variable bias and reduce the problem of multi-colinearity. This improves the accuracy of parameter estimates (Hsiao, 2003).

The estimation of international tourism demand to Thailand from the 25 countries of origin is presented in the following formula:

$$Q_{i,t} = f\left(Q_{i,t-1}, GDP_{i,t}, RP_{i,t}, ER_{i,t}\right) \tag{3.1}$$

Dependent Variable

$Q_{i,t}$ = the number of tourism arrivals to Thailand from country *i* during year *t*, where *t* = 1991,…, 2007.

Independent Variables

$Q_{i,t-1}$ = the number of tourism arrivals to Thailand from country *i* during the Period *t-1*.

$GDP_{i,t}$ = the Gross Domestic Product per capita of each of the origin countries.

$RP_{i,t}$ = the relative consumer price level for tourists from origin country *i* in Thailand.

$ER_{i,t}$ = the exchange rate in units of the origin country's currency per Thai baht.

As with most of the previous studies, the tourism demand model in this study uses the double logarithmic form. The model is:

$$\ln Q_{i,t} = \alpha + \beta_1 \ln Q_{i,t-1} + \beta_2 \ln GDP_{i,t} + \beta_3 \ln RP_{i,t} + \beta_4 \ln ER_{i,t} + \lambda_t + \eta_i + \varepsilon_{i,t} \tag{3.2}$$

where λ_t and η_i are the fixed effects that capture cross-section and time-series specific effects, in which λ_t is the time specific effect and η_i is the country specific

effects. The error component (ε_{it}) is assumed to be serially uncorrelated with zero mean and independently distributed across countries, and ε_{it} is assumed to be uncorrelated with the initial condition $\ln Q_{it}$, for t = 2,…, T, and with the individual effects η_i for any t.

When a model for panel data includes lagged dependent explanatory then the OLS estimator, which omits the country specific effects, is also biased if these effects are relevant. One solution to this problem is to use the lags of the dependent variable as instruments for the lagged dependent variable.

These conditions may be exploited as in the Generalized Method of Moment (GMM) framework of Arellano and Bond (1991). This GMM estimator makes use of the fact that the values of the dependent variable lagged two periods or more are valid instruments for the lagged dependent variable. This will generate consistent and efficient estimates of the parameters of interest. The dynamic panel model will therefore be:

$$\Delta \ln Q_{i,t} = \beta_1 \Delta \ln Q_{i,t-1} + \beta_2 \Delta \ln GDP_{i,t} + \beta_3 \Delta \ln RP_{i,t} + \beta_4 \Delta \ln ER_{i,t} + \Delta \varepsilon_{i,t} \quad (3.3)$$

where i = 1, …, 25; t = 1981, …, 2007, and all the variables are in first differences. This means that $\Delta \ln Q_{it} = \ln Q_{i,t} - \ln Q_{i,t-1}$ and similar for the other variables.

The parameter β_1 indicates the degree to which current tourism purchases are determined by the value of previous consumption. As it is a dynamic panel model, the estimated coefficients are the short run elasticity.

3.3 Empirical Results

The empirical results are divided into 2 parts, the empirical results of tourism demand by using the static model and the panel data model.

3.3.1 Empirical Results of Tourism Demand by Using the Static Model

The static model, as show in equation 3.5, was used to estimated the elasticity of long-run tourism demand.

$$\ln Q_{i,t} = \alpha + \beta_1 \ln GDP_{i,t} + \beta_2 \ln RP_{i,t} + \beta_3 \ln ER_{i,t} + \lambda_t + \eta_i + \varepsilon_{i,t} \quad (3.5)$$

The estimated results show that all variables appear with the most correct sign. Income of origin countries, price, and exchange rate are influential in determining international tourist arrivals to Thailand and the values of elasticities, as show in Table 3.2

The American region

In the American region as in long-run suggested that the international tourism demand for Thailand from the tourists from the Americas is very high image of tourism, income elasticity is 3.40. The results showed that GDP growth had a positive impact on international tourist arrivals to Thailand, implying that in the long-run when GDP growth increases by 1% then the number of tourists from the Americas arriving in Thailand will increase by 3.40%. The absolute value of price elasticity is -1.89, implying that the demand of tourists from the Americas to Thailand is very sensitive to price change. When relative price increases by 1% then the number of tourist from this region arriving in Thailand will decrease by 1.89%. The Exchange rate is also a significant determinant of inbound tourism to Thailand. The estimated model explains 99.48% of tourist arrivals.

European region

In the European region as in long-run suggest the elasticity of international tourism demand from European tourists in Thailand is a very high luxury good; income elasticity is 4.31. The result of the GDP growth has a positive impact on international tourist arrivals to Thailand and price has a negative impact on international tourist arrival to Thailand. The empirical results imply that in the long-run when GDP growth increases by 1%, then the number of European tourists arriving

Table 3.2 Estimate Results for the Static Panel Model

Variables	Americas	Europe	ASEAN	East Asia	Oceania	South Asia	25 Countries
Constant	-24.69	-34.51	-14.73	-2.27	-17.38	-16.24	-12.54
	(-9.96)	(-13.91)	(-9.77)	(-1.62)	(-3.47)	(-5.70)	(-14.55)
ln *GDP*	3.40**	4.31**	2.01**	1.25**	2.72**	2.88**	2.05**
	(13.19)	(18.28)	(14.53)	(9.79)	(5.03)	(10.05)	(25.24)
ln *RP*	-1.89**	-0.39	-1.33**	-1.40**	-0.22	0.92*	-0.95**
	(-6.70)	(-1.56)	(-8.08)	(-4.47)	(-0.74)	(2.13)	(-8.39)
ln *ER*	-0.34**	0.19**	-0.49**	-1.10**	0.36	-0.27	-0.55**
	(-3.19)	(2.71)	(-3.44)	(-5.00)	(0.61)	(-1.46)	(-7.30)
R^2	0.9948	0.9715	0.9843	0.7918	0.9808	0.9823	0.9562
Adjust R^2	0.9941	0.9693	0.9829	0.7728	0.9782	0.9782	0.9532
Durbin Watson	1.4205	0.4565	0.6253	0.6981	0.7414	1.6716	0.3897
F statistic	1408.39	446.47	692.16	41.83	371.19	204.53	321.31

Note: the number in parenthesis is t-Statistic.

** is significant at level 0.01

* is significant at level 0.05

in Thailand increases by 4.31%, relative price increases by 1% then the number of European's tourist arriving in Thailand decreasing 0.39% and price elasticity imply that tourism price of European countries are sensitive to price change. The model explains 97.15% of tourist arrivals.

ASEAN region

In ASEAN region suggest that GDP growth has a positive impact on international tourist arrivals to Thailand. The empirical results imply that when income of ASEAN countries, GDP growth, increasing 1%, then the number of ASEAN countries arriving in Thailand will increase by 2.01%. The estimated elasticity value implies that long-run international tourism demand to Thailand is a luxury good; its income elasticity is greater than 1. The results of relative price and exchange rate have a negative impact on international tourist arrivals to Thailand implying that that in increases long-run when relative price increases by 1%, then the number of ASEAN countries arriving in Thailand will decrease by 1.33%, exchange rate increasing 1% then the number of ASEAN countries arriving in Thailand decreasing 0.49%. According to these elasticities, international tourism demand to Thailand is very sensitive to destination price changes, with an absolute value of price elasticity lower than 1. In fact, the estimated model explains 98.43% of tourist arrivals.

East Asia region

In the East Asia region as in long-run elasticities suggest that international tourism demand from East Asian to Thailand is a luxury good; income elasticity is 1.26. The result on GDP growth has a positive impact on international tourist arrivals to Thailand, implying that when the income of East Asian increases by 1%, then the number of East Asians arriving in Thailand increases 1.25%. In long-run suggest that relative price and exchange rate have a negative impact on international tourist arrivals to Thailand, thus implying that when relative price increases by 1%, then the number of East Asians arriving in Thailand decreases by 1.40%, exchange rate increasing 1% then the number of ASEAN countries arriving in Thailand decreasing 1.10%. The price elasticity shows that international tourism demand to Thailand is very sensitive to price variations, i.e. the absolute value of price elasticity is lower than 1. The model explains 79.18% of tourist arrivals.

Oceania region

In the Oceania region suggest that the long-run elasticity of international tourism demand from Oceania tourists in Thailand is a high luxury good; income elasticity is 2.72. The result of the GDP growth has a positive impact on international tourist arrivals to Thailand and relative price has a negative impact on international tourist arrivals to Thailand. The empirical results imply that in the long-run when GDP growth increases by 1%, then the number of Oceania tourists arriving in Thailand increases by 2.72%, relative price increasing 1% then the number of Oceania's tourist arriving in Thailand decreasing 0.22% and price elasticity, implying that the tourism price of Oceania countries is very sensitive to price change. The model explains 98.08% of tourist arrivals.

South Asia

In South Asia region suggest that GDP growth has a positive impact on international tourist arrivals to Thailand. The empirical results imply that when the income of South Asian countries increases by 1%, then the number of South Asian countries arriving in Thailand increases by 2.88%. The estimated elasticity value implies that long-run international tourism demand to Thailand is a high luxury good. The results of relative price have a positive impact on international tourist arrivals to Thailand, implying that in the long-run when relative price increases by 1%, then the number of South Asian countries arriving in Thailand increases by 0.92%. Thus price elasticity has a positive sign for South Asia. This implies that international tourism demand to Thailand is not sensitive to price change. In fact, the estimated model explains 98.23% of tourist arrivals.

Total of 25 origin countries

In the 25 origin countries, as in long-run elasticities, suggest that GDP growth has a positive impact on international tourist arrivals to Thailand. The empirical results imply that when the GDP growth increases by 1%, then the number of tourists from the 25 international origin countries arriving in Thailand increases by 2.05%. The estimated elasticity value implies that international tourism demand to Thailand is a high luxury good; its income elasticity is greater than 1. In brief, the economic conditions, measured by the per capita income level, in the country of origin are the most significant variables for explaining the number of arrivals. However, all of the

remaining explanatory variables are also significant determinants of inbound tourism to Thailand. The results of the relative price and exchange rate have a negative impact on international tourist arrivals to Thailand, and this implies that in the long-run when relative price increases by 1%, then the number of countries arriving from the 25 discussed decreases by 0.95%, exchange rate increasing 1% then the number of 25 international origin country arriving in Thailand decreasing 0.55%. According to these elasticities, international tourism demand to Thailand is not very sensitive to destination price changes, with an absolute value of price elasticity lower than 1. In fact, the estimated model explains 95.62% of tourist arrivals.

3.3.2 Empirical Results of Tourism Demand by Using Panel Data Model

The model of this estimation by using the GMM-DIFF estimator of Arellano and Bond is shown as:

$$\Delta \ln Q_{i,t} = \beta_1 \Delta \ln Q_{i,t-1} + \beta_2 \Delta \ln GDP_{i,t} + \beta_3 \Delta \ln RP_{i,t} + \beta_4 \Delta \ln ER_{i,t} + \Delta \varepsilon_{i,t}$$

The consistency of the estimation depends on whether the lagged values of the endogenous and exogenous variables are valid instruments in the regression. A test was also conducted for autocorrelation and the Wald test identifying restrictions. Failure to reject the null hypothesis in both tests gives support to the model.

The empirical results from the panel data estimated coefficients are short-run demand elasticities, as shown in Table 3.3. In order to obtain long-run elasticities, some transformations need to be made. If the long-run equilibrium is assumed, $\ln Q_{i\,t} = \ln Q_{i\,t-1}$, the elasticities have to be obtained by dividing each of the coefficients by $(1-\beta_1)$. The long-run parameters are shown at the bottom of Table 3.3.

Table 3.3 Estimate Results for the Panel Data Model

Variable	GMM estimator of Arellano and Bond
ln $Q_{i\,t-1}$	0.8399**
	(55.9892)
ln *GDP*	0.3586**
	(13.3674)
ln *RP*	-0.0685**
	(-4.2521)
ln *ER*	-0.0042
	(-0.6857)
Wald test	198.47
N. Observation	375
Long-run parameters	
ln *GDP*	2.2414
ln *RP*	-0.4280
ln *ER*	-0.0268

Source: from computed

Note: the variables are first differenced.

the number in parenthesis is a t-Statistic.

** is significant at the level 0.01

The results of Table 3.3 indicate that the model performs satisfactorily. The magnitudes and signs of the coefficients appear theoretically reasonable and significant. No signs of serial correlation were found and the Wald test denotes the joint significance of the explanatory variables.

3.3.2.1 The lagged dependent variable

These results show that the lagged dependent variable has a significant effect on the demand of international tourist arrivals from the 25 origin countries. This suggests that the word-of-mouth effect is very important in creating tourism demand for Thailand, at 83.99%; thus the large number of new and repeat visitors should be given due attention by the Thai tourism industry.

3.3.2.2 Income variable

The estimated coefficient for the income variable has the expected sign. According to the estimated short-run elasticity value of 0.3586, tourism to Thailand is considered by foreigners as a non-luxury good and service in the short-run. However, the long-run income elasticity shows that it is a high luxury good and service, with an estimated long-run elasticity value of 2.2414. This suggests that tourism is very much dependent on the economic conditions of the origin countries.

As a result, it would be advisable to diversify promotion efforts to different countries in order to avoid vulnerability to the changes in the economic conditions of a single or a few markets.

3.3.2.3 Price variable

According to these results, the negative coefficient for the relative price variable (0.0685) was significant. The short-run elasticities to relative price suggest that tourism arrivals to Thailand are not very responsive to price change; a 1% increase in prices would lead in the short- run to a 0.68% decrease in the number of arrivals. Also, in the long-run, the effects of prices on tourism demand can be considered as sensitive to price change at 42.80%.

3.3.2.4 Exchange rate variable

The exchange rate variable was also significant; the estimated short-run elasticity value was -0.0042.

3.4 Demand Forecasting

The static model will be used to forecast the tourist arrivals from the 6 main regions, comprising 25 countries, and can be done using the following equation, with the Americas taken as:

$$\begin{aligned}\ln \hat{Q}_{2008} &= -24.69173 + 3.408887 \ln GDP_{2008} - 1.897555 \ln RP_{2008} - 0.348874 \ln ER_{2008} \\ &\vdots \quad\quad \vdots \quad\quad\quad \vdots \quad\quad\quad \vdots \quad\quad\quad \vdots \\ \ln \hat{Q}_{2010} &= -24.69173 + 3.408887 \ln GDP_{2010} - 1.897555 \ln RP_{2010} - 0.34887 \ln ER_{2010}\end{aligned} \quad (3.4)$$

where the ^ symbol represents the forecast value. Actual data for the GDP were used, and the RP and ER during 2008-2010 for forecasting $\hat{Q}_{2008}$ - $\hat{Q}_{2010}$.

The above equation is used to predict the international tourist arrivals for the period 2008-2010. The procedure was applied to all six main regions. The forecast numbers of international tourist arrivals from the six main regions are shown in Table 3.4.

Table 3.4 Results of the Forecast of International Tourist Arrivals to Thailand during 2008-2010

Main Regions	Year		
	2008	2009	2010
The Americas	836,548	785,458	795,482
Europe	2,951,426	3,007,583	3,158,452
ASEAN	3,265,412	3,300,014	3,412,854
East Asia	3,851,243	3,342,985	3,254,889
Oceania	699,548	651,568	649,854
South Asia	554,258	595,856	610,258

Source: from computed

According to table 3.4, the estimate of international tourist arrivals from the six main regions is that about 12.15 million tourists would be visiting Thailand in 2008, decreasing to 11.68 million in 2009 and 11.88 million in 2010. The growth in the number of tourists from ASEAN from 2008 to 2010 was 4.51 percent.

The importance of forecasting, it is necessary to evaluate the forecasting performance to compare the results with actual statistics. The comparisons are based on the actual data of international tourism demand to Thailand and static forecasting of arrivals from the six main regions. The results presented in Figure 3.1 show that the forecast number of tourist arrivals from the Americas, Europe and Oceania was under the actual demand, and the forecast number of tourist arrivals from ASEAN, East Asia, and East Asia was over the actual demand. However, forecasting the number of tourist arrivals must consider the seasonality that will respond on shock of tourism in short-run of demand and therefore tends to capture the short-term variations more precisely. The short-term variation results can be found in the next chapter where the time series model for tourism demand is discussed.

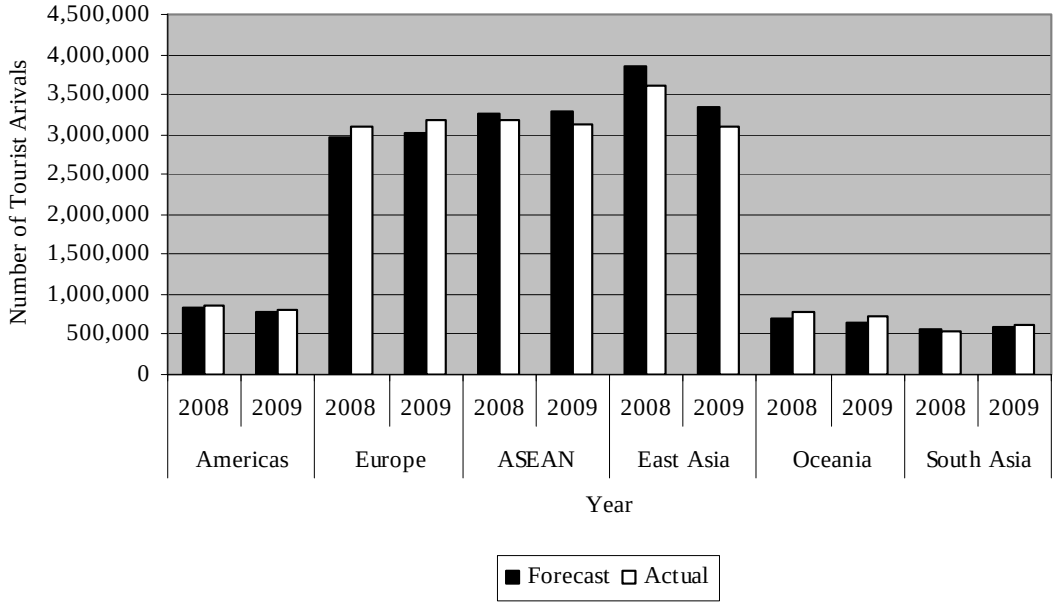

Figure 3.1 The Comparisons of the Forecasting Results with Actual Statistics

3.5 Conclusion

The results of this study aim to explain tourism demand in the short-run and long-run by using panel data model of the Generalized Method of Moment (GMM) method. Important economic factors as income, price, exchange rate, and the number of previous visitors to Thailand included as independent variables in model have been studied. The results of tourism demand in the short run show that the number of previous visits to Thailand was the main factor in determining tourist demand for Thailand, implying that the word-of-mouth effect and repeat visitors were important features for short-run tourism demand.

The results of the long run tourism demand show that Thailand is a high-end market for international tourism, especially for Americas and Europe. In terms of tourism prices, tourism demand from the Americas, ASEAN, East Asia, and Oceania was very sensitive to price change.

CHAPTER 4

TIME SERIES MODEL FOR TOURISM DEMAND

This chapter focuses on forecasting international tourist arrivals to Thailand. In the previous chapter, we focus on long-run tourist estimation arrivals to Thailand. However, tourism has one of the most highly seasonal patterns of demand in directing that tourism demand also responded to shock in short run. In this chapter, various Autoregressive Integrated Moving Average (ARIMA) models and the seasonal ARIMA were used to forecast short-run international tourist arrivals to Thailand in order to capture shock of demand in the short- run during the period January 2008 to December 2010.

4.1 Theoretical and Methodological Issues

This study focuses on forecasting monthly international tourist arrivals to Thailand using monthly data from 1991 to 2007. The seasonal Autoregressive Integrated Moving Average (ARIMA) (p,d,q)(P,D,Q) method was used to forecast international tourist arrivals to Thailand during the period 2008-2010.

4.1.1 Autoregressive Integrated Moving Average (ARIMA) Model

The Box-Jenkins approach (Box & Jenkins, 1970) was applied to forecast tourist arrival patterns from origin sources by examining past patterns in the time series. This technique is estimated in a model-building procedure consisting of three steps: identification, estimation, and diagnosis checking. The steps are repeated until the model is satisfied.

For the time series analysis, there was a combination of two forecasting models: autoregression (AR) and moving average (MA) models, called an

autoregressive moving average or ARMA model, in order to produce the best simulation of the time series. AR and MA processes of orders p and q, respectively.

The autoregression (AR) model is used to explain a time series in which the current observation depends on its own previous values, show as:

$$\mathrm{A}_t = \sum_{i=1}^{p} \phi_i A_{t-i} + \varepsilon_t \tag{4.1}$$

where

A = actual value

ϕ = coefficient identified through computational iteration, 'autocorrelation'

t = time period

p = number of past values included

The moving average (MA) model is used to describe a time series process as a linear function of current and previous random errors:

$$\mathrm{A}_t = \varepsilon_t - \sum_{j=1}^{q} \theta_j \varepsilon_{t-j} \tag{4.2}$$

where

A = actual value

θ = coefficient identified through computational iteration

ε = error term

t = time period

q = number of past error values included

The general form of the ARMA process can be written as:

$$\left(1 - \phi_1 L - \ldots - \phi_p L^p\right) A_t = C + \left(1 + \theta_1 L - \ldots - \theta_q L^q\right) \varepsilon_t, \quad t = 1, \ldots, n \tag{4.3}$$

and

$$C = \left(1 - \varphi_1 - \ldots - \varphi_p\right) \mu$$

where

A_t = number of tourist arrivals from origin to Thailand in time *t*.

μ = time series observation mean.

φ_i = autoregressive parameter. $(i = 1, \ldots, p)$

θ_j = moving average parameter. $(j = 1, \ldots, q)$

L = lag shift operator.

ε_t = independently and identically distributed error term.

The autoregressive moving average model is based on stationary time series processes. This means that a tourist arrivals series will be stationary if the mean, variance, and covariance of the series remain constant over time. The unit root test is a formal method of testing for the stationary of a series. If a particular time series, A_t, is not stationary, it can often be transformed into a stationary series by taking first differences, a method which is known as autoregressive integrated moving average (ARIMA) models.

The general formulation of the ARIMA *(p,d,q)* model can be written as:

$$\left(1 - \phi_1 L - \ldots - \phi_p L^p\right) A_t = C + \left(1 + \theta_1 L - \ldots - \theta_q L^q\right) \varepsilon_t, \qquad t = 1, \cdots, n \qquad (4.4)$$

or,

$$A_t = C + \varphi_1 A_{t-1} + \ldots + \varphi_{t-p} A_{t-p-d} + \varepsilon_t + \theta_1 \varepsilon_{t-1} - \theta_2 \varepsilon_{t-2} - \theta_q \varepsilon_{t-q}$$

where

$$1 - \phi_1 L - \ldots - \phi_{p+d} L^{p+d} = \left(1 - \phi_1 L - \ldots - \phi_p L^p\right)(1 - L)^d \qquad (4.5)$$

and *d* is the number of times the data are differenced to obtain stationary.

These forecasted differences may then be accumulated to produce forecasts for the values of the original series. When the *d*'th differences of the time series have an ARMA structure, the time series is said to have an Autoregressive Integrated Moving

Average (ARIMA). The ARIMA models combine three types of processes: autoregression (AR), differencing to get rid of integration (I), and moving averages (MA). The general model is written as ARIMA (*p,d,q*), where *p* is the order of autoregression, *d* is the degree of differencing, and *q* is the order of moving average involved.

As the tourist arrivals series measures at regular calendar intervals within a year may exhibit periodic behavior, the general Box-Jenkins model, which allocates seasonality with *D* seasonal differences, *P* seasonal autoregressive terms, and *Q* seasonal moving average terms, is given as follows:

$$\left(1-\Phi_1 L^s-\ldots-\Phi_{Ps}L^{Ps}\right)\left[\left(1-L^s\right)^D A_t-\mu\right]=\left(1-\Theta_1 L^s-\ldots-\Theta_{Qs}L^{Qs}\right)\varepsilon_t \qquad (4.6)$$

where Φ is fixed seasonal autoregressive and Θ is moving average parameters, and *s* is the number of periods each year. Combining the ARIMA*(p,d,q)* model in equation 4.4 and the seasonal ARIMA*(P,D,Q)* in equation 4.6, it is shown as the multiplication seasonal autoregressive integrated moving average (SARIMA) *(p,d,q)(P,D,Q)* model, which comprises seasonal and non seasonal parts.

The formulation of the SARIMA *(p,d,q)(P,D,Q)* model can be written as:

$$\begin{aligned}&\left(1-\phi_1 L-\ldots-\phi_p L^p\right)\left(1-\Phi_1 L^s-\ldots-\Phi_{Ps}L^{Ps}\right)(1-L)^d\left(1-L^s\right)^D A_t\\&\quad=C+\left(1-\theta_1 L-\ldots-\theta_q L^q\right)\left(1-\Theta_1 L^s-\ldots-\Theta_{Qs}L^{Qs}\right)\varepsilon_t\end{aligned} \qquad (4.7)$$

The best fitting ARIMA model is chosen by using the minimum Akaike Information Criterion (AIC) and Schwarz Bayesian Information Criterion (SBIC) values.

4.1.2 Seasonal Unit Roots

The data for this study used tourist arrivals from various countries to Thailand with monthly data on seasonal patterns. The seasonal difference filter $(1-L^{12})$ is used when the seasonal unit root exists, and non-seasonal filter $(1-L)$ is used when a seasonal unit root does not exist.

Beaulieu and Miron (1993) was applied to seasonal and non-seasonal unit roots in the monthly time series. The differencing operator Δ_{12} will have 12 roots on the unit circle, as follows:

$$\begin{aligned} 1-L^{12} &= (1-L)(1+L)(1-iL)(1+iL) \\ &\times \left[1+\left(\sqrt{3}+i\right)L/2\right]\left[1+\left(\sqrt{3}-i\right)L/2\right] \\ &\times \left[1-\left(\sqrt{3}+i\right)L/2\right]\left[1-\left(\sqrt{3}-i\right)L/2\right] \\ &\times \left[1+\left(\sqrt{3}+i\right)L/2\right]\left[1-\left(\sqrt{3}-i\right)L/2\right] \\ &\times \left[1-\left(\sqrt{3}+i\right)L/2\right]\left[1+\left(\sqrt{3}-i\right)L/2\right] \end{aligned}$$

where all terms denote seasonal unit roots, except $(1-L)$. Testing for unit roots in the monthly time series where S=12, the relevant testing for the significance of the parameters in the following auxiliary regression by Ordinary Least Squares:

$$\begin{aligned} \varphi^{*}(L)y_{8,t} = {} & \pi_1 y_{1,t-1} + \pi_2 y_{2,t-1} + \pi_3 y_{3,t-2} + \pi_4 y_{3,t-1} + \pi_5 y_{4,t-2} \\ & + \pi_6 y_{4,t-1} + \pi_7 y_{5,t-2} + \pi_8 y_{5,t-1} + \pi_9 y_{6,t-2} + \pi_{10} y_{6,t-1} \\ & + \pi_{11} y_{7,t-2} + \pi_{12} y_{7,t-1} + \mu_t + \varepsilon_t \end{aligned}$$

where μ_t is the deterministic component, which consists of a constant and a time trend and $\varphi^{*}(L)$ is an autoregressive polynomial function of L for which the usual assumption applies.

4.2 The Data

The series analyzed in this study uses monthly data as the number of tourist arrivals to Thailand in the 1991-2007 period with respect to its 6 main regions, which were 25 origin countries to Thailand from 1993 to 2007. The 25 origin countries are the following: 1) the Americas: the U.S.A. and Canada; 2) Europe: the United Kingdom, Sweden, France, Germany, the Netherlands, Switzerland, Norway, Italy, Denmark, and Finland; 3) East Asia: Japan, Korea, China, Hong Kong, Taiwan;

4) ASEAN: Singapore, Malaysia, Vietnam, Philippines, and Indonesia; 5) South Asia: India; 6) and Oceania: Australia and New Zealand.

The original data were obtained from the Tourism Statistics Yearbook, Tourism Authority of Thailand.

4.3 Empirical Findings

4.3.1 Estimates of Selected Seasonal ARIMA Model

Monthly tourist arrival data from the 25 major countries were used to capture the patterns in the data series. Various autoregressive (AR), moving average (MA), and auto regressive integrated moving average models (ARIMA) were estimated using ordinary least squares to determine whether the tourist arrivals series from the major countries during 1991 to 2007 could be described by the AR, MA or ARIMA processes.

The appropriate models selected for major countries' tourist arrivals were based on significant t-satistics at the 5% level of significance for the AR and MR coefficients, with no seserial correlation using the Langrange multiplier (LM) test for serial correlation. In particular, the estimated models were tested for serial correlation. If the serial correlation is present, the estimate is biased and the selected model is not valid. Diagnostic checking of the residuals based on the correlogram of the estimated residuals of the ARIMA model provided further support for the results of the LM test for serial correlation, with no serial correlation in the residuals. In addition, modes were selected using model selection criteria, including the Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC), whereby smaller values are preferred.

The results of estimating the various ARIMA processes for the logarithrm of tourist arrivals from major countries to Thailand are presented as follows:

4.3.1.1 Estimates of the selected ARIMA model for Japanese tourists

The possible fitted ARIMA models, including ARIMA (24,1,24) (model 1), ARIMA (12,1,19) (model 2).

The empirical results show that the ARIMA (24,1,24) (model 1) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = -0.015 + u_t$$

$$\underset{(4.42)}{\left(1-0.25L^{12}\right)}\underset{(11.82)}{\left(1-0.69L^{24}\right)}u_t = \underset{(4.69)}{\left(1-0.21L^{19}\right)}\underset{(-16.32)}{\left(1-0.73L^{24}\right)}$$

Table 4.1 Results of the Run Test for Tourist Arrivals from Japan

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.015975	-0.200165	
AR(12)	0.257409	4.425021	AIC = -1.929139
AR(24)	0.691528	11.82200	SC = -1.840106
MA(19)	0.212305	4.692087	
MA(24)	-0.731947	-16.32119	
MODEL 2			
C	-7.46E-05	-0.000771	
AR(12)	0.962494	55.88962	AIC = -1.889373
MA(3)	-0.243215	-6.580440	SC = -1.787207
MA(12)	-0.713276	-14.17836	
MA(15)	0.289317	39.43270	
MA(19)	0.199844	4.472780	

4.3.1.2 Estimates of the selected ARIMA model for Chinese tourists

The models include ARIMA models and seasonal patterns displayed by seasonal ARIMA models (SARIMA), which include the ARIMA (2,1,24) (Model 1), ARIMA (2,1,24) $(12,1,12)_{12}$ (Model 2), and the ARIMA (22,1,22) (Model 3).

The empirical results show that the ARIMA (2,1,24) $(12,1,12)_{12}$ (Model 2) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.002 + u_t$$

$$\underset{(10.74)}{\left(1-0.64L^{2}\right)}\underset{(28.45)}{\left(1-0.93L^{12}\right)}u_t = \underset{(-60.05)}{\left(1-0.92L^{2}\right)}\underset{(14.01)}{\left(1+0.15L^{24}\right)}\underset{(-54.14)}{\left(1-0.92L^{12}\right)}$$

Table 4.2 Results of the Run Test for Tourist Arrivals from China

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.009346	0.895707	
AR(2)	0.578625	9.822463	AIC = 0.213273
MA(2)	-0.923265	-105.5230	SC = 0.279010
MA(24)	0.170087	19.43968	
MODEL 2			
C	0.002423	0.057069	
AR(2)	0.645839	10.74550	AIC = 0.196400
SAR(12)	0.938312	28.45836	SC = 0.299312
MA(2)	-0.926555	-60.05801	
MA(24)	0.150020	14.01977	
SMA(12)	-0.920412	-54.14979	
MODEL 3			
C	0.004708	0.249186	
AR(22)	-0.555590	-8.406306	AIC = 0.268762
MA(2)	-0.390033	-11.54538	SC = 0.357119
MA(9)	0.331467	9.688036	
MA(22)	0.526712	22.95892	

4.3.1.3 Estimates of the selected ARIMA model for Hong Kong tourists

The models include the ARIMA models and seasonal patterns displayed by seasonal ARIMA models (SARIMA), which include the ARIMA (11,1,24) $(12,1,0)_{12}$ (model 1), ARIMA (11,1,1) $(12,1,12)_{12}$ (model 2), and the ARIMA (12,1,1) $(0,1,12)_{12}$ (model 3).

The empirical results show that the ARIMA (11,1,1) $(12,1,12)_{12}$ (model 2) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.011 + u_t$$

$$\underset{(3.25)}{\left(1-0.22L^{11}\right)}\underset{(45.41)}{\left(1-0.93L^{12}\right)}u_t = \underset{(-22.92)}{\left(1-0.86L\right)}\underset{(-47.24)}{\left(1-0.91L^{12}\right)}$$

Table 4.3 Results of the Run Test for Tourist Arrivals from Hong Kong

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.002519	0.574438	
AR(11)	0.225620	3.095168	AIC = 0.425452
SAR(12)	0.241568	3.248320	SC = 0.531884
MA(1)	-0.902031	-31.72963	
MA(21)	-0.281576	-9.407203	
MA(24)	0.296951	10.51036	
MODEL 2			
C	-0.011923	-0.870473	
AR(11)	0.222938	3.255596	AIC = 0.123149
SAR(12)	0.937250	45.41287	SC = 0.211842
MA(1)	-0.864639	-22.92283	
SMA(12)	-0.916286	-47.24057	
MODEL 3			
C	-0.005289	-0.386796	
AR(12)	0.943463	48.81123	AIC = 0.183138
MA(1)	-0.829335	-20.26424	SC = 0.251248
SMA(12)	-0.908754	-39.33725	

4.3.1.4 Estimates of the selected ARIMA model for Korean tourists

Three possible fitted ARIMA models including ARIMA (24,1,24) (model 1), ARIMA (24,1,24) (model 2), and the ARIMA (12,1,12) (model 3).

The empirical results show that the ARIMA (24,1,24) (model 1) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.007 + u_t$$

$$\underset{(-2.13)}{\left(1 + 0.06L^2\right)}\underset{(27.52)}{\left(1 - 0.84L^{24}\right)}u_t = \underset{(-41.76)}{\left(1 - 0.90L^{24}\right)}$$

Table 4.4 Results of the Run Test for Tourist Arrivals from Korea

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.007223	0.237674	
AR(2)	-0.068823	-2.137465	AIC =-0.300922
AR(24)	0.842197	27.52469	SC =-0.229695
MA(24)	-0.909462	-41.76000	
MODEL 2			
C	0.009518	0.199699	
AR(24)	0.855959	28.08395	AIC =-0.286903
MA(24)	-0.916876	-39.68988	SC =-0.233483
MODEL 3			
C	0.008586	0.144375	
AR(12)	0.945790	61.10772	AIC =-0.264577
MA(12)	-0.946872	-50.58196	SC =-0.213494

4.3.1.5 Estimates of the selected ARIMA model for Taiwanese tourists

Three possible fitted ARIMA models including the ARIMA (12,1,24) (Model 1), ARIMA (12,1,12) (Model 2), and the ARIMA (12,1,15) (Model 3)

The empirical results show that the ARIMA (12,1,15) (Model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.013 + u_t$$

$$\underset{(38.99)}{\left(1 - 0.91L^{12}\right)} u_t = \underset{(-3.16)}{\left(1 - 0.22L^{3}\right)} \underset{(-49.17)}{\left(1 - 0.93L^{12}\right)} \underset{(3.07)}{\left(1 + 0.21L^{15}\right)}$$

Table 4.5 Results of the Run Test for Tourist Arrivals from Taiwan

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.004179	-1.211736	
AR(9)	-0.160685	-3.388320	AIC = -0.289960
AR(12)	0.744088	16.70010	SC = -0.153739
MA(2)	-0.271223	-7.322770	
MA(3)	-0.246945	-6.775011	
MA(9)	0.227411	5.757204	
MA(12)	-0.804329	-14.24496	
MA(24)	0.111337	2.026842	
MODEL 2			
C	-0.003167	-0.970725	
AR(9)	-0.207889	-3.753328	AIC = -0.278773
AR(12)	0.688485	13.07782	SC =-0.159580
MA(2)	-0.291265	-6.420808	
MA(3)	-0.275682	-6.791784	
MA(9)	0.261609	5.831322	
MA(12)	-0.675740	-13.82495	
MODEL 3			
C	-0.013910	-0.461110	
AR(12)	0.914085	38.99177	AIC =-0.270790
MA(3)	-0.227915	-3.163592	SC =-0.185652
MA(12)	-0.935080	-49.17740	
MA(15)	0.214763	3.073007	

4.3.1.6 Estimates of the selected ARIMA model for Malaysia tourists

The models include the ARIMA models and seasonal patterns displayed by seasonal ARIMA models (SARIMA), which include the ARIMA (7,1,24) $(12,1,0)_{12}$ (Model 1), ARIMA (1,1,24) (Model 2), and the ARIMA (1,1,24) $(0,1,12)_{12}$ (Model 3).

The empirical results show that the ARIMA (7,1,24) $(12,1,0)_{12}$ (Model 1) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.005 + u_t$$

$$\underset{(-2.49)}{\left(1 + 0.18L^{7}\right)}\underset{(4.29)}{\left(1 - 0.29L^{12}\right)}u_t = \underset{(-15.54)}{\left(1 - 0.75L\right)}\underset{(2.91)}{\left(1 + 0.14L^{24}\right)}$$

Table 4.6 Results of the Run Test for Tourist Arrivals from Malaysia

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.005370	0.878657	
AR(7)	-0.184728	-2.491076	AIC = -0.576230
SAR(12)	0.299914	4.290509	SC = -0.488867
MA(1)	-0.751012	-15.54935	
MA(24)	0.142377	2.915924	
MODEL 2			
C	0.008643	0.502777	
AR(1)	-0.387218	-5.974150	AIC = -0.517608
MA(24)	0.867482	47.07759	SC = -0.468475
MODEL 3			
C	0.005974	0.342783	
AR(1)	-0.464221	-7.405037	AIC = -0.529072
MA(24)	0.600736	9.612912	SC = -0.463562
SMA(12)	0.261656	3.706991	

4.3.1.7 Estimates of the selected ARIMA model for Indonesian tourists

The models include the ARIMA models and seasonal patterns displayed by seasonal ARIMA models (SARIMA), which include ARIMA (22,1,22) $(12,1,0)_{12}$ (Model 1), ARIMA (22,1,22) $(12,1,12)_{12}$ (Model 2), and the ARIMA (22,1,22) $(12,1,12)_{12}$ (Model 3). The ARIMA (22,1,22) $(12,1,12)_{12}$ (Model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.02 + u_t$$

$$\underset{(-2.94)}{(1+0.22L^{22})}\underset{(20.33)}{(1-0.84L^{12})}u_t = \underset{(-20.93)}{(1-0.71L)}\underset{(-2.70)}{(1-0.10L^{10})}\underset{(-26.56)}{(1-0.85^{12})}\underset{(11.99)}{(1+0.54L^{13})}\underset{(8.49)}{(1+0.27L^{22})}\underset{(4.41)}{(1+0.35L^{12})}$$

Table 4.7 Results of the Run Test for Tourist Arrivals from Indonesia

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.006769	1.251210	
AR(22)	-0.284679	-3.879287	AIC = 0.074930
SAR(12)	0.905442	32.66551	SC = 0.204571
MA(1)	-0.797114	-19.50160	
MA(12)	-0.934454	-40.04268	
MA(13)	0.622229	12.65909	
MA(22)	0.127650	7.104905	
MODEL 2			
C	0.008870	0.644846	
AR(22)	-0.276504	-3.624296	AIC = 0.106693
SAR(12)	0.727595	12.57228	SC = 0.254853
MA(1)	-0.690014	-12.84044	
MA(12)	-0.765107	-13.95012	
MA(13)	0.384719	5.907923	
MA(22)	0.244985	6.871398	
SMA(12)	0.417267	5.137489	
MODEL 3			
C	0.022023	0.992184	
AR(22)	-0.223999	-2.944308	AIC = 0.033371
SAR(12)	0.846418	20.33447	SC = 0.200052
MA(1)	-0.711867	-20.93220	
MA(10)	-0.100515	-2.703417	
MA(12)	-0.855058	-26.56285	
MA(13)	0.549496	11.99565	
MA(22)	0.279490	8.493961	
SMA(12)	0.356621	4.417768	

4.3.1.8 Estimates of selected ARIMA model for Philippines tourist

Three possible fitted ARIMA models including ARIMA (24,1,24) (Model 1), ARIMA (24,1,24) (Model 2), and the ARIMA (24,1,24) (Model 3)

The empirical results show that the ARIMA (24,1,24) (Model 2) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.011 + u_t$$

$$\underset{(-3.38)}{(1 + 0.08L)}\underset{(34.91)}{(1 - 0.90L^{24})}u_t = \underset{(-53.39)}{(1 - 0.91L^{24})}$$

Table 4.8 Results of the Run Test for Tourist Arrivals from the Philippines

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.014279	0.371757	
AR(24)	0.905354	33.85890	AIC = -1.553133
MA(24)	-0.918281	-49.46466	SC = -1.499713
MODEL 2			
C	0.001798	0.032220	
AR(19)	0.100297	2.837201	AIC = -1.517647
AR(24)	0.822424	21.63308	SC = -1.410807
MA(5)	0.175845	3.557034	
MA(9)	-0.093232	-2.790547	
MA(24)	-0.768254	-19.62426	
MODEL 3			
C	0.011800	0.609272	
AR(1)	-0.089184	-3.383213	AIC = -1.604956
AR(24)	0.905031	34.91967	SC = -1.533730
MA(24)	-0.913202	-53.39676	

4.3.1.9 Estimates of the selected ARIMA model for Singaporean tourists

Three possible fitted ARIMA models including the ARIMA (24,1,24) (Model 1), ARIMA (24,1,24) (Model 2), and the ARIMA (24,1,24) (Model 3)

The empirical results show that the ARIMA (24,1,24) (Model 2) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.002 + u_t$$

$$\underset{(3.71)}{\left(1 - 0.18L^{12}\right)}\underset{(14.61)}{\left(1 - 0.73L^{24}\right)}u_t = \underset{(-4.72)}{\left(1 - 0.22L^{2}\right)}\underset{(-17.95)}{\left(1 - 0.73L^{24}\right)}$$

Table 4.9 Results of the Run Test for Tourist Arrivals from Singapore

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.004592	0.225594	
AR(24)	0.826562	29.01184	AIC = -0.689519
MA(2)	-0.356711	-6.075521	SC = -0.618293
MA(24)	-0.603084	-12.85196	
MODEL 2			
C	0.002845	0.060902	
AR(12)	0.184499	3.715526	AIC = -0.786725
AR(24)	0.731354	14.61896	SC = -0.697692
MA(2)	-0.221520	-4.721354	
MA(24)	-0.731842	-17.95012	
MODEL 3			
C	-0.001730	-0.043634	
AR(12)	0.180100	3.535331	AIC = -0.764203
AR(24)	0.700874	13.15483	SC = -0.657363
MA(2)	-0.259736	-4.392522	
MA(19)	0.108092	2.091302	
MA(24)	-0.588746	-8.963509	

4.3.1.10 Estimates of the selected ARIMA model for Vietnam tourists

The models include the ARIMA models and seasonal patterns displayed by seasonal ARIMA models (SARIMA), which include the ARIMA (3,1,24) $(0,1,12)_{12}$ (Model 1) , ARIMA (0,1,24) $(0,1,12)_{12}$ (Model 2) , ARIMA (3,1,24) (Model 3), and the ARIMA (1,1,24) $(0,1,12)_{12}$ (Model 4).

The empirical results show that the ARIMA (1,1,24) $(0,1,12)_{12}$ (Model 4) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.017 + u_t$$

$$\underset{(-3.61)}{(1+0.28L)}\, u_t = \underset{(-14.06)}{(1-0.63L^{12})}\underset{(66.79)}{(1+0.91L^{24})}\underset{(93.83)}{(1+0.96L^{12})}$$

Table 4.10 Results of the Run Test for Tourist Arrivals from Vietnam

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.016554	0.696624	
AR(3)	-0.159979	-2.004335	AIC = -0.231425
MA(24)	0.371944	4.644340	SC = -0.151850
SMA(12)	0.206936	2.488236	
MODEL 2			
C	0.015841	0.448149	
MA(12)	-0.623446	-13.33319	AIC = -0.635168
MA(24)	0.918581	66.79229	SC = -0.556628
SMA(12)	0.967127	95.79361	
MODEL 3			
C	0.011601	0.463275	
AR(3)	-0.207048	-2.608422	AIC = -0.286714
MA(24)	0.888321	40.16301	SC = -0.227032
MODEL 4			
C	0.017364	0.663901	
AR(1)	-0.282235	-3.614503	AIC = -0.715843
MA(12)	-0.636160	-14.06404	SC = -0.617240
MA(24)	0.917165	66.79160	
SMA(12)	0.965737	93.83711	

4.3.1.11 Estimates of the selected ARIMA model for Indian tourists

Three possible fitted ARIMA models including the ARIMA (24,1,24) (model 1), ARIMA (12,1,12) (model 2), and the ARIMA (24,1,24) (model 3)

The empirical results show that the ARIMA (24,1,24) (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.281 + u_t$$

$$\underset{(2.99)}{\left(1 - 0.13L^{12}\right)}\underset{(18.56)}{\left(1 - 0.86L^{24}\right)}u_t = \underset{(-36.21)}{\left(1 - 0.91L^{24}\right)}$$

Table 4.11 Results of the Run Test for Tourist Arrivals from India

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.028731	0.249895	
AR(24)	0.964819	31.17684	AIC = -1.398821
MA(24)	-0.905494	-35.73820	SC = -1.345401
MODEL 2			
C	0.790372	0.070389	
AR(12)	0.998917	64.82708	AIC = -1.408629
MA(12)	-0.935067	-45.60450	SC = -1.357546
MODEL 3			
C	0.281600	0.065553	
AR(12)	0.132133	2.995854	AIC = -1.442871
AR(24)	0.865709	18.56535	SC = -1.371644
MA(24)	-0.912763	-36.21815	

4.3.1.12 Estimates of the selected ARIMA model for Australian tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (12,1,12) (Model 1), ARIMA (24,1,0) (Model 2), ARIMA (24,1,0) (Model 3), and the ARIMA (1,1,12) $(12,1,0)_{12}$ (Model 4).

The empirical results show that the ARIMA (1,1,12) $(12,1,0)_{12}$ (Model 4) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.080 + u_t$$

$$(1 + 0.40L)(1 + 0.98L^{12})u_t = (1 - 0.92L^{12})$$

$$(-6.13) \qquad (99.99) \qquad (-52.52)$$

Table 4.12 Results of the Run Test for Tourist Arrivals from Australia

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.093869	0.623814	
AR(12)	0.989786	103.4567	AIC = -2.257657
MA(12)	-0.916486	-44.18121	SC = -2.206574
MODEL 2			
C	0.008061	0.671734	
AR(3)	0.220722	4.027120	AIC = -2.133389
AR(5)	-0.153071	-2.871642	SC = -2.044356
AR(13)	-0.119224	-2.280755	
AR(24)	0.539100	9.597065	
MODEL 3			
C	0.015028	0.323552	
AR(3)	0.255197	4.687433	AIC = -2.105840
AR(24)	0.609714	11.76453	SC = -2.052421
MODEL 4			
C	0.080918	1.036864	
AR(1)	-0.409619	-6.136330	AIC = -2.447546
SAR(12)	0.985987	99.99392	SC = -2.379188
MA(12)	-0.922402	-52.52122	

4.3.1.13 Estimates of the selected ARIMA model for New Zealand tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (0,1,24) (Model 1), ARIMA (12,1,7) $(0,1,12)_{12}$ (Model 2), and the ARIMA (1,1,7) $(12,1,12)_{12}$ (Model 3).

The empirical results show that the ARIMA (1,1,7) $(12,1,12)_{12}$ (Model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.021 + u_t$$

$$\underset{(2.45)}{(1-0.23L)}\underset{(92.56)}{(1-1.01L^{12})}u_t = \underset{(-14.89)}{(1-0.82L)}\underset{(-3.77)}{(1-0.16L^{7})}\underset{(-74.51)}{(1-0.94L^{12})}$$

Table 4.13 Results of the Run Test for Tourist Arrivals from New Zealand

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.005782	0.489974	
MA(1)	-0.346433	-7.190830	AIC = -1.063460
MA(7)	-0.237956	-4.836742	SC = -0.981854
MA(12)	0.347314	6.799831	
MA(24)	0.464917	9.360165	
MODEL 2			
C	0.021733	0.551762	
AR(12)	1.008005	99.35431	AIC = -1.597515
MA(1)	-0.641494	-12.30275	SC = -1.512376
MA(7)	-0.199536	-3.905776	
SMA(12)	-0.945788	-73.41793	
MODEL 3			
C	0.021990	1.307790	
AR(1)	0.234426	2.454289	AIC = -1.609944
SAR(12)	1.011814	92.56942	SC = -1.507406
MA(1)	-0.825332	-14.89958	
MA(7)	-0.169560	-3.775204	
SMA(12)	-0.943398	-74.51312	

4.3.1.14 Estimates of the selected ARIMA model for the USA tourist

Two possible fitted ARIMA models including ARIMA (24,1,24) (Model 1), and the ARIMA (24,1,24) (Model 2)

The empirical results show that the ARIMA (24,1,24) (Model 1) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.064 + u_t$$

$$\underset{(4.74)}{\left(1 - 0.21L^{12}\right)}\underset{(17.44)}{\left(1 - 0.79L^{24}\right)}u_t = \underset{(-49.66)}{\left(1 - 0.91L^{24}\right)}$$

Table 4.14 Results of the Run Test for Tourist Arrivals from the USA

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.064111	0.203930	
AR(12)	0.212026	4.745429	AIC = -2.438744
AR(24)	0.796080	17.44273	SC = -2.367517
MA(24)	-0.912858	-49.66949	
MODEL 2			
C	0.110863	0.011732	
AR(12)	0.177779	3.739200	AIC = -2.419240
AR(24)	0.822543	17.09517	SC = -2.330207
MA(6)	0.079810	2.324104	
MA(24)	-0.865282	-30.23992	

4.3.1.15 Estimates of the selected ARIMA model for Canadian tourists

The possible fitted ARIMA models were the ARIMA (24,1,24). The empirical results show that the ARIMA (24,1,24) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.023 + u_t$$

$$\underset{(-2.66)}{\left(1 + 0.03L^{8}\right)}\underset{(4.99)}{\left(1 - 0.24L^{12}\right)}\underset{(14.33)}{\left(1 - 0.71L^{24}\right)}u_t = \underset{(-43.58)}{\left(1 - 0.881L^{24}\right)}$$

Table 4.15 Result of the Run Test for Tourist Arrivals from Canada

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.023526	0.582371	
AR(8)	-0.037038	-2.661979	AIC = -2.082755
AR(12)	0.247510	4.992605	SC = -1.993722
AR(24)	0.717711	14.33590	
MA(24)	-0.880064	-43.58736	

4.3.1.16 Estimates of the selected ARIMA model for French tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include ARIMA (12,1,22) (model 1), ARIMA (12,1,17) (model 2), and the ARIMA (1,1,17) $(12,1,0)_{12}$ (model 3).

The empirical results show that the ARIMA (1,1,17) $(12,1,0)_{12}$ (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.015 + u_t$$

$$\underset{(-3.20)}{(1+0.23L)}\underset{(137.87)}{(1-0.95L^{12})}u_t = \underset{(6.28)}{(1+0.30L^{10})}\underset{(-11.38)}{(1-0.53L^{12})}\underset{(7.82)}{(1-0.93L^{17})}$$

Table 4.16 Results of the Run Test for Tourist Arrivals from France

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.009611	-0.065414	
AR(4)	0.012174	2.133388	AIC = -1.952015
AR(12)	0.950792	170.6359	SC = -1.832822
MA(10)	0.363563	5.790572	
MA(12)	-0.640808	-12.95962	
MA(17)	0.253323	6.472683	
MA(22)	-0.156093	-2.221028	
MODEL 2			
C	-0.012335	-0.088032	
AR(12)	0.951650	137.1959	AIC = -1.936970
MA(10)	0.307055	6.566503	SC = -1.851832
MA(12)	-0.552792	-12.18657	
MA(17)	0.282563	6.850511	
MODEL 3			
C	-0.015190	-0.131098	
AR(1)	-0.230626	-3.200826	AIC = -1.974522
SAR(12)	0.951838	137.8752	SC = -1.871984
MA(10)	0.309342	6.283555	
MA(12)	-0.539848	-11.38639	
MA(17)	0.303368	7.826022	

4.3.1.17 Estimates of the selected ARIMA model for Danish tourists

The models include A the RIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include ARIMA (24,1,24) (model 1), ARIMA (24,1,24) $(12,1,12)_{12}$ (model 2), ARIMA (24,1,24) (model 3), and the ARIMA (24,1,24) $(12,1,12)_{12}$ (model 4). The empirical results show that the ARIMA (24,1,24) $(12,1,12)_{12}$ (model 4) was the best fitting model to describe tourist arrivals pattern, which can be expressed as follows:

$$\Delta_{12} y_t = 0.091 + u_t$$

$$\underset{(-5.56)}{(1+0.39L)}\underset{(-3.40)}{(1+0.24L^{24})}\underset{(119.60)}{(1-1.00L^{12})}u_t = \underset{(5.89)}{(1+0.19L^{12})}\underset{(66.53)}{(1+0.89L^{24})}\underset{(-108.31)}{(1-0.96L^{12})}$$

Table 4.17 Results of the Run Test for Tourist Arrivals from Denmark

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.028666	0.198107	
AR(24)	1.028216	72.75623	AIC = -1.402724
MA(24)	-0.860843	-46.99554	SC = -1.349304
MODEL 2			
C	-0.057973	-0.172617	
AR(24)	-0.291863	-3.751175	AIC = -1.842848
SAR(12)	1.008846	103.1717	SC = -1.730824
MA(12)	0.194664	5.418532	
MA(24)	0.890818	58.34160	
SMA(12)	-0.955765	-91.46334	
MODEL 3			
C	0.012445	0.046652	
AR(24)	1.017009	50.15064	AIC = -1.369080
MA(5)	-0.123509	-2.665540	SC = -1.280047
MA(12)	0.158742	2.552178	
MA(24)	-0.674135	-10.34395	
MODEL 4			
C	-0.091194	-0.341364	
AR(1)	-0.391482	-5.565009	AIC =-2.009306
AR(24)	-0.244109	-3.409247	SC = -1.878612
SAR(12)	1.008378	119.6005	
MA(12)	0.194930	5.893516	
MA(24)	0.892052	66.53418	
SMA(12)	-0.961796	-108.3102	

4.3.1.18 Estimates of the selected ARIMA model for Finnish tourist

The models include ARIMA models and seasonal patterns displayed by Finish seasonal ARIMA models (SARIMA), which include Finish ARIMA (12,1,2) $(0,1,12)_{12}$ (model 1), ARIMA (15,1,24) (model 2) , ARIMA (15,1,13) $(12,1,12)_{12}$ (model 3), and the ARIMA (1,1,2) $(12,1,12)_{12}$ (model 4). The empirical results show that the ARIMA (1,1,2) $(12,1,12)_{12}$ (model 4) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.021 + u_t$$

$$\underset{(-5.95)}{(1+0.42L)}\underset{(222.24)}{(1-1.02L^{12})}u_t = \underset{(-7.5)}{(1-0.51L^{2})}\underset{(-41.94)}{(1-0.89L^{12})}$$

Table 4.18 Results of the Run Test for Tourist Arrivals from Finland

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.026936	-0.466008	
AR(12)	1.027776	154.6773	AIC = -0.963414
MA(2)	-0.362598	-5.352815	SC = -0.895304
SMA(12)	-0.903692	-46.80695	
MODEL 2			
C	0.028769	0.280687	
AR(2)	0.148853	3.584789	AIC = -0.712726
AR(12)	0.872314	23.81893	SC = -0.592221
AR(15)	-0.116444	-3.048604	
MA(2)	-0.461796	-7.601440	
MA(13)	0.387328	6.449337	
MA(24)	-0.127749	-2.091654	
MODEL 3			
C	-0.012243	-0.118667	
AR(2)	0.210365	4.235043	AIC = -1.037849
AR(12)	0.216117	3.171901	SC = -0.893736
AR(15)	-0.207880	-2.707816	
SAR(12)	1.019638	94.60795	
MA(2)	-0.681547	-12.58498	
MA(13)	0.303705	4.931986	
SMA(12)	-0.910694	-49.34036	
MODEL 4			
C	-0.021958	-0.771285	
AR(1)	-0.429001	-5.952449	AIC = -1.130264
SAR(12)	1.028205	222.2441	SC = -1.044816
MA(2)	-0.513235	-7.549586	
SMA(12)	-0.899003	-41.94793	

4.3.1.19 Estimates of the selected ARIMA model for German tourist

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (12,1,24) (model 1), ARIMA (7,1,24) (model 2), and the ARIMA (12,1,1) $(0,1,12)_{12}$ (model 3).

The empirical results show that the ARIMA (12,1,1) $(0,1,12)_{12}$ (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.007 + u_t$$

$$\underset{(253.24)}{\left(1 - 0.98L^{12}\right)} u_t = \underset{(-13.18)}{\left(1 - 0.69L\right)} \underset{(-65.68)}{\left(1 - 0.93L^{12}\right)}$$

Table 4.19 Results of the Run Test for Tourist Arrivals from Germany

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.001712	-0.021387	
AR(12)	0.923411	34.91074	AIC = -1.309914
MA(24)	-0.382644	-4.888734	SC = -1.258831
MODEL 2			
C	0.004065	0.254046	
AR(7)	-0.304322	-4.425804	AIC = -0.791397
MA(24)	0.887489	58.16719	SC = -0.741222
MODEL 3			
C	0.007514	0.231268	
AR(12)	0.987189	253.2436	AIC = -2.004402
MA(1)	-0.694608	-13.18500	SC = -1.936292
SMA(12)	-0.938577	-65.68184	

4.3.1.20 Estimates of the selected ARIMA model for Italian tourists

Three possible fitted ARIMA models including ARIMA (12,1,12) (model 1), ARIMA (24,1,24) (model 2),and the ARIMA (24,1,24) (model 3)

The empirical results show that the ARIMA (24,1,24) (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.036 + u_t$$

$$\underset{(3.77)}{(1-0.18L)}\underset{(16.73)}{(1-0.84L^{24})}u_t = \underset{(-49.00)}{(1-0.91L^{24})}$$

Table 4.20 Results of the Run Test for Tourist Arrivals from Italy

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.051375	-0.381644	
AR(12)	1.015330	208.5756	AIC = -1.169396
MA(12)	-0.947327	-66.04475	SC = -1.118313
MODEL 2			
C	0.010162	0.072285	
AR(12)	0.250412	4.586446	AIC = -1.153126
AR(24)	0.785310	13.98808	SC = -1.064093
MA(10)	0.116795	2.895543	
MA(24)	-0.828494	-21.78996	
MODEL 3			
C	-0.036655	-0.256117	
AR(12)	0.187705	3.778838	AIC = -1.197041
AR(24)	0.842784	16.73464	SC = -1.125815
MA(24)	-0.916103	-49.00326	

4.3.1.21 Estimates of the selected ARIMA model for Dutch tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (12,1,12) (model 1), ARIMA (12,1,24) $(12,1,0)_{12}$ (model 2), and the ARIMA (12,1,24) $(12,1,12)_{12}$ (model 3).

The empirical results show that the ARIMA (12,1,24) $(12,1,0)_{12}$ (model 2) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.009 + u_t$$

$$\underset{(-15.02)}{\left(1 + 0.74L^{12}\right)}\underset{(138.71)}{\left(1 - 1.02L^{12}\right)}u_t = \underset{(-56.31)}{\left(1 - 0.91L^{24}\right)}$$

Table 4.21 Results of the Run Test for Tourist Arrivals from the Netherlands

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.009146	0.195764	
AR(12)	1.036913	150.4651	AIC = -1.576970
MA(12)	-0.937690	-47.05745	SC = -1.525887
MODEL 2			
C	0.009692	0.137371	
AR(12)	-0.741902	-15.02383	AIC = -1.768507
SAR(12)	1.026830	138.7160	SC = -1.697280
MA(24)	-0.911347	-56.31989	
MODEL 3			
C	0.003803	0.010632	
AR(12)	-0.694741	-12.46791	AIC = -1.617293
SAR(12)	1.007335	78.05018	SC = -1.510453
MA(12)	-0.821927	-14.59785	
MA(24)	0.041695	316.5555	
SMA(12)	0.947214	46.57589	

4.3.1.22 Estimates of the selected ARIMA model for Norwegian tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (22,1,24) (model 1), ARIMA (22,1,24) (model 2), ARIMA (22,1,22) $(12,1,12)_{12}$ (model 3), and the ARIMA (22,1,22) $(12,1,12)_{12}$ (model 4). The empirical results show that the ARIMA (22,1,22) $(12,1,12)_{12}$ (model 4) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.110 + u_t$$

$$\underset{(-4.35)}{(1+0.30L)}\underset{(2.87)}{(1-0.17L^{13})}\underset{(-5.37)}{(1+0.40L^{22})}\underset{(84.68)}{(1-1.01L^{12})}u_t = \underset{(-6.21)}{(1-0.36L^{2})}\underset{(10.84)}{(1+0.61L^{22})}\underset{(-14.17)}{(1-0.76L^{12})}$$

Table 4.22 Results of the Run Test for Tourist Arrivals from Norway

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.012538	0.603749	
AR(2)	-0.478885	-8.767677	AIC = -0.271130
AR(22)	-0.419703	-7.994235	SC = -0.165103
MA(2)	0.422709	12.93323	
MA(22)	0.375522	11.86105	
MA(24)	0.870054	40.90607	
MODEL 2			
C	0.012737	0.824418	
AR(2)	-0.333735	-4.994624	AIC = -0.249872
AR(22)	-0.320932	-4.935516	SC = -0.161516
MA(6)	-0.159676	-3.487858	
MA(24)	0.808438	25.95932	
MODEL 3			
C	-0.060006	-0.081775	
AR(13)	0.261884	4.191436	AIC = -1.185791
AR(22)	-0.508876	-7.152756	SC = -1.056150
SAR(12)	0.994470	76.84326	
MA(2)	-0.251545	-4.716761	
MA(22)	0.719149	13.09140	
SMA(12)	-0.713690	-11.23545	
MODEL 4			
C	0.110187	0.460402	
AR(1)	-0.306672	-4.353859	AIC = -1.260882
AR(13)	0.177334	2.874083	SC = -1.112721
AR(22)	-0.405997	-5.373017	
SAR(12)	1.010986	84.68670	
MA(2)	-0.368437	-6.212541	
MA(22)	0.615892	10.84311	
SMA(12)	-0.763921	-14.17373	

4.3.1.23 Estimates of the selected ARIMA model for Swedish tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (24,1,24) (model 1), ARIMA (24,1,24) (model 2) , and the ARIMA (24,1,24) $(12,1,12)_{12}$ (model 3). The empirical results show that the ARIMA (24,1,24) $(12,1,12)_{12}$ (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.026 + u_t$$

$$\underset{(-4.08)}{(1+0.03L^{7})}\underset{(5.41)}{(1-0.48L^{12})}\underset{(5.78)}{(1-0.52L^{24})}\underset{(7.05)}{(1-0.53L^{12})}u_t = \underset{(-12.73)}{(1-0.65L)}\underset{(-6.30)}{(1-0.32L^{24})}\underset{(-32.50)}{(1-0.89L^{12})}$$

Table 4.23 Results of the Run Test for Tourist Arrivals from Sweden

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.017695	0.536506	
AR(7)	-0.049058	-3.189324	AIC = -1.333926
AR(12)	0.449573	7.010407	SC = -1.227087
AR(24)	0.555683	8.583139	
MA(1)	-0.655479	-14.75864	
MA(24)	-0.322642	-7.368022	
MODEL 2			
C	0.015724	0.307502	
AR(7)	-0.056146	-4.260068	AIC = -1.338814
AR(12)	0.337056	5.859690	SC = -1.214168
AR(24)	0.663836	11.31431	
MA(1)	-0.489291	-11.47320	
MA(7)	0.146400	3.164965	
MA(24)	-0.453138	-11.82841	
MODEL 3			
C	0.026449	0.829635	
AR(7)	-0.033654	-4.087293	AIC = -1.556240
AR(12)	0.489284	5.414933	SC = -1.406875
AR(24)	0.521677	5.784471	
SAR(12)	0.532731	7.054632	
MA(1)	-0.654255	-12.73805	
MA(24)	-0.324008	-6.308320	
SMA(12)	-0.897962	-32.50224	

4.3.1.24 Estimates of the selected ARIMA model for Swiss tourists

Three possible fitted ARIMA models including ARIMA (24,1,24) (model 1), ARIMA (12,1,21) (model 2), and the ARIMA (24,1,24) (model 3)

The empirical results show that the ARIMA (24,1,24) (model 3) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.002 + u_t$$

$$\underset{(-2.01)}{(1+0.02L)}\underset{(4.98)}{(1-0.29L^{12})}\underset{(11.48)}{(1-0.66L^{24})}u_t = \underset{(-49.63)}{(1-0.88L^{24})}$$

Table 4.24 Results of the Run Test for Tourist Arrival from Switzerland

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	-0.002793	-0.029826	
AR(12)	0.299170	5.026223	AIC = -1.800792
AR(24)	0.665380	11.37758	SC = -1.729565
MA(24)	-0.885342	-52.37008	
MODEL 2			
C	0.014981	0.200477	
AR(12)	0.977561	134.9836	AIC = -1.653283
MA(12)	-0.797243	-21.59621	SC = -1.585173
MA(21)	-0.161893	-4.381393	
MODEL 3			
C	-0.002002	-0.035364	
AR(1)	-0.022274	-2.015107	AIC = -1.812597
AR(12)	0.295615	4.988730	SC = -1.723564
AR(24)	0.668473	11.48543	
MA(24)	-0.881355	-49.63242	

4.3.1.25 Estimates of the selected ARIMA model for UK tourists

The models include the ARIMA models and seasonal patterns displayed by the seasonal ARIMA models (SARIMA), which include the ARIMA (12,1,12) (Model 1), and the ARIMA (0,1,8) $(0,1,12)_{12}$ (Model 2).

The empirical results show that the ARIMA (12,1,12) (Model 1) was the best fitting model to describe tourist arrival patterns, which can be expressed as follows:

$$\Delta_{12} y_t = 0.014 + u_t$$

$$\underset{(109.00)}{\left(1 - 0.99L^{12}\right)} u_t = \underset{(-57.09)}{\left(1 - 0.92L^{12}\right)}$$

Table 4.25 Results of the Run Test for Tourist Arrivals from United Kingdom

Variable	Coefficient	t-Statistic	AIC/SBC
MODEL 1			
C	0.014283	0.122273	
AR(12)	0.990065	109.0079	AIC = -2.428874
MA(12)	-0.924713	-57.09798	SC = -2.377791
MODEL 2			
C	0.006442	0.397942	
MA(8)	0.255293	3.896789	AIC = -1.554522
SMA(12)	0.680464	14.31163	SC = -1.505559

4.3.2 Forecasting for Tourist Arrivals from Major Countries

After the empirical examination the most appropriate models for tourist arrivals from 25 countries were determined. The best fitting model for each tourist arrival series, and the accuracy of the one-month-ahead ex post forecast from January 2008 to December 2010, were examined for their forecast performance. Theil's U-statistic was considered as an indicator of forecast accuracy. It is a relative measure, indicating that the model under consideration and the benchmark model are accurate, in which a value of less than one implies that the model is higher than the benchmark (Brook, 2002).

The U-coefficients of the best fitting ARIMA models for the one-month-ahead ex post forecast, 1991 to 2007, are presented in Table 4.26 for the forecasting period January 2008-December 2010. As the U-coefficients of the ex-post are all less than one for each country, these results suggest that the ARIMA models perform well in forecasting tourist arrivals from the 25 countries to Thailand.

Table 4.26 Theil's U-Coefficients for One-Month-Ahead Ex-Post Forecasting

Original country	Ex-post forecast
Australia	0.0225
Canada	0.0068
China	0.0411
Denmark	0.0087
Finland	0.0719
France	0.0249
Germany	0.0089
Hong Kong	0.0439
India	0.0222
Indonesia	0.0137
Italy	0.0095
Japan	0.0221
Korea	0.0164

Table 4.26 (Continued)

Original country	Ex-post forecast
Malaysia	0.0124
Netherlands	0.0109
New Zealand	0.0129
Norway	0.0272
Philippines	0.0194
Singapore	0.0209
Sweden	0.0064
Switzerland	0.0057
Taiwan	0.0629
United Kingdom	0.0116
USA	0.0104
Vietnam	0.0081

The spatial aggregates and the temporal aggregates for January 2008 to December 2010 are given in the following.

4.3.2.1 Tourist arrivals from Europe

The spatial aggregates and the temporal aggregates of tourist arrivals from Europe for January 2008 to December 2010 are shown in Table 4.27.

Table 4.27 Results of Forecast by Using Seasonal ARIMA from Europe

Month-year	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Sweden	Switzer-land	UK	Spatial Aggre-gate
Jan-2008	23910	26008	40212	63431	20207	17435	16278	68287	16370	74064	366203
Feb-2008	24612	22620	39709	60645	16633	13943	15667	64559	15336	73692	347416
Mar-2008	18971	16073	34215	60772	12761	12131	14137	55784	14313	78114	317272
Apr-2008	12429	7056	28032	44135	8645	11594	7557	26902	12597	71302	230248
May-2008	8701	4877	21922	31223	6570	9777	3935	11730	8723	56250	163709
Jun-2008	8876	5088	21119	26342	7547	11072	7790	14751	7317	56162	166065
Jul-2008	15783	4581	31248	32819	12637	24584	9120	12089	11899	65348	220108
Aug-2008	9872	4191	37821	34114	28670	14945	4946	9062	7582	67511	218714
Sep-2008	10026	4983	21467	35399	9414	12212	5729	11192	9656	59578	179655
Oct-2008	11611	8254	27507	45525	10283	16235	7466	23675	12945	71405	234907
Nov-2008	16200	22511	34259	62413	12989	17056	12164	52811	16695	83047	330146
Dec-2008	20712	33266	33518	61963	19323	18923	15318	86077	17678	89957	396733
Jan-2009	30297	31240	41404	66939	23693	17816	16756	78663	17290	80016	404116
Feb-2009	28577	28503	40245	64042	18071	15102	16106	76447	16602	79630	383324
Mar-2009	22899	19636	36027	64181	14145	12618	13492	67543	14728	84371	349641
Apr-2009	13220	8506	29479	46806	10401	11566	7488	32364	14046	77095	250971
May-2009	8821	5800	23102	33264	7654	10105	4070	14352	10277	60972	178416
Jun-2009	9815	6072	22326	28127	8521	10876	7517	17889	8988	60886	181017
Jul-2009	15222	5449	32377	34948	14975	26601	8929	14930	13316	70748	237495
Aug-2009	8980	4978	38805	36313	33783	15687	4954	11151	8693	73076	236421
Sep-2009	10139	5950	22617	37666	11250	12877	5559	13548	10706	64578	194890
Oct-2009	13215	10005	28616	48290	12342	17986	7277	28445	14667	77270	258112
Nov-2009	19568	28085	35240	65943	15519	19280	12059	61895	17522	89747	364857
Dec-2009	22959	41988	34489	65479	22671	21324	15886	101883	18843	97150	442673
Jan-2010	33975	39386	42141	70675	26257	19466	16027	93982	17466	86528	445902
Feb-2010	33616	35865	40987	67661	21203	15656	17009	90608	16547	86126	425278
Mar-2010	27415	24464	36861	67812	16216	13372	14131	79873	15267	91215	386626
Apr-2010	16744	10357	30432	49659	11037	12596	7669	37719	13846	83435	273493
May-2010	11511	6990	24112	35450	8277	10640	4086	15949	9895	66149	193058
Jun-2010	15247	7332	23324	30043	9503	11939	7796	19472	8519	66067	199240
Jul-2010	21307	6564	33200	37228	16328	28273	9088	15668	13287	76664	257608
Aug-2010	12291	5985	39416	38667	37984	16640	4949	11634	8580	79173	255319
Sep-2010	14135	7194	23561	40093	12102	13481	5732	14595	10829	70062	211785
Oct-2010	18982	12283	29453	51243	13280	18411	7458	31406	14382	83694	280592
Nov-2010	25335	35522	35883	69703	16899	19490	12213	71573	17853	97077	401546
Dec-2010	27204	53745	35129	69226	25387	21699	16233	121217	18858	105017	493715
Temporal Aggregates	643176	601410	1150256	1778240	573179	573405	362590	1559722	482117	2753176	10477272

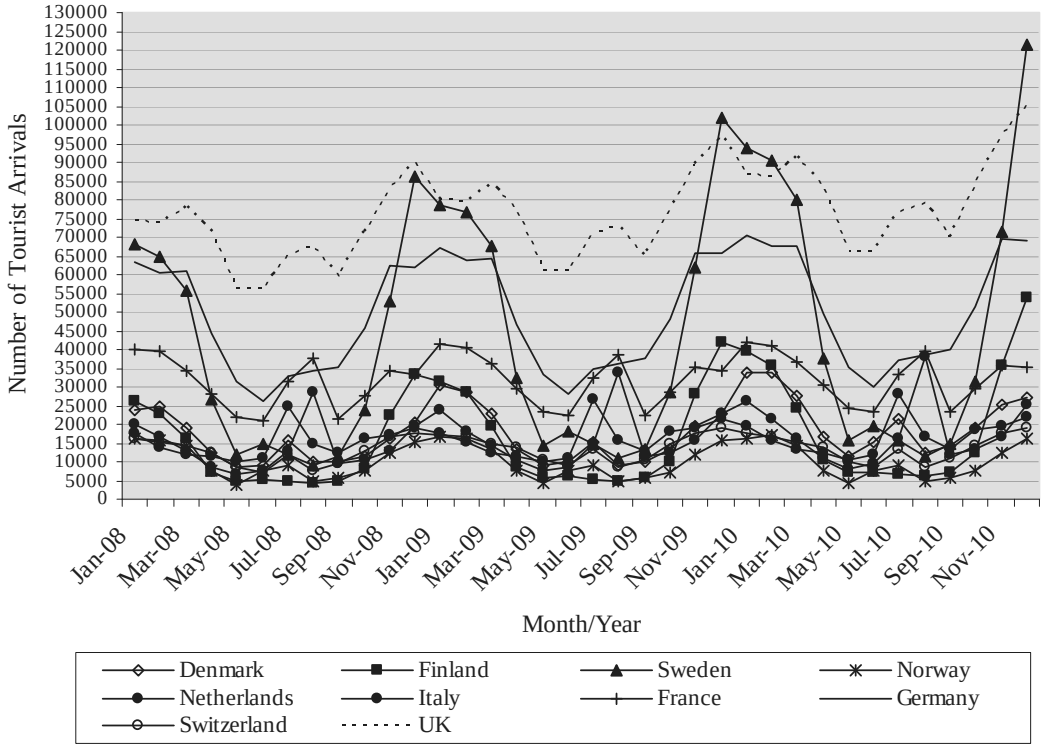

Figure 4.1 Forecast Trends in the Number of Arrivals from Europe
Source: from computed

The forecasting the European tourist arrivals in Thailand are growing, with accumulated numbers of 10,477,272 as satisfactory from the period 2008-2010. The United Kingdom had the highest forecast arrivals of 2,753,176, followed by Sweden with 1,559,722, Germany with 1,778,240, and France with 1,150,256. Italy, the Netherlands, and Switzerland also had more than 300,000 arrivals. According to the figure, arrivals from Scandinavian countries such as Norway, Finland, and Sweden countries will continue to grow over the next three years and are forecast to deliver 716,534 visitors by 2008, 835,415 visitors by 2009 and 971,774 visitors by 2010.

4.3.2.2 Tourist arrivals from East Asia

Tourist arrivals from East Asia for January 2008 to December 2010

Table 4.28 Results of Forecast by Using Seasonal ARIMA from East Asia

Month-year	China	Japan	Hong Kong	Taiwan	Korea	Spatial Aggregates
Jan-2008	95330	104298	32828	29076	113756	375288
Feb-2008	107048	99146	37885	32786	102636	379501
Mar-2008	105959	100679	34605	30156	95387	366786
Apr-2008	117227	81483	35183	30301	98341	362536
May-2008	114719	69818	33020	28156	99477	345190
Jun-2008	112373	77942	39634	29715	95550	355215
Jul-2008	133191	86356	44672	31197	102043	397459
Aug-2008	144934	104420	48051	30458	112201	440064
Sep-2008	131579	100290	34103	28323	92773	387068
Oct-2008	135405	79936	34361	27311	100656	377669
Nov-2008	152684	89614	33254	26657	120320	422531
Dec-2008	153133	85901	38548	26594	117989	422165
Jan-2009	152303	93204	30670	25970	125762	427909
Feb-2009	161912	90928	38497	28470	106669	426476
Mar-2009	151460	94347	34677	26620	106813	413917
Apr-2009	165035	81128	34826	26705	108043	415737
May-2009	152479	71347	31716	24941	110624	391108
Jun-2009	147264	75403	37253	26170	112016	398106
Jul-2009	163813	81419	41601	27327	124037	438198
Aug-2009	170748	98066	44797	26704	129722	470036
Sep-2009	157496	93824	32895	24957	104588	413760
Oct-2009	159712	78317	33179	24112	110817	406137
Nov-2009	173859	89241	32313	23556	131912	450880
Dec-2009	173754	91539	36477	23476	128824	454072
Jan-2010	167265	93660	30042	22945	135446	449358
Feb-2010	171116	89789	36990	24926	124612	447433
Mar-2010	162475	91538	33435	23413	116945	427807
Apr-2010	167660	76005	33297	23454	120876	421291
May-2010	159109	66027	30415	22007	122786	400345
Jun-2010	149657	72211	35331	22969	118616	398784
Jul-2010	168708	78999	39210	23867	125438	436222
Aug-2010	174017	94430	42120	23341	136421	470328
Sep-2010	163769	90717	31527	21915	115979	423907
Oct-2010	166679	73963	31793	21210	123711	417356
Nov-2010	181224	82715	30878	20738	145627	461181
Dec-2010	184495	80791	34729	20649	142846	463510
Temporal Aggregates	5449591	3109495	1284812	931173	4180260	14955330

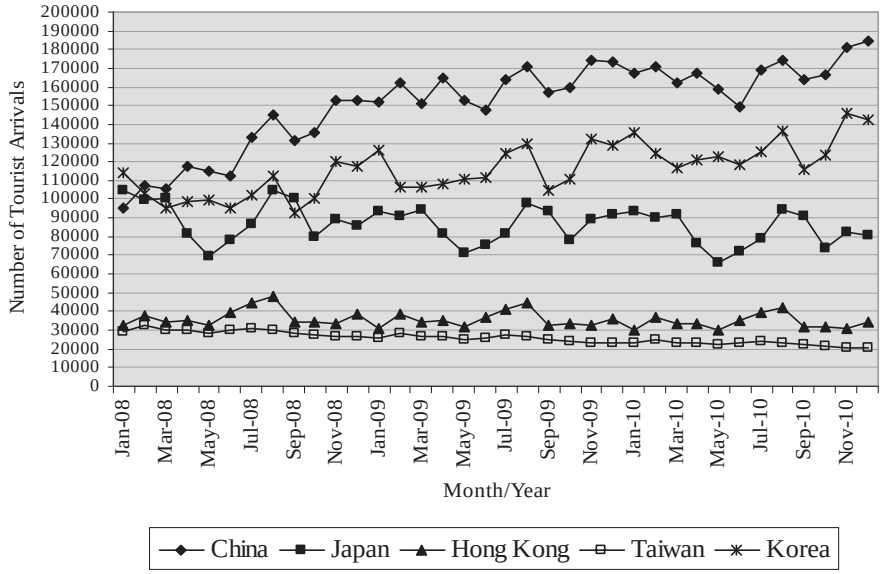

Figure 4.2 Forecast Trends in the Number of Arrivals from East Asia
Source: from computed

The figure shows the tourism forecasts for the East Asia markets during the period 2008-2010. The accumulated number of arrivals is 14,955,330. China had the highest forecasting arrivals of 5,449,591. Korea and Japan also had significant numbers of tourist arrivals. The high forecast trends of Japan between July and September of every year have been expanded, and highly expanded forecast trends can also be found in China and Korea.

4.3.2.3 Tourist arrivals from ASEAN

Tourist arrivals from ASEAN for January 2008 to December 2010

Table 4.29 Results of Forecast by Using Seasonal ARIMA from ASEAN

Month-year	Indonesia	Malaysia	Philippine	Singapore	Vietnam	Spatial Aggregate
Jan-2008	21439	131722	18381	55221	21185	247948
Feb-2008	16974	143760	18167	58641	23157	260698
Mar-2008	20169	138263	21109	64769	25319	269630
Apr-2008	17976	144025	21768	55386	32125	271281
May-2008	19745	135865	20466	59104	33144	268324
Jun-2008	19996	139701	18413	76344	29910	284364
Jul-2008	23406	139362	19420	60815	29521	272523
Aug-2008	19931	155430	19676	61506	28406	284949
Sep-2008	21646	143930	20072	60335	29744	275727
Oct-2008	26189	154463	22282	63239	29562	295734
Nov-2008	26517	155431	21307	76548	37699	317501
Dec-2008	29274	172745	21194	89904	36410	349528
Jan-2009	23858	151200	19924	57327	32045	284354
Feb-2009	21790	157224	20287	57694	35980	292976
Mar-2009	23172	152968	24209	67777	36118	304244
Apr-2009	21270	153510	22694	60129	44879	302483
May-2009	22969	148097	23338	65158	43442	303004
Jun-2009	24278	148058	20877	92070	32084	317366
Jul-2009	25887	147534	22173	67303	40622	303521
Aug-2009	23218	155154	23072	70400	37569	309412
Sep-2009	24364	150944	21875	62962	38857	299003
Oct-2009	27525	158521	26120	66232	35401	313799
Nov-2009	29264	164490	24728	78910	43824	341217
Dec-2009	29739	176544	23561	92596	42084	364524
Jan-2010	27616	170658	23948	58883	40676	321781
Feb-2010	26209	173531	23713	61616	41394	326462
Mar-2010	27586	172314	27246	68277	39653	335077
Apr-2010	25687	173410	27729	59577	37617	324020
May-2010	27094	171436	26240	63425	38586	326780
Jun-2010	29376	171075	24015	81538	44879	350883
Jul-2010	28839	170423	25457	65181	46432	336332
Aug-2010	29200	173595	25682	66286	44092	338854
Sep-2010	28830	172778	26186	64043	43625	335462
Oct-2010	34102	176078	28794	66921	50411	356307
Nov-2010	35418	178662	27478	79500	47992	369049
Dec-2010	35199	183329	27521	92123	54212	392385
Temporal Aggregates	915752	5706230	829123	2447742	1348657	11247503

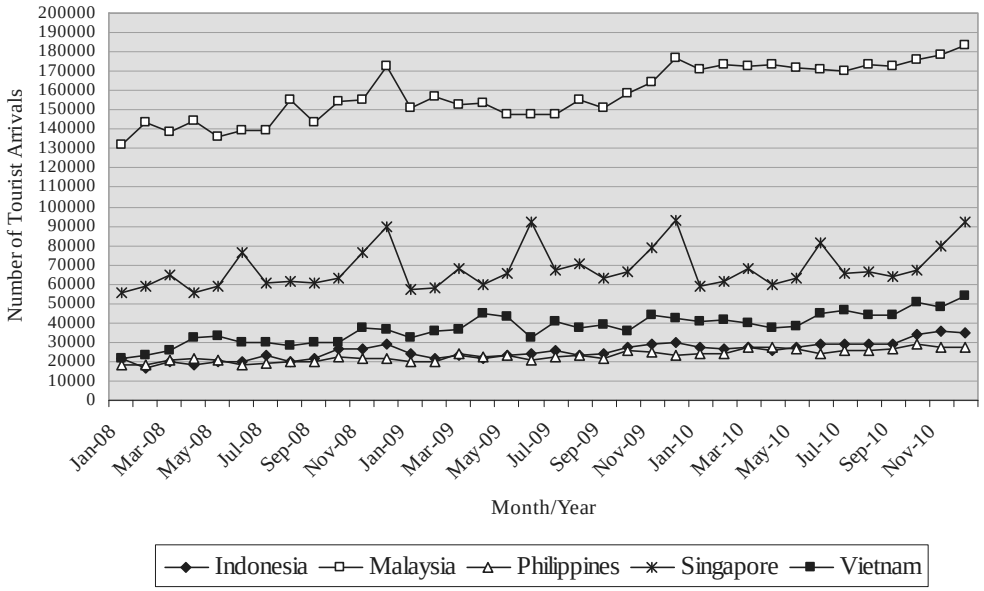

Figure 4.3 Forecast Trends in the Number of Arrivals from ASEAN
Source: from computed

The accumulated number of arrivals from ASEAN is 11,247,503. The result shows that Malaysia's forecast trend increased in the number of tourist arrivals with the highest arrivals of 5,706,230. Singapore had the second highest arrivals of 2,447,742 within ASEAN. The high forecast trends of Malaysia and Singapore were expanded in every new year with arrivals from cross-border traffic for to celebrate the new year in Thailand. Vietnam, Indonesia, and the Philippines also had a significant number of tourist arrivals with 1,348,657, 915,752, and 829,123, respectively.

4.3.2.4 Tourist arrivals from South Asia

Tourist arrivals from India between January 2008 and December 2010

Table 4.30 Results of Forecast by Using Seasonal ARIMA from South Asia

Month-year	India
Jan-2008	37027
Feb-2008	33406
Mar-2008	38251
Apr-2008	41318
May-2008	55216
Jun-2008	52357
Jul-2008	43687
Aug-2008	45296
Sep-2008	45602
Oct-2008	46949
Nov-2008	45721
Dec-2008	49818
Jan-2009	42543
Feb-2009	38560
Mar-2009	42996
Apr-2009	49248
May-2009	66057
Jun-2009	59693
Jul-2009	50371
Aug-2009	51198
Sep-2009	52175
Oct-2009	54927
Nov-2009	51896
Dec-2009	56811
Jan-2010	47974
Feb-2010	43345
Mar-2010	49473
Apr-2010	53880
May-2010	72037
Jun-2010	67922
Jul-2010	56816
Aug-2010	58785
Sep-2010	59312
Oct-2010	61278
Nov-2010	59476
Dec-2010	64874
Aggregates	1846294

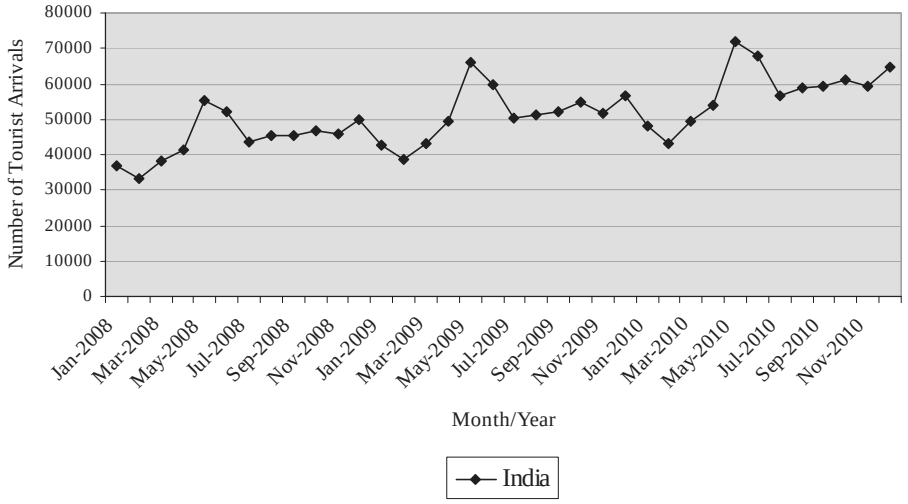

Figure 4.4 Forecast Trends in the Number of Arrivals from South Asia
Source: from computed

Tourism forecasts for South Asia were expanded with a satisfactory trend: the total number of forecasted tourist arrivals during 2008-2010 was 1,846,294. The forecast trend of India expanded between May and July of every year, having the highest number of arrivals in May. The arrivals came for relaxation with family during the end of the semester.

4.3.2.5 Tourist arrivals from the Americas

Tourist arrivals from the Americas for January 2008 to December 2010

Table 4.31 Results of Forecast by Using Seasonal ARIMA from the Americas

Month-year	USA	Canada	Spatial Aggregates
Jan-2008	63974	19595	83569
Feb-2008	55053	18517	73571
Mar-2008	58155	17023	75179
Apr-2008	47346	13468	60813
May-2008	44874	12497	57371
Jun-2008	48370	10474	58844
Jul-2008	52248	12137	64384
Aug-2008	45055	11243	56298
Sep-2008	39686	9463	49150
Oct-2008	54423	14141	68564
Nov-2008	62979	17473	80452
Dec-2008	63816	18596	82412
Jan-2009	63735	21879	85614
Feb-2009	55586	20408	75993
Mar-2009	59675	19314	78990
Apr-2009	52043	16638	68681
May-2009	49557	15723	65279
Jun-2009	52665	12532	65197
Jul-2009	56316	14867	71183
Aug-2009	46526	13074	59601
Sep-2009	43056	11921	54976
Oct-2009	59868	17058	76926
Nov-2009	68076	21125	89201
Dec-2009	68181	22030	90211
Jan-2010	67776	25114	92890
Feb-2010	58389	23943	82332
Mar-2010	61886	22133	84019
Apr-2010	51012	18146	69157
May-2010	48350	17045	65395
Jun-2010	51965	14033	65998
Jul-2010	56017	16170	72188
Aug-2010	47787	14829	62616
Sep-2010	42469	12768	55237
Oct-2010	58530	18678	77208
Nov-2010	67525	23028	90553
Dec-2010	68225	24554	92779
Temporal Aggregates	1991192	611638	2602831

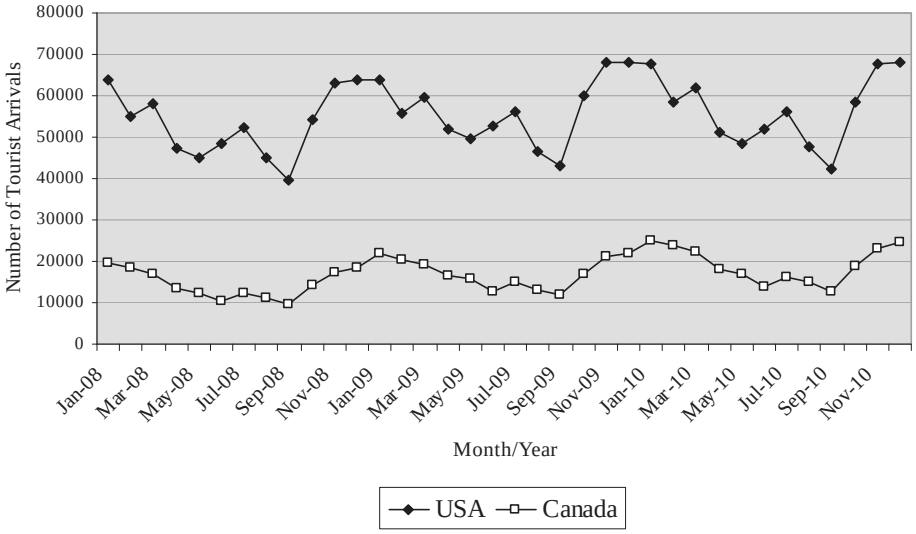

Figure 4.5 Forecast Trends in the Number of Arrivals from the Americas
Source: from computed

The forecasted number of tourist arrivals from the Americas to Thailand grew strongly and continually expanded in the number of tourists; the total number of forecast tourist arrivals during 2008-2010 was 2,602,831. The highest forecasted number of tourist arrivals of 1,991,192 came from the USA and the second highest (611,638 arrivals) from Canada. The forecasted trend of the Americas expanded between November and January of every year, the tourists coming to celebrate the new year in Thailand.

4.3.2.6 Tourist arrivals from Oceania

Tourist arrivals from Oceania for January 2008 to December 2010

Table 4.32 Results of Forecast by Using Seasonal ARIMA from Oceania

Month-year	Australia	New Zealand	Spatial Aggregates
Jan-2008	64641	6931	71572
Feb-2008	50581	4920	55501
Mar-2008	54987	6326	61313
Apr-2008	58378	7341	65719
May-2008	53145	7546	60691
Jun-2008	58888	9060	67948
Jul-2008	64976	10160	75136
Aug-2008	60587	9202	69789
Sep-2008	70539	10071	80610
Oct-2008	76448	9054	85503
Nov-2008	65969	8234	74203
Dec-2008	74213	7680	81893
Jan-2009	76900	7445	84345
Feb-2009	60474	5241	65715
Mar-2009	65728	6685	72413
Apr-2009	69807	7708	77515
May-2009	63704	7977	71682
Jun-2009	70567	9513	80081
Jul-2009	77843	10859	88702
Aug-2009	72739	9858	82597
Sep-2009	84602	10808	95411
Oct-2009	91691	9705	101395
Nov-2009	79375	8813	88189
Dec-2009	89249	8212	97461
Jan-2010	92539	7956	100495
Feb-2010	73101	5576	78677
Mar-2010	79449	7130	86579
Apr-2010	84404	8234	92638
May-2010	77212	8522	85734
Jun-2010	85504	10182	95686
Jul-2010	94297	11637	105934
Aug-2010	88298	10550	98848
Sep-2010	102598	11577	114175
Oct-2010	111195	10378	121573
Nov-2010	96564	9412	105976
Dec-2010	108520	8761	117281
Temporal Aggregates	2749714	309265	3058979

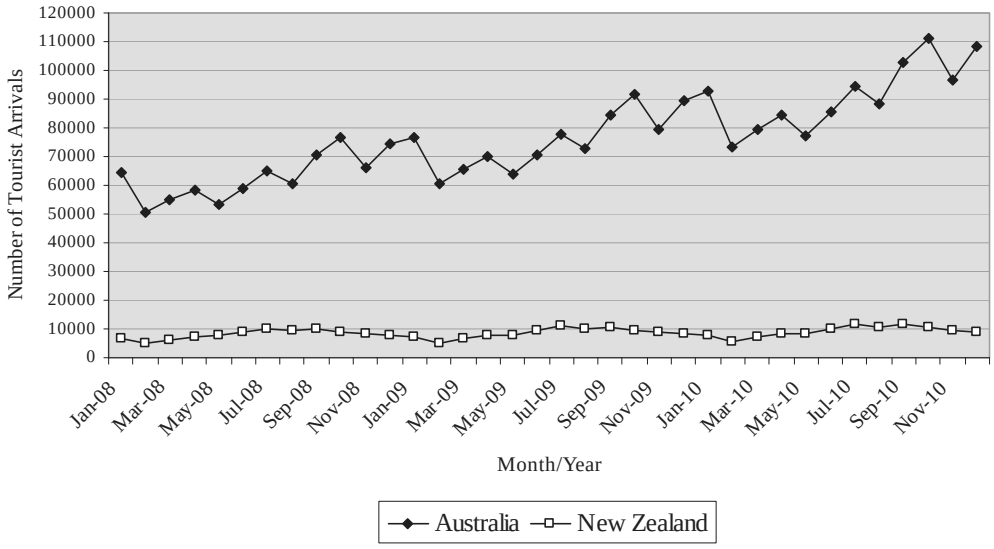

Figure 4.6 Forecast Trends in the Number of Arrivals from Oceania
Source: from computed

During the forecast period Oceania retained its growth with a total number of 3,058,979 visitors to Thailand. Those forecasted numbers came from the Australian markets with the highest number of 2,749,714 visitors, while New Zealand had 309,265 visitors. The forecasted trend for Australia sees very interesting. Australia's tourists will come to Thailand with the motivation of tourism place and low-cost expenses during their travel in Thailand.

4.4 Forecasting Accuracy

Forecasting ability is an important aspect of evaluating the accuracy of an econometric model. It is necessary to evaluate the forecasting accuracy of the model because accurate predictions should provide tourism organizations and the government with useful information for competitiveness analysis and strategy formulation. The accuracy of the one-month-ahead ex post forecast was obtained for the computed number of tourist arrivals in Thailand. This study compares the trends of forecasting demand for tourism and the actual number of tourist arrivals in Thailand from January 2008 to December 2009.

The results presented in Figure 4.7-4.12 show that the time-series of the ARIMA and seasonal ARIMA models from computed in this model performed well perform and were consistent in every region.

In Europe, Thailand's inbound tourism from this market grew consistently. The total forecast trend for tourists during the forecasting periods was close to the actual value. The forecast trends show that the arrivals from European members and Scandinavian countries will continue to grow over three years and are forecasted to deliver 741,542 visitors between 2008-2010 from Norway and Finland. However, the actual tourism trends saw a slowdown at the end of 2008 and the beginning of 2009 as a result of the protests in Thailand.

In East Asia, the forecasting trends from March 2008 to December 2009 seemed to exceed the actual trend. The forecasting trends exceeded the actual numbers because the visitors in this market are very sensitive to the shocks in Thailand, for example political problems and Suvarnabhumi Airport temporary closing. The visitors is respond to the crisis they has no confidence to travel, it show a forecasting trend drop.

In ASEAN, the 2008-2010 forecasts show 11.2 million visitors from ASEAN to Thailand. The trend shows that the actual values trend dropped during the forecast period beginning with the third quarter of 2008, although there was a rebound in the last quarter of 2009. ASEAN visitors, with Malaysia the largest visitor to Thailand, were quite sensitive to the crisis of closing the southern international airport. The majority visitors in this region like to travel to Thailand during the

weekends and festival holidays, when there respond on shock in this period of time then the visitors trend drops.

Thailand's inbound tourism from South Asia at the actual value grew consistently with the forecast trend during the forecasting periods. India was the fastest growing regional market, with visitor numbering from 534,648 in 2008 to 616,475 in 2009, and this was forecast to hit 695,172 in 2010. The figure shows that the actual values trend dropped during the forecasting period beginning with the third quarter of 2008 and rebounding in the first quarter of 2009 because of the crisis in Thailand.

In the Americas, the forecasting trend from computed in this model is outperform. Thailand's inbound tourism from this market grew consistently between actual and forecast, exceeding the actual trend from October 2008 to January 2009, which as the season of political unrest. The visitors responded with shock to the closing of Suvannaphom International Airport. After that period, the inbound tourism from this market recovered.

The inbound tourism from the Oceanian market demonstrated consistency between actual and forecast. Although, the forecasted trend was under the actual trend during the third quarter of 2008 because of political unrest in Thailand, the basic actual and forecasted trends expanded together.

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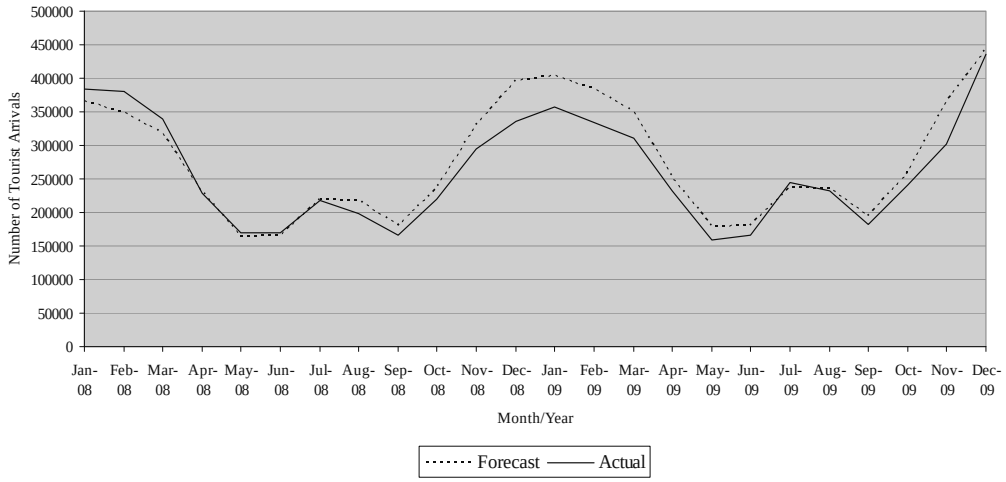

Figure 4.7 Forecasting Accuracy in the Number of Arrivals from Europe

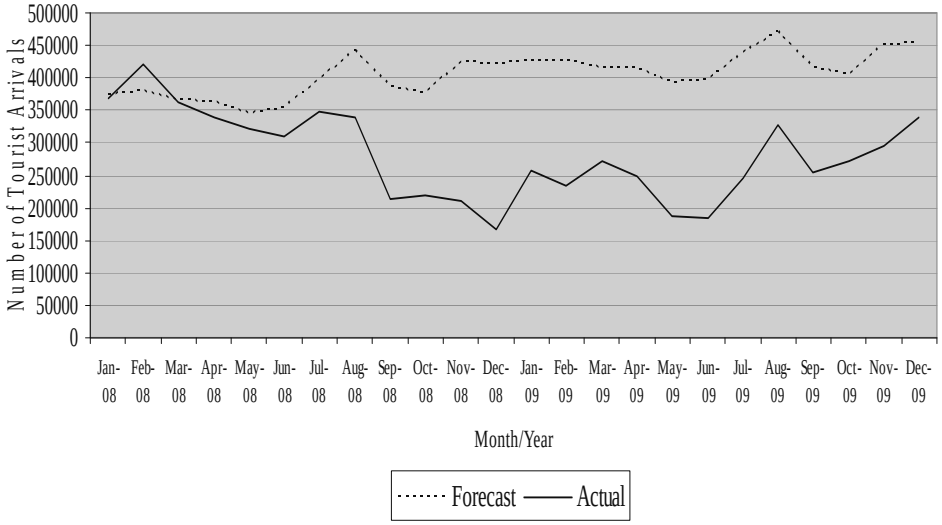

Figure 4.8 Forecasting Accuracy in the Number of Arrivals from East Asia

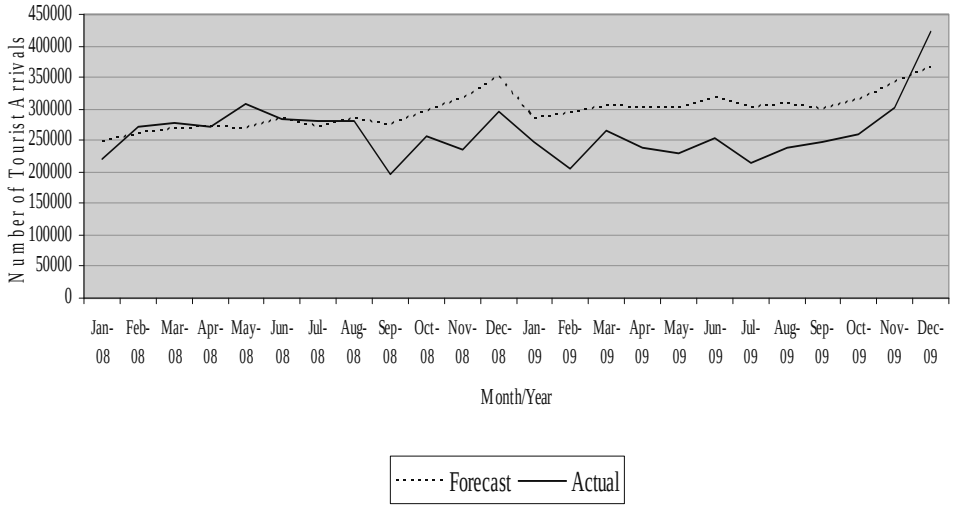

Figure 4.9 Forecasting Accuracy in the Number of Arrivals from ASEAN

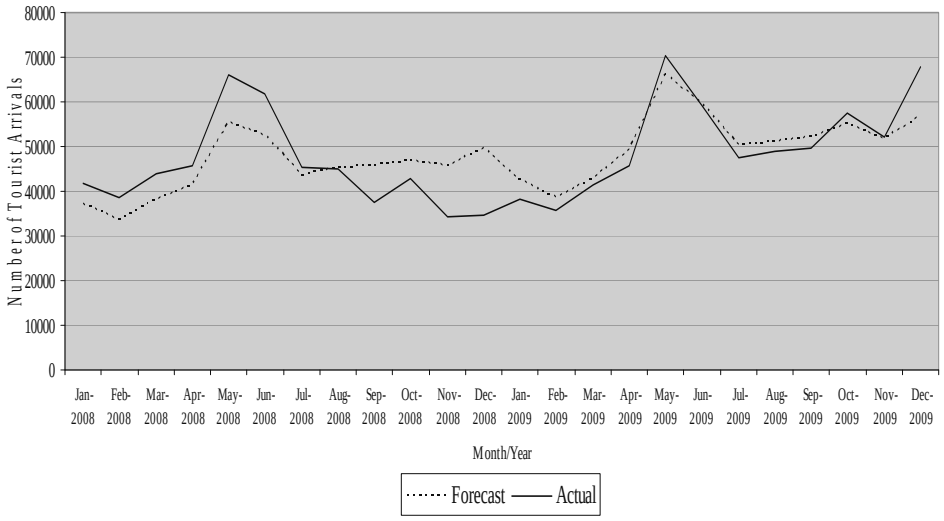

Figure 4.10 Forecasting Accuracy in the Number of Arrivals from South Asia

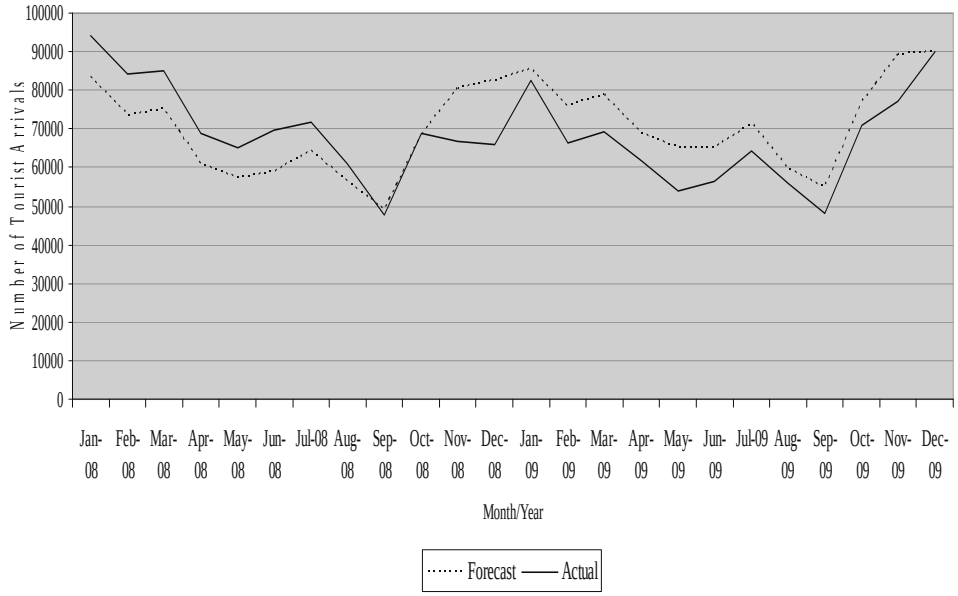

Figure 4.11 Forecasting Accuracy in the Number of Arrivals from the Americas

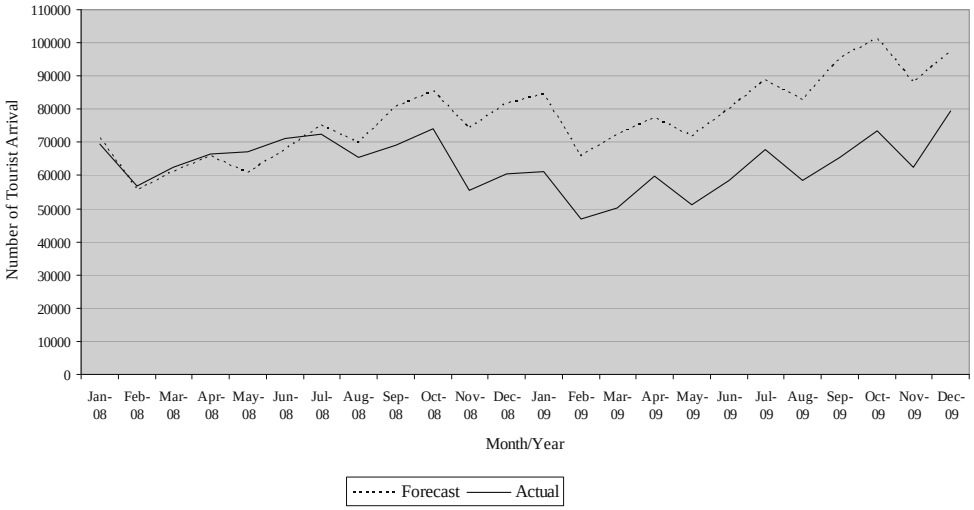

Figure 4.12 Forecasting Accuracy in the Number of Arrivals from Oceania

4.5 Conclusion

This study forecasts international tourist arrivals to Thailand from January 2008 to December 2010 by using the seasonal Autoregressive Integrated Moving Average (SARIMA) method. Forecasting the number of tourist arrivals is considering the seasonality that will respond on shock of tourism in short-run of demand.

The forecasting results show that the growth of tourist arrivals from East Asia are expected to be the strongest among the six main regions, especially tourist arrivals from China. Another important major market, ASEAN, shows an increasing trend. The countries of Malaysia, Singapore, and Vietnam are expected to be interesting regarding the number of tourist arrivals during the forecasting period. It was concluded in the study that the time-series of the seasonal ARIMA models was accurate in forecasting tourism demand in Europe, South Asia, the Americas, and the Oceania region.

CHAPTER 5

EFFECTS OF NEWS SHOCKS ON INTERNATIONAL TOURISM DEMAND

5.1 The Effects of News Shocks on Tourism

News broadcasts covering new events spread very quickly around the world, through various mass media sources. In terms of tourism demand, news shocks are likely to influence directly or indirectly the demand on tourism. Some news may have a positive impact on some potential tourists and some tourist destinations, whereas other news may have an adverse effect. It is not surprising that the shock of recent news is often followed by a fluctuation in tourism demand as a type of repercussion. Some news shocks are persistent, whereas others may readily and imperceptibly evaporate. In addition, the level of the tourist's reaction to a news shock is likely to differ according to the characteristics of the news. Thus, news impacts are likely to directly affect tourism demand.

In this regard, the affects of changes in tourism demand, the affect of news shocks is one of the factors that affects in demand. Thus, this study will emphasize the affects of news shocks on the overall image of tourism demand, as follows.

5.1.1 News on Natural Disasters

The news shocks on natural disaster in this study is the affects of Tsunami, it can be caused by undersea earthquakes as the one caused in Thailand by the 2004 Indian Ocean Earthquake.

The tsunami that hit Thailand on December 26th 2004 created the Boxing Day Tsunami; it was first and foremost a human tragedy, with more than 5,000 people killed, around half of whom were foreign tourists. The six provinces affected by the

tsunami were Phuket, Krabi, Ranong, Phang Nga, Satun, and Trang, and the two most seriously affected areas were Khao Lak inPhang Nga and Phi Phi island in Krabi.

International media coverage focused solely on the devastation and reported that many areas were operating as abnormal. The media reports on suffered the most serious devastation in terms of the people killed and damage to hotels and infrastructure. A number of popular bays around Phuket island were seriously affected by the waves. The tourist may be reluctant to return to an area where so many people have died, and where the risk of disease may persist for some time.

5.1.2 News on Health and Disease

This news shock focuses on the Avian Influenza (H5N1) or Bird Flu. Although the bird flu viruses infect birds, including chickens, other poultry and wild birds such as ducks can also be infected. However, bird flu can pose health risks to people.

The first case of a bird flu virus infecting a person directly, H5N1, was in Hong Kong. Since then, the bird flu virus has spread to birds in countries in Asia and also in Thailand. This study will focus on the news shocks of bird flu H5N1 that affected the tourism demand in Asia and Thailand as follows:

1 Bird flu H5N1 in Asia

2 Bird flu H5N1 in Thailand

5.1.3 News on Criminals and Terrorists

The news shock in this study will focus on the South Thailand insurgency. This insurgency is an Islamist separatist insurgency which is taking place in the predominantly Malay Pattani region, made up of the three southernmost provinces of Thailand, Pattani, Yala, and Narathiwat, which are the center of the terrorism effects on in terms of travel warning. A massive security presence in the region has failed to stem the almost daily violence, usually involving drive by shootings or small bombings. Many murders have involved shooting and decapitation.

This news has surely negatively affected the tourism industry in Thailand, and the shock of it may make tourists think more about their safety when their make a decision to travel to Thailand.

5.2 The Data

Secondary data will be used in this chapter in studying the effect of news shocks on the change in international tourism demand at that time. The data set comprises monthly data from 25 major international tourist countries to Thailand, as well as total tourist arrivals and the original data published by the Tourism statistical report of various years by the Tourism Authority of Thailand.

The data set of total tourist arrivals to Thailand employs the natural logarithm of monthly tourist arrivals covering the period January 2003 to December 2007, a 5-year period.

The main source of data concerning the news shocks that affected international tourism demand is articles from the Bangkok Post.

5.3 Data Description

The data in this study, comprised of the variables regarding the news shocks that affected the decision making of tourists concerning their arrival to Thailand, are as follows.

5.3.1 Dependent Variable

This study uses international tourist arrivals to Thailand as a dependent variable. The data of tourist arrivals are categorized into 25 major international tourist countries, as presented in chapter 3.

5.3.2 Independent Variables

This study categorizes variables being expected to have an affect to individual decision to participate in news shock. These may affect tourists' decisions to travel to Thailand. The dummy variables used to define in the models are as follows.

1) Criminal and terrorist effects

The news shocks of domestic criminals and terrorists were expressed as dummy variables. This dummy variable on news shocks of domestic terrorism in

Thailand is presented as South Thailand Insurgency. These variables are expected to be negatively associated with tourist demand.

Dummy variables were defined as CRIME_SOUTH and were equal to “1” for shocks of criminals and terrorists in southern Thailand and “0” otherwise.

2) Natural disaster effects

The news shocks from domestic national disasters were expressed as dummy variables. This dummy variable on news shocks regarding the domestic natural disasters in Thailand in this study was the Tsunami. The variable was expected to be negatively associated with tourist demand.

Dummy variables were used to define as NATURE_TSUNAMI equal to “1” for news shocks of the Tsunami disaster in Thailand and “0” otherwise.

3) Health and diseases effects

The news shocks on health and diseases in Asia and Thailand were expressed as dummy variables. These dummy variables on news shocks the Asian in this study were the effects on health such Bird Flu Avian Influenza H5N1. A dummy variable on news shock of domestic health in Thailand on this study is Bird Flu Thailand. These variables are expected to be negative associate to tourist demand.

Dummy variables are used to define as follow. FLU_INTER equal to “1” for news shocks of health and diseases on Asian Avian Influenza H5N1 and “0” otherwise. FLU_THA equal to “1” for shocks of Bird Flu on Thailand and “0” otherwise.

Finally, the main independent variables in chapter 3 were
The monthly GDP per capita, tourism prices, and the nominal exchange rate used to measure the effect of shocks on tourist demand.

5.4 Model Specification

The news shocks that use in the chapter will use variables by study the relation between tourist arrivals with dependent variables. Then, this study is applying

exchange rate and dummies variable for the estimation. By using regression analysis to observe each kind of factor affects the international tourism demand.

Transformation of the data by taking natural logarithms means that the coefficients of the estimates equation can be interpreted as indicating a percentage change in a dependent variable given a 1% change in an independent variable.

Therefore, the tourism dummy equation takes the following form:

$$\ln Q_t = \alpha + b_1 \ln GDP + b_2 \ln RP + b_3 \ln ER + b_4 Crime\_South_t + b_5 Nature\_Tsunami_t + b_6 Flu\_Inter_t + b_7 Flu\_Tha_t + \varepsilon_i$$

Dependent Variable

Q_t	=	number of tourist arrivals at time *t*.

Independent Variables

GDP	=	monthly Gross Domestic Product per capita of each of the origin countries.
RP	=	monthly relative consumer price level for tourists from origin country in Thailand.
ER	=	average monthly exchange rate in units of origin currency per Thai baht.
Crime_South	=	news shocks on South Thailand insurgency.
Nature_Tsunami	=	news shocks of Tsunami disaster on Thailand.
Flu_Inter	=	news shocks on Asian Avian Influenza H5N1
Flu_Tha	=	news shocks of Bird Flu in Thailand
ε_i	=	error term
d	=	dummy variables capturing the information on tourism (1 is news shocks affects on tourism and otherwise)

5.5 Empirical Results

The empirical results from the panel estimated of 25 international arrivals as show in Table 5.1

Table 5.1 Estimate Results for the Panel Estimate

Variable	Panel estimator
ln *GDP*	0.3712*
	(6.5612)
ln *RP*	-0.0282*
	(-1.2998)
ln *ER*	-0.2440**
	(-3.6160)
ln *Nature_Tsunami [-1]*	-0.0869*
	(-2.5182)
ln *Crime_South [-2]*	-0.0275*
	(-2.3672)
ln *Flu_Inter [-3]*	0.0107
	(0.6308)
ln *Flu_Thai [-3]*	0.0219
	(1.3013)
R-squared	0.9884
Adjusted R-squared	0.9880
Durbin-Watson	1.4052
S-statistic	2166.930

Source: from computed

Note: The number in parentheses ( ) is the t-Statistic.
The number in parentheses [ ] is the lag period
* is significant at level 0.01.
** is significant at level 0.05.

The results in Table 5.1 indicate that the model performs satisfactorily. The magnitudes of independent variables of GDP per capita of each country (0.3712), tourism price (-0.0282), and the nominal exchange rate (-0.2440) coefficients appear

significant. This suggests that tourism is very much dependent on the economic conditions of the origin countries, as presented in chapter 3. The results of news shocks as are follows.

5.5.1 News Shock of the Tsunami Disaster on Thailand

These results show that news shocks of the Tsunami disaster on Thailand had a negative and significant effect on the demand of international tourist arrivals from the 25 origin countries. This suggests that this news shock was important in tourism demand in Thailand when Nature_Tsunami increasing 1% then the number of international tourist arriving in Thailand decreasing 0.0869%. This implies that the Tsunami dramatically discouraged Thai tourism growth because tourists from over the world were shocked by the unexpected terrible damage seen in the media. Nevertheless, the results show that the situation gradually recovered rapidly. The rate of the shock decreased and the situation was more positive one month later. The reason may have the impression in Thai people's hospitality which creates a good image for Thailand. Also the reason of rapid recovery may have the most tourists who prefer visiting beaches and the sea changed to visit other alternative provinces in the Gulf of Thailand, such as Hua Hin and Samui, rather than the Andaman coast.

5.5.2 News Shock on South Thailand Insurgency

According to these results, the negative coefficient for news shocks on the South Thailand insurgency variable had a negative impact on international tourist arrivals to Thailand. The empirical results suggest that when Crime_South increases by 1% then the number of international tourists arriving in Thailand decreases by 0.0275%. Tourist has a shock on kind of South insurgency; they are responsive to this news shock. Thus the news shock on Thailand insurgency should be given due attention by the Thai tourism industry. The resulted is a slight impact of this factor on the Thai tourism industry; it is imply that tourists were shocks from news and media when they make decision to travel in Thailand. They waited and were looking forward to hearing of the safety, security measure. Nevertheless, most tourists still tend to continuingly travel in Thailand because the affect areas in the 3 southern

provinces were not popular destination. They may travel in Bangkok or preferred other activities tourism during visit Thailand such as shopping, cultural tourism etc.

5.5.3 News Shock on Asian Avian Influenza H5N1

The estimated coefficient for this news shock on Asian Avian Influenza H5N1 has interesting when Flu_Inter increasing 1% then the number of international tourist arriving in Thailand still increasing 0.0107%. It suggests that tourism is not dependent on news shock of Asian Avian Influenza H5N1 when they visit Thailand.

5.5.4 News Shock of Bird Flu in Thailand

The estimated coefficient for this news shock on Bird Flu in Thailand has also interesting when Flu_Tha increasing 1% then the number of international tourist arriving in Thailand increasing 0.0219%. It is imply that tourism is not dependent on news shock of bird flu during visit Thailand, because the media and information on bird flu present that the bird flu issue was not leads to a high mortality rate among humans as a result of the disease being transmitted from animals to humans, but not by close person-to-person contact.

5.6 Conclusion

This study aims to investigate the impact of news shocks on international tourist arrivals in Thailand by using the Ordinary Least Square (OLS) technique. The independent variables of the model were GDP per capita, tourism prices, exchange rate, and the dummy factors of news shocks that affect tourism demand, the Tsunami disaster, Asian Avian Influenza H5N1, the bird flu in Thailand, and the South Thailand insurgency. The results from the study show that even though the conventional variables of the GDP, price, and exchange rate were statistically significant in explaining the international tourist arrivals in Thailand, the effect of news shocks was far more important. The effect of news shocks from the Tsunami disaster was sensitive in every market of the study, where the effect from the South Thailand insurgency was sensitive for tourism demand only in the Americas market.

CHAPTER 6

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Conclusions

This study examines the factors that influence the demand for international tourism in Thailand, which was divided into three parts.

The first part was to identify and estimate the important economic factors affecting tourism demand for Thailand of income, price, and exchange rate and the number of previous visitors that affected tourism demand. The Generalized Method of Moment (GMM) model was used to study the tourism demand both in the short-run and long-run. The estimated results indicated the following.

1 In the short-run, the number of previous visits to Thailand was the main factor in determining tourist demand for Thailand, implying that the effect of word-of-mouth and number of revisit tourists were important features in the tourism demand for Thailand. The estimated values of income elasticity in short-run is 0.35, suggested that tourism demand in Thailand was non high end market in the short run but when tourism demand continuously increasing by the word-of mouth effect, it is possible that Thailand can be a high end market in the long-run. The estimated values for the relative price in short run elasticity was -0.068, suggesting that tourism arrivals to Thailand were less sensitive to relative price change between the baht and foreign exchange.

2 In the long run, demand for travelling in Thailand in the 6 main regions found that Thailand is a high-end market for tourism, especially for tourists from the Americas and Europe. In terms of tourism price, the results show that tourism demand from Americas, ASEAN, East Asia, and Oceania were very sensitive to price variations.

Second part was to forecast the international tourism arrivals to Thailand during the period, 2008 to 2010, by using the time-series model. The Seasonal

Autoregressive Integrated Moving Average (SARIMA) model was adopted for the study. Forecasting the number of tourist arrivals is considering the seasonality that will respond on shock of tourism in short-run of demand.

The forecasting results show that the growth of tourist arrivals from East Asia is expected to be the strongest among the six main regions, especially tourist arrivals from China. Another major market, ASEAN, show an increasing trend. The countries of Malaysia Singapore and Vietnam are expected to be interesting regarding in the number of tourist arrivals during the forecasting period. It is concluded in the study that the time-series of the seasonal ARIMA models was accurate in forecasting tourism demand in Europe, South Asia, the Americas and the Oceania regions.

However, forecasting number of tourist arrivals still have other factor comes in to relate during that time, such as a tourist receives the information or news in destination country at that time of travel. Then, information or news shocks might make affect on the travel. In next part is study the factor of the news shocks to the making a decision for travel to Thailand.

Third part is study the impact of news shocks on the international tourism demand. This study is using the Ordinary Least Square (OLS) technique. The independent variables of the model were GDP per capita, tourism prices, exchange rate and the dummy factors of news shocks that affect tourism demand, the Tsunami disaster, Asian Avian Influenza H5N1, the bird flu in Thailand, and the south Thailand insurgency. The results from the study show that even though the conventional variables of the GDP, price and exchange rate were statistically significant in explaining the international tourist arrivals in Thailand, their impacts on international tourism in Thailand is small compared to the dummy factors of news shocks on Tsunami disaster and South Thailand insurgency.

1 The results of news shock Tsunami disaster on Thailand show that news shocks of Tsunami disaster on Thailand has significant effect on demand of international tourist arrivals from 25 origin countries. This suggests that Tsunami disaster news shock is important in tourism demand for Thailand. The Tsunami dramatically discouraged Thai tourism growth because tourists from over the world were shocked by the unexpected terrible damage from media.

2 The results of news shock on South Thailand insurgency show that the negative coefficient for news shocks on South Thailand insurgency variable. Tourist has a shock on kind of South insurgency; they are responsive to this news shock. Thus the news shock on Thailand insurgency should be given due attention by the Thai tourism industry. The resulted is a slight impact of this factor on the Thai tourism industry; it is imply that tourists were shocks from news and media when they make decision to travel in Thailand.

6.2 Policy Implication and Further Study

The results in this study are an important tool for the planners and policy makers not only for planning and policy formulation but also to monitor the progress of the schemes and evaluate their impacts. The policy suggestions and implications emerge from the results. The recommendation from the study under taken should enable both public sector and private sector policy makers to develop a strategic tourism plan to focus on the increasing numbers of international tourist arrivals to Thailand.

6.2.1 Improve Services and Quality Standards

As show in this study, the significant value of the Lagged dependent Variable (0.839), implying that the word-of-mouth effect and repeat visitors were important features for short-run tourism demand. The policy implication of this result is that, in order to attract more tourists to the destination

1) Suppliers of tourism product and service should improve their service quality and upgrade their services. The supplier should pay attention on human resource development as well as standardization of services. Tourist training is very important to improve their service quality such as improve on service quality on hotel personal, and tourist guides.

2) Suppliers should improve their infrastructure facilities throughout their product. There has been interest in developing related tourism infrastructure facilities and facilitating assistance to tourists such as hotels, restaurant and transportation.

3) Government could have policies and programs to play a positive role to improving the infrastructure facilities system throughout the country. Furthermore, strategic policy could support the suppliers to improve their facilities and policies such as capital grants or low-interest loans for improvements in hotel and/or accommodation etc.

6.2.2 Price Monitor

Based on the study, tourism in Thailand is very sensitive to prices change. In this context, policy makers and suppliers must be careful with prices in order to maintain the competitiveness of their products. Hence, policy makers and suppliers must closely monitor all tourism service providers such as hotels, restaurants, tourist operators, and transportation companies such as airport taxies and tourist souvenir shop to ensure that they do not charge unreasonable prices for their products and services.

6.2.3 Improve Safety and Security in Tourism

The study found that news shocks have an impact on tourism demand. The results confirm the expected negative sign of Tsunami and south Thailand insurgency, and it is significant for explaining the decrease number of arrivals. The Thai government and key tourism industry players should focus on change in the tourism business environment following the broadcast of negative news shocks occur. The negative shock is not easily predicted because they occur suddenly, but it should imply to plan for the negative events. They need to plan tourism strategies to minimize the effects that may result from a decrease of tourism demand.

Then, the policies could be;

1) Presenting Thailand as a peaceful country ideal for a leisure visit and offering quality of services, giving a different image from those of our regional competitors.

2) The policy maker should develop an integrated management of information on news shock of public relations and customer relations through the use of information technology.

3) Policy maker should develop country more policies on tourism safety and security. They should adopt safety standards in tourism sties. Provide appropriate information policies on safety tourism.

6.2.4 Promote Tourism Activities

The study results show that the regional demand market for travel such as Malaysia, Japan, and Korea are the important destinations from the large amount of visitors come to Thailand. Apart from these countries, tourist arrivals from China and India will remain influential throughout the forecast period of 2008 to 2010. The reason will continue to be dominated by short trips to take advantage of shopping and accommodation facilities in other ASEAN countries. Thus, the policy implications of this result are.

1) Policy maker should creation of tourism activities plan to encourage tourists to stay longer and spend more; they should create an accommodation package with bonus of activities such as spa, cultural and so on. Additionally, they should create promotional on long stay tourism or tourism package to inspire tourists to stay longer as surgery package, health package etc.

2) The government is likely to boost tourist arrivals are planned to promote tourism sector in the main target country such as promote promotional campaign for Thailand's shopping paradise in target countries such as Malaysia, Japan, Korea, China and India. These schemes will attract many tourists to Thailand as they will promote country as a tourist shopping destination on the world map.

6.2.5 Development on Tourism Demand

The forecast results that Thailand will face increasing tourism demand then the number of international tourists to Thailand for next forecast three years will continue growth. Tourism industry in Thailand has witnessed tremendous growth. If these results can be generalized to a series of future year then the policy recommendation of this result is that:

1) Policy maker and tourism industry should have updating state aid for research and development on tourism demand.

2) Investment in natural resources as well as physical and human capital should also be undertaken. Human resources with higher standards of training, budget allocation for developing facilities and financed by government are a further means of supporting ongoing for sustainable growth.

3) Policy maker should have free trade agreement for tourism with the tourist visa fee waiver in main target countries to attract inbound tourists, such as exemption of entry visa for Japanese tourists temporarily at that period, which attract more tourists from Japanese visitors.

4) The government should have route allocation to foreign airline, for example, airline on the high density routes between high income countries of origin and Thailand.

Finally, it is interesting to academic researchers for future research.

1) The other interesting factor for the tourism demand is fuel prices. Rising fuel prices are also pushing the travel cost up, thereby discouraging people from traveling. Also, high oil prices are forcing airlines to reduce their flights, resulting in the slowdown of tourist arrival.

2) The test of others time series methodology of seasonal and non-seasonal forecast may a suggesting for future research to compare for forecasting.

3) In addition, another important factor on news shocks for decline in the number of tourist arrivals is political uncertainty in Thailand. This factor may have an affect on to build the country image and the tourism stability in Thailand, it interest to test on.

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APPENDICES

APPENDIX A

International Tourist Arrival to Thailand

Table A.1 International Tourist Arrivals to Thailand, 1991

Nationality	January	February	March	April	May	June	July	August	September	October	November	December
Canada	7,260	5,713	5,766	4,586	4,457	3,327	4,806	3,543	3,888	6,341	7,052	7,450
USA	21,544	14,027	16,689	16,582	17,669	19,655	23,569	18,357	19,835	26,153	27,029	27,332
Denmaek	3,304	2,740	2,088	1,945	1,632	2,167	2,773	1,528	1,975	3,265	3,110	3,136
Finland	4,620	3,672	2,897	1,317	1,193	1,108	932	1,288	1,042	1,376	3,134	4,433
France	19,088	18,840	15,240	13,566	10,178	5,931	12,574	15,428	7,975	16,530	21,719	15,876
Germany	28,119	25,645	26,037	18,842	13,690	10,541	15,967	14,768	14,768	21,007	31,064	36,649
Italy	11,082	6,167	6,870	8,664	5,122	5,866	9,824	18,354	9,052	8,227	9,747	14,194
Netherlands	5,751	4,357	4,102	4,605	4,323	4,647	8,796	5,868	5,670	7,853	7,429	7,786
Norway	1,227	1,054	1,133	992	846	1,114	1,655	945	1,067	1,633	1,563	1,462
Sweden	9,193	5,680	5,436	4,416	3,283	4,162	4,536	2,746	3,537	5,683	8,431	12,533
Switzerland	9,320	7,156	7,522	5,916	4,094	3,387	6,085	3,530	4,519	6,655	9,189	13,937
UK	19,326	15,917	18,574	16,028	13,627	11,334	12,899	11,350	12,849	18,731	23,673	23,300
Australia	21,593	13,236	14,459	13,600	13,871	16,498	18,061	14,709	18,606	19,912	17,377	20,705
New Zealand	2,130	1,275	2,012	1,365	1,956	1,884	1,853	2,263	3,048	2,304	2,161	1,614
India	8,288	7,071	8,249	9,076	12,162	10,085	8,647	8,349	9,079	10,622	8,578	9,529
China	6,596	4,418	6,837	5,041	5,042	5,312	6,186	6,012	5,672	7,324	8,019	8,593
Hong Kong	16,802	37,311	31,012	19,822	20,564	31,172	34,837	51,872	22,947	23,487	22,098	29,518
Japan	54,185	32,653	35,901	36,830	38,210	37,867	47,100	64,473	51,313	45,815	54,475	60,679
Korea	26,392	8,016	9,303	11,095	12,698	11,286	18,563	23,041	10,200	14,773	16,049	18,127
Taiwan	35,906	44,760	40,714	41,967	34,970	34,015	46,649	45,412	36,267	36,289	29,364	27,551
Indonesia	3,068	2,530	2,176	6,155	2,849	6,868	4,528	4,093	3,844	4,273	4,420	8,068
Malaysia	60,611	90,751	70,333	84,988	78,954	69,029	60,230	73,358	50,826	35,714	62,770	70,879
Philippines	2,713	2,614	3,606	3,651	3,968	3,495	3,762	3,645	3,610	5,017	4,770	4,434
Singapore	18,202	21,322	19,903	24,527	23,296	44,360	20,218	23,471	23,881	25,737	32,290	42,857

Source: Tourism Authority of Thailand

Table A.2 International Tourist Arrivals to Thailand, 1992

Nationality	January	February	March	April	May	June	July	August	September	October	November	December
Canada	8,210	6,984	6,620	5,161	3,895	3,436	4,819	4,264	3,570	5,602	5,981	6,336
USA	25,178	21,427	23,261	20,656	18,495	20,594	22,556	22,046	19,115	25,598	27,480	27,991
Denmaek	3,584	3,598	2,841	2,407	1,541	1,859	2,492	1,851	1,936	2,624	2,879	2,505
Finland	3,157	2,745	2,250	1,194	871	769	780	775	714	1,331	2,178	2,546
France	21,747	23,838	21,357	17,660	10,221	6,346	12,348	17,049	8,241	16,540	20,780	16,960
Germany	31,919	28,697	26,543	25,708	13,498	11,404	15,063	16,037	14,005	23,350	32,279	37,003
Italy	15,140	12,396	8,351	6,733	4,883	5,672	8,549	17,608	8,268	7,933	8,698	13,615
Netherlands	5,967	5,800	5,182	5,222	5,050	5,711	8,516	9,273	6,882	7,868	7,523	6,912
Norway	1,504	1,533	1,286	1,380	657	1,169	1,721	1,346	1,006	1,386	1,800	1,747
Sweden	9,817	7,829	6,496	5,171	2,515	3,616	4,957	3,782	3,608	5,231	8,205	10,564
Switzerland	10,033	8,432	7,934	6,899	4,244	3,239	5,646	4,780	4,064	6,829	9,268	12,557
United Kingdom	20,381	20,954	21,391	21,755	13,950	13,987	17,850	20,839	16,377	20,926	23,537	24,521
Australia	20,018	16,179	14,010	18,058	13,410	13,679	18,509	15,268	20,465	19,845	17,563	20,519
New Zealand	1,420	1,228	1,427	1,912	1,842	1,648	2,019	2,153	2,399	2,183	2,122	2,048
India	8,422	7,326	7,260	8,265	10,483	11,283	7,937	8,487	8,815	9,635	9,006	8,284
China	6,675	7,237	7,365	6,521	7,479	7,606	8,583	11,387	13,945	12,330	18,455	21,365
Hong Kong	15,864	40,698	17,603	25,595	12,281	16,063	26,688	43,809	22,485	28,491	18,149	23,444
Japan	58,004	59,436	61,132	45,868	31,323	31,301	43,046	63,941	46,409	35,733	41,635	51,916
Korea	28,709	20,499	15,686	15,499	10,900	10,139	13,607	18,603	11,955	15,724	19,337	23,219
Taiwan	24,040	47,257	39,769	31,899	21,791	26,319	38,182	40,291	30,776	32,151	37,846	36,972
Indonesia	3,167	2,999	3,000	6,145	2,442	4,324	4,874	3,941	3,337	3,814	4,198	7,079
Malaysia	49,644	81,765	43,628	72,650	56,508	54,665	51,504	62,240	46,535	64,441	81,102	64,771
Philippines	4,101	3,664	3,868	5,672	3,784	3,399	2,995	3,976	3,546	4,569	5,082	4,666
Singapore	18,366	30,889	22,860	25,016	19,180	32,431	21,024	24,463	22,605	28,135	30,983	48,360

Source: Tourism Authority of Thailand

Table A.3 International Tourist Arrivals to Thailand, 1993

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	6,961	6,094	5,898	4,708	4,117	3,422	4,248	3,388	3,324	5,076	6,201	5,826
USA	26,483	24,731	24,035	21,925	21,660	19,229	22,450	18,581	18,861	26,481	26,977	26,902
Denmaek	3,631	3,290	2,695	2,548	1,700	2,025	2,790	1,965	2,351	2,913	3,228	2,839
Finland	2,308	2,143	1,719	1,577	952	902	1,098	924	890	1,366	2,417	2,404
France	22,250	24,089	20,585	16,962	10,558	6,854	13,739	17,827	9,693	17,982	25,190	16,441
Germany	36,178	33,141	32,255	25,442	16,579	13,594	21,526	16,862	18,158	27,783	39,701	38,977
Italy	12,585	10,916	7,672	6,928	5,925	6,728	11,136	22,645	9,694	9,092	10,223	12,884
Netherlands	6,384	5,694	5,645	4,750	4,720	4,831	9,127	7,071	6,262	7,983	7,310	6,579
Norway	1,833	2,069	1,588	1,534	1,051	1,497	2,568	1,295	1,388	2,045	2,146	2,008
Sweden	9,436	7,888	6,150	4,764	2,676	3,718	4,476	2,572	3,497	5,934	8,250	10,050
Switzerland	10,305	9,825	8,253	7,806	4,942	3,873	7,005	4,008	4,941	8,627	10,247	12,240
United Kingdom	19,605	20,178	21,854	21,598	17,071	15,899	20,224	21,771	18,993	22,648	25,181	24,958
Australia	20,425	15,079	14,352	15,806	14,305	15,792	18,956	15,451	19,110	20,755	16,440	18,716
New Zealand	2,285	1,755	2,048	2,114	2,527	2,511	2,592	2,947	3,025	2,824	2,447	2,379
India	6,875	7,628	7,203	8,795	11,139	9,566	8,919	8,668	7,907	8,803	9,893	9,956
China	13,130	18,859	26,450	28,091	33,700	30,824	25,716	22,758	18,518	15,777	13,174	14,742
Hong Kong	32,123	13,975	16,258	28,095	14,176	19,811	26,955	37,952	15,365	18,041	18,403	24,329
Japan	50,893	51,703	54,458	43,474	35,040	34,694	46,337	68,401	49,831	41,628	48,240	57,110
Korea	34,198	26,512	20,512	17,559	17,481	14,199	20,620	24,384	16,476	21,985	25,328	32,002
Taiwan	41,772	44,878	43,773	50,940	37,244	40,299	61,126	52,783	39,095	37,788	37,831	37,165
Indonesia	3,868	3,338	8,762	3,805	3,520	8,149	5,397	4,565	3,832	4,530	5,213	8,346
Malaysia	90,080	61,246	80,421	64,875	64,070	77,516	57,435	78,139	47,236	54,061	89,320	65,262
Philippines	4,198	4,149	4,335	5,522	4,978	4,183	3,990	4,210	3,779	4,641	5,096	4,297
Singapore	28,326	23,711	27,441	27,126	27,267	40,463	25,272	27,528	23,838	24,362	36,106	52,947

Source: Tourism Authority of Thailand

Table A.4 International Tourist Arrivals to Thailand, 1994

	- January	February	March	April	May	June	July	August	September	October	November	December
Canada	6,549	5,927	5,866	4,424	3,503	3,001	4,356	3,184	2,850	4,638	6,399	5,434
USA	26,037	24,151	27,103	24,023	22,679	22,408	24,962	19,952	19,195	26,907	27,787	27,140
Denmaek	4,281	3,804	3,758	2,319	1,802	2,491	3,555	1,985	2,378	3,431	3,552	3,773
Finland	2,113	2,211	2,040	1,293	1,056	890	743	969	1,003	1,200	2,436	3,088
France	22,685	26,032	26,870	22,227	11,792	7,004	14,960	17,528	9,102	19,603	24,078	17,626
Germany	42,079	38,092	39,885	25,325	17,991	14,751	23,759	19,459	21,226	30,355	40,180	40,135
Italy	16,071	12,744	9,557	7,282	6,326	7,367	10,903	19,171	9,105	9,887	9,608	12,119
Netherlands	6,719	5,533	5,093	4,543	4,638	4,696	8,736	6,599	5,882	7,782	6,788	7,297
Norway	2,313	2,286	2,517	1,395	830	1,636	3,122	1,683	1,516	2,293	2,011	2,223
Sweden	9,890	8,354	8,933	4,834	2,863	4,352	4,719	2,800	3,491	6,033	9,032	10,312
Switzerland	11,021	10,137	9,368	8,211	5,304	3,639	7,531	4,380	4,881	9,089	11,617	13,078
United Kingdom	21,213	21,964	25,463	22,255	18,385	17,080	22,175	23,921	20,313	24,200	25,268	25,803
Australia	18,895	14,486	15,416	16,681	13,977	15,115	17,608	15,318	17,303	19,051	15,845	18,288
New Zealand	2,187	1,762	2,147	1,936	2,382	2,408	2,600	2,881	2,597	2,657	2,853	2,399
India	8,171	6,621	8,156	9,194	10,512	9,579	8,471	9,072	9,170	7,636	9,725	11,522
China	12,719	10,613	14,938	15,278	17,906	17,225	21,931	27,807	25,379	28,653	32,417	32,589
Hong Kong	12,726	42,321	23,401	21,429	16,438	29,638	32,663	41,250	18,924	20,589	21,461	29,664
Japan	55,921	60,324	65,482	51,731	44,645	41,568	56,283	75,250	62,122	49,399	63,614	65,366
Korea	48,664	28,755	27,944	26,002	27,158	19,889	27,575	38,403	23,193	27,017	31,674	42,096
Taiwan	29,504	51,092	37,293	43,272	27,741	32,488	47,879	41,879	35,736	33,464	30,653	37,161
Indonesia	4,518	3,339	9,882	4,016	4,556	8,145	7,438	5,801	5,161	5,867	6,139	10,810
Malaysia	53,382	84,588	83,330	83,846	70,801	77,095	60,483	80,976	56,415	62,714	96,938	88,232
Philippines	4,005	3,648	4,813	4,949	4,430	3,812	4,115	4,233	4,209	5,584	6,404	5,594
Singapore	21,052	34,885	29,718	28,441	28,701	39,910	25,372	26,779	27,812	28,291	38,823	57,067

Source: Tourism Authority of Thailand

Table A.5 International Tourist Arrivals to Thailand, 1995

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	6,235	5,419	4,992	4,278	3,516	2,873	3,817	3,986	2,848	4,502	5,909	5,120
USA	26,090	25,372	24,006	22,981	21,164	20,737	21,881	22,898	18,926	26,416	28,948	26,067
Denmaek	5,162	4,973	3,457	3,333	2,660	3,351	3,883	3,195	2,709	3,738	5,010	4,315
Finland	2,812	2,650	1,794	1,570	1,086	913	989	761	1,177	1,876	3,543	3,246
France	21,198	23,957	20,378	18,188	11,383	6,664	14,385	18,289	9,782	16,825	20,055	16,609
Germany	42,618	42,459	35,588	32,170	18,195	16,077	20,434	21,117	21,932	30,906	41,815	42,501
Italy	15,890	12,146	9,713	6,811	6,883	6,822	9,495	20,138	8,169	9,163	10,397	12,138
Netherlands	6,904	6,166	5,350	4,904	5,137	6,011	9,928	7,032	6,840	8,222	7,804	7,221
Norway	2,501	2,425	1,735	1,865	1,090	1,823	2,778	1,544	1,537	2,146	2,922	2,883
Sweden	11,027	9,630	7,797	4,663	2,790	3,875	4,095	2,669	3,279	6,568	10,202	10,954
Switzerland	11,955	10,624	8,568	8,884	5,240	4,430	7,549	5,484	6,076	9,408	11,996	13,062
United Kingdom	23,116	20,826	22,653	22,636	18,471	16,953	22,963	28,244	21,379	23,478	27,719	25,928
Australia	18,625	13,887	13,899	15,695	13,658	14,180	16,924	15,281	18,066	19,224	15,898	17,236
New Zealand	2,372	1,670	2,177	2,175	2,191	2,341	2,337	2,819	2,679	2,417	2,558	2,437
India	9,329	8,481	8,972	9,904	11,908	11,055	10,273	11,307	12,148	10,916	9,023	10,334
China	22,608	29,932	35,281	30,329	31,905	26,519	35,587	31,918	26,683	31,686	36,405	36,711
Hong Kong	28,928	30,584	22,399	32,276	18,872	29,412	36,335	46,070	21,315	24,318	23,758	31,987
Japan	64,634	67,099	80,936	55,381	52,063	48,115	68,668	86,950	73,749	64,780	78,999	73,332
Korea	61,824	47,907	44,629	34,185	28,287	21,353	32,542	41,526	26,516	27,771	43,579	46,109
Taiwan	33,419	50,288	38,165	46,926	36,786	47,619	50,624	44,191	36,271	35,599	34,546	37,755
Indonesia	5,431	5,488	12,754	5,092	6,230	10,286	9,181	6,807	5,474	6,612	6,584	13,335
Malaysia	83,803	101,972	94,074	90,738	96,137	84,034	65,204	74,371	68,408	87,638	108,970	121,656
Philippines	5,192	4,686	5,535	6,952	5,439	4,976	4,902	5,495	5,268	6,984	6,995	6,622
Singapore	30,039	31,676	33,265	31,508	35,478	50,107	26,923	26,460	30,132	34,092	38,758	62,386

Source: Tourism Authority of Thailand

Table A.6 International Tourist Arrivals to Thailand, 1996

-	January-	February	March	April	May	June	July	August	September	October	November	December
Canada	6,230	5,565	5,475	4,386	3,825	3,179	3,886	3,168	2,859	4,999	7,366	5,948
USA	28,161	25,448	27,022	25,029	22,106	22,870	24,603	20,604	20,539	31,420	31,994	28,777
Denmaek	5,728	6,313	4,885	2,979	2,459	2,956	3,902	2,322	2,387	3,570	5,323	4,697
Finland	3,705	4,067	2,280	1,490	1,099	1,251	1,325	1,103	1,211	2,510	5,466	5,739
France	19,249	24,516	24,342	17,833	12,301	8,559	15,370	17,929	9,500	17,086	21,523	17,258
Germany	45,197	40,162	44,135	26,680	17,812	14,552	18,093	17,926	19,263	27,313	39,208	43,336
Italy	14,869	11,803	9,721	6,680	4,910	5,969	8,516	15,911	6,416	7,452	9,670	12,886
Netherlands	7,246	5,560	5,683	4,403	3,858	4,844	9,043	5,712	5,322	7,168	10,416	9,489
Norway	2,681	3,111	2,713	1,594	1,044	1,893	2,402	1,281	1,407	2,295	3,311	3,440
Sweden	11,851	10,353	8,550	4,338	2,760	4,097	3,852	2,559	3,058	6,549	10,923	15,519
Switzerland	12,138	11,387	11,172	8,308	5,724	4,636	7,590	4,391	5,682	9,865	13,831	15,735
United Kingdom	23,654	23,889	25,148	23,342	18,326	19,130	21,725	25,309	21,478	25,898	31,697	27,293
Australia	19,064	13,975	15,945	16,361	15,804	17,999	18,900	17,793	18,590	21,286	19,370	19,987
New Zealand	2,458	1,728	2,229	2,566	2,425	2,899	3,120	2,914	3,101	3,152	4,123	2,954
India	9,931	8,224	9,496	9,878	12,387	12,465	10,887	10,713	10,330	12,799	11,081	11,571
China	33,225	41,355	34,142	32,007	34,785	26,338	43,150	48,235	34,450	38,580	43,122	47,523
Hong Kong	14,860	42,076	29,043	32,075	22,703	33,790	46,559	60,643	23,767	27,222	27,023	36,918
Japan	84,172	94,067	99,898	65,814	54,296	60,644	77,310	92,001	80,606	67,570	74,543	83,190
Korea	64,323	40,142	49,847	36,996	42,335	29,935	35,549	40,427	26,382	37,537	40,132	45,064
Taiwan	29,862	45,413	43,939	36,110	33,647	39,013	44,445	42,204	35,547	35,201	32,612	29,131
Indonesia	4,396	11,722	5,395	5,825	5,242	9,442	7,844	5,591	4,536	5,803	6,876	13,085
Malaysia	68,586	108,633	82,025	111,439	90,954	85,709	78,557	83,975	61,570	69,426	95,351	119,947
Philippines	5,535	5,640	7,023	7,517	7,401	5,579	5,493	5,465	5,073	8,408	7,992	6,606
Singapore	25,149	36,161	34,349	36,181	34,125	44,330	28,952	33,555	29,373	31,774	48,940	54,214

Source: Tourism Authority of Thailand

Table A.7 International Tourist Arrivals to Thailand, 1997

	January	February	March	April	May	June	July	August	September	October-	November	December
Canada	6,649	5,547	5,989	4,628	3,889	4,063	3,612	3,341	3,644	4,546	5,472	5,956
USA	31,391	26,567	30,518	26,458	24,688	22,293	24,409	19,825	18,600	26,312	30,233	29,787
Denmaek	7,729	6,441	5,829	3,557	2,790	3,234	3,985	2,453	2,585	3,741	4,594	5,142
Finland	4,092	4,987	3,440	1,681	1,512	1,511	1,173	1,161	1,330	2,022	4,539	6,646
France	20,760	23,138	22,384	18,798	11,805	8,270	13,747	18,067	9,791	16,100	22,453	17,330
Germany	44,015	39,842	43,457	24,637	19,150	14,124	16,422	20,848	19,948	24,325	34,256	41,305
Italy	13,564	11,221	8,291	7,099	4,727	5,696	7,618	14,778	6,612	6,254	7,301	11,617
Netherlands	6,897	5,834	5,365	5,010	4,166	5,652	8,462	6,622	5,726	7,276	7,510	8,776
Norway	3,552	3,543	3,276	2,274	1,303	2,325	2,807	1,503	1,549	2,176	3,243	4,317
Sweden	13,359	12,453	11,206	5,145	5,080	5,112	4,313	2,866	3,449	7,071	11,164	18,150
Switzerland	11,959	11,439	10,730	7,033	5,067	3,843	6,755	4,101	4,902	7,791	9,888	13,745
United Kingdom	25,025	25,796	29,110	23,920	19,124	18,731	22,144	22,756	18,747	22,803	27,780	31,728
Australia	22,296	17,336	19,845	16,806	17,604	19,006	20,056	17,903	20,626	22,121	18,749	21,433
New Zealand	2,560	1,952	2,950	2,689	2,941	3,214	3,651	3,367	3,245	3,195	2,801	2,866
India	10,084	9,314	8,484	9,928	13,627	12,614	10,698	11,961	11,032	12,425	11,287	13,667
China	43,734	51,137	37,692	47,506	50,414	22,284	26,070	37,626	27,049	25,443	31,402	39,438
Hong Kong	20,296	49,417	44,595	26,481	28,862	35,803	38,236	58,141	28,697	26,246	50,231	65,320
Japan	90,131	95,861	105,162	75,189	59,501	63,878	78,720	97,192	77,789	65,593	74,431	82,007
Korea	56,140	37,649	46,914	35,019	36,791	25,365	29,266	38,403	21,837	32,630	33,368	17,705
Taiwan	28,158	43,440	36,890	38,088	33,341	39,409	53,204	45,025	34,348	31,431	28,710	36,236
Indonesia	5,859	13,480	7,081	6,338	6,371	8,945	10,865	5,949	5,347	5,537	6,117	7,221
Malaysia	57,537	109,198	72,770	91,892	94,174	72,692	89,931	88,646	78,404	74,637	101,520	114,628
Philippines	6,313	5,101	8,423	6,740	7,540	5,920	5,031	5,692	5,187	6,977	7,444	6,359
Singapore	26,002	39,602	37,943	34,564	32,075	47,604	33,229	32,291	36,483	39,852	50,868	81,576

Source: Tourism Authority of Thailand

Table A.8 International Tourist Arrivals to Thailand, 1998

-	January	February	March	April	May	June	July	August	September	October	November	December
Canada	6,813	6,381	6,959	5,196	4,538	3,613	4,552	4,143	3,771	5,727	7,777	6,998
USA	29,632	28,340	32,233	30,007	28,173	26,796	27,450	24,851	23,079	32,882	40,426	37,836
Denmaek	7,169	8,292	5,940	4,435	3,087	4,264	5,577	3,219	3,572	5,369	6,620	6,722
Finland	5,978	5,744	4,475	2,480	1,848	1,722	1,701	1,673	1,690	2,875	6,503	8,701
France	21,575	26,108	23,126	19,618	15,412	9,383	15,672	20,570	12,659	16,862	24,740	17,770
Germany	40,741	41,073	43,327	31,163	22,490	15,709	19,679	22,694	24,531	30,665	43,113	43,381
Italy	13,519	13,601	10,937	7,225	6,151	5,884	7,800	18,289	7,097	8,568	10,041	12,895
Netherlands	7,378	7,651	6,400	5,891	5,040	5,903	10,456	8,739	7,353	8,651	9,059	9,416
Norway	4,432	4,913	4,253	3,292	1,727	2,982	4,082	1,971	2,530	3,817	5,408	6,579
Sweden	15,685	15,768	14,654	8,054	3,990	6,043	5,368	3,301	4,760	10,861	18,528	25,914
Switzerland	11,851	11,843	10,926	10,427	6,292	5,154	7,660	4,682	5,832	9,184	12,915	13,291
United Kingdom	29,973	32,482	33,151	33,482	25,054	25,171	27,413	30,130	27,514	32,343	38,399	40,800
Australia	23,059	19,388	22,931	24,034	22,230	26,584	26,824	26,771	29,791	32,155	24,729	24,324
New Zealand	2,689	1,975	2,511	3,322	3,318	3,864	5,237	4,168	4,776	4,125	3,189	3,005
India	10,646	10,583	10,469	12,122	14,968	13,944	11,641	11,125	12,754	13,508	11,260	14,559
China	58,661	43,676	49,185	40,824	39,233	34,152	53,677	51,631	36,112	41,918	60,272	61,720
Hong Kong	53,505	46,654	63,226	36,034	30,299	38,473	51,487	56,237	38,641	39,316	27,710	36,384
Japan	83,257	90,255	92,226	71,328	58,023	65,243	87,017	102,495	97,311	72,601	81,196	85,312
Korea	9,096	7,243	8,222	16,124	16,735	15,661	16,673	19,402	13,984	19,638	32,394	27,669
Taiwan	46,355	47,221	37,798	35,464	31,681	40,095	38,338	43,682	28,169	33,335	37,672	37,550
Indonesia	7,241	3,476	4,047	4,939	5,401	4,717	5,230	5,416	4,847	7,139	6,951	10,070
Malaysia	84,648	74,301	64,150	99,784	87,205	66,980	67,225	69,918	68,454	68,262	65,108	102,036
Philippines	6,471	5,249	6,560	8,221	6,843	6,570	5,747	5,613	5,770	6,691	7,330	7,116
Singapore	44,641	34,420	45,965	46,573	40,908	69,638	40,306	39,139	36,521	45,565	62,123	80,314

Source: Tourism Authority of Thailand

Table A.9 International Tourist Arrivals to Thailand, 1999

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	7,949	7,118	7,638	5,875	5,130	4,202	5,217	4,664	4,259	7,550	9,442	7,835
USA	39,732	33,612	42,875	32,912	31,313	33,655	34,384	29,700	26,462	40,469	45,810	41,240
Denmaek	10,573	9,776	8,955	5,391	3,928	5,400	7,105	4,013	4,054	5,636	7,028	7,541
Finland	7,073	7,255	4,977	2,488	2,058	1,807	1,710	1,567	1,921	3,266	7,188	8,423
France	23,643	24,779	24,268	20,042	14,280	9,622	16,692	20,126	11,560	18,023	26,791	18,357
Germany	48,723	42,146	47,580	28,779	18,877	15,743	21,057	23,200	21,889	31,790	46,708	37,594
Italy	16,183	11,658	9,935	6,890	4,784	4,803	8,264	17,180	6,075	8,075	9,519	10,969
Netherlands	9,511	7,809	7,419	7,575	6,827	6,350	13,555	9,766	8,018	9,827	10,792	9,150
Norway	6,505	6,734	6,395	3,003	1,925	3,775	5,690	2,682	2,565	3,785	6,157	6,496
Sweden	22,237	21,395	20,930	9,279	5,636	7,897	7,323	4,997	6,380	11,977	21,735	23,929
Switzerland	13,791	11,761	10,592	9,706	5,957	4,641	8,422	5,193	5,520	10,642	12,675	11,628
United Kingdom	37,338	37,233	42,312	34,901	28,429	28,857	31,479	33,328	30,795	37,707	45,586	41,337
Australia	27,672	19,715	24,234	22,157	21,731	23,416	26,844	23,990	29,989	33,882	28,143	24,810
New Zealand	2,997	1,975	2,857	2,980	3,232	4,705	5,234	4,128	4,813	4,191	4,208	3,300
India	11,652	9,241	11,737	11,847	18,393	14,846	13,086	12,743	12,839	16,544	14,866	16,485
China	71,814	104,959	51,261	64,345	64,314	51,066	71,419	61,375	43,249	54,898	71,526	65,833
Hong Kong	20,076	53,864	31,904	39,325	27,858	39,238	53,277	47,969	28,949	32,267	29,703	34,361
Japan	98,867	91,395	111,909	75,686	64,692	65,446	87,097	107,652	105,179	80,080	94,820	88,659
Korea	32,725	24,755	26,338	25,619	28,355	18,515	25,883	29,163	18,629	28,572	41,837	37,875
Taiwan	33,692	43,261	36,756	49,768	45,975	54,230	66,306	58,778	46,360	36,843	47,212	43,842
Indonesia	15,018	7,127	9,659	7,958	13,984	15,896	9,869	9,771	8,609	9,532	10,406	14,691
Malaysia	82,959	83,364	75,756	83,287	90,913	78,306	78,804	78,579	71,533	72,127	85,970	111,422
Philippines	5,746	6,259	9,411	7,702	8,386	6,873	6,326	6,280	6,342	8,132	9,265	6,981
Singapore	35,939	42,830	50,618	42,672	48,426	66,594	45,569	43,359	42,694	47,268	69,466	72,949

Source: Tourism Authority of Thailand

Table A.10 International Tourist Arrivals to Thailand, 2000

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	9,863	8,898	9,099	6,442	5,855	4,650	5,718	5,150	4,673	7,534	9,863	8,840
USA	40,239	41,113	46,349	38,234	34,988	38,479	39,226	32,168	31,077	43,649	51,952	48,227
Denmaek	10,783	10,996	8,235	6,011	4,007	4,898	6,557	3,999	4,261	5,748	7,336	8,206
Finland	8,722	8,104	5,567	2,591	2,291	2,289	2,101	1,905	2,128	3,176	7,984	8,573
France	24,339	29,305	26,268	21,580	14,837	10,727	18,235	20,484	11,902	17,088	26,712	19,091
Germany	48,276	46,906	43,112	33,844	18,687	17,824	21,995	21,255	21,621	28,069	43,056	43,259
Italy	15,625	12,193	9,318	7,292	4,720	4,974	10,140	18,358	6,970	7,683	9,612	13,274
Netherlands	10,507	9,543	8,782	7,488	6,264	6,174	16,080	10,298	8,200	11,033	12,996	13,188
Norway	6,656	7,641	6,139	5,662	3,035	4,735	5,838	2,793	3,673	4,871	6,349	7,816
Sweden	30,522	26,386	22,510	15,564	6,371	8,003	7,915	5,624	7,560	14,278	26,602	39,169
Switzerland	12,697	13,182	10,669	10,696	5,931	5,055	8,642	5,222	5,909	10,050	12,127	13,850
United Kingdom	37,205	43,037	46,520	43,188	32,446	31,610	36,473	38,966	32,987	40,165	47,376	50,330
Australia	28,593	20,106	25,026	27,189	23,312	25,204	26,901	27,184	30,480	33,420	28,277	30,311
New Zealand	2,846	2,618	3,362	4,449	4,038	5,508	7,332	5,068	7,354	4,710	4,048	4,872
India	13,929	11,913	13,094	15,953	23,842	19,907	17,159	15,767	18,403	18,957	17,400	16,897
China	74,911	82,538	63,043	78,788	67,547	44,874	57,632	49,265	50,713	39,600	43,378	52,174
Hong Kong	23,165	50,441	38,277	44,243	33,083	42,494	52,334	54,374	36,786	36,890	36,189	46,877
Japan	96,746	110,153	119,335	90,868	76,267	76,644	98,235	117,806	113,691	91,488	109,994	105,322
Korea	44,412	37,340	34,548	30,872	36,989	28,130	34,465	36,791	28,753	36,705	48,677	50,525
Taiwan	36,677	63,125	47,830	59,776	59,126	70,011	81,525	69,352	68,301	53,580	54,626	47,773
Indonesia	20,480	9,770	15,062	9,987	8,107	11,493	16,198	9,118	9,219	10,598	9,403	15,940
Malaysia	76,700	93,781	74,411	101,410	88,141	79,703	78,848	79,853	94,850	87,739	97,658	102,839
Philippines	6,909	7,177	8,392	11,755	10,943	8,401	7,521	7,911	8,679	10,615	9,615	9,205
Singapore	35,708	51,142	53,555	50,412	52,566	68,465	47,072	45,701	53,081	52,415	67,809	81,613

Source: Tourism Authority of Thailand

Table A.11 International Tourist Arrivals to Thailand, 2001

- -	January	February	March	April	May	June	July	August	September	October	November	December
Canada	11,044	10,001	9,383	7,728	6,810	5,576	6,835	5,553	4,575	7,018	9,441	9,042
USA	51,237	45,453	46,563	41,725	39,462	43,120	42,968	33,712	26,496	34,288	43,970	45,926
Denmaek	10,977	10,769	8,612	5,457	3,844	5,078	7,315	3,891	4,156	5,305	6,918	7,728
Finland	10,057	8,251	5,481	2,675	2,228	2,278	2,336	2,124	2,266	3,317	7,561	10,363
France	25,201	27,453	25,134	20,337	15,485	11,713	18,522	20,628	13,720	16,824	24,044	19,489
Germany	49,391	47,583	44,323	33,250	20,645	19,229	24,327	23,306	25,480	30,271	45,458	44,090
Italy	16,126	14,103	10,575	7,309	6,037	5,623	10,245	18,441	7,222	5,828	7,392	11,467
Netherlands	11,905	10,850	9,303	9,630	7,749	9,281	18,022	12,647	10,398	12,085	12,438	14,047
Norway	9,120	9,009	6,969	6,091	2,928	5,652	7,340	3,438	3,864	4,337	6,612	7,922
Sweden	36,635	33,278	28,128	14,183	6,502	9,091	8,537	6,471	7,106	12,840	23,735	37,762
Switzerland	13,789	13,342	10,966	11,149	6,705	5,765	9,436	5,625	7,327	9,074	13,732	15,791
United Kingdom	46,512	45,918	47,496	46,060	34,643	37,260	40,638	39,451	35,559	42,356	51,708	54,516
Australia	32,561	24,906	27,285	29,267	27,364	32,031	34,573	31,087	34,842	36,698	26,700	29,154
New Zealand	4,228	3,024	3,457	4,738	4,882	6,619	7,501	5,546	6,065	5,803	5,007	4,675
India	14,377	14,265	14,893	17,113	23,055	21,179	17,676	18,112	14,492	14,550	17,473	19,356
China	80,416	39,544	48,909	66,569	59,286	44,078	66,037	61,290	48,933	48,412	62,432	69,466
Hong Kong	56,862	36,798	62,339	47,496	37,019	53,284	46,937	45,611	37,565	31,456	33,153	42,780
Japan	107,068	122,845	128,447	93,418	79,019	86,369	103,288	122,035	107,701	67,254	73,667	88,091
Korea	53,990	49,611	45,126	45,461	41,185	35,285	46,099	48,550	35,221	33,657	58,199	61,057
Taiwan	60,272	50,743	57,330	66,074	59,720	80,276	81,099	71,970	51,923	48,072	45,711	55,763
Indonesia	11,561	9,354	11,246	9,343	8,579	11,169	15,110	10,062	8,960	20,334	11,147	26,869
Malaysia	83,022	69,962	87,600	86,040	92,826	95,377	78,005	97,923	97,922	98,575	106,226	168,012
Philippines	8,163	9,127	11,105	13,756	13,607	10,663	9,645	10,345	9,228	11,500	12,164	10,876
Singapore	48,499	42,696	58,133	49,690	55,113	74,690	51,607	51,372	44,544	41,738	63,795	87,289

Source: Tourism Authority of Thailand

Table A.12 International Tourist Arrivals to Thailand, 2002

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	11,385	10,214	9,707	8,305	6,676	5,833	6,896	5,974	5,657	8,634	11,552	10,755
USA	48,188	43,304	47,131	39,634	38,779	40,871	43,067	34,239	32,230	43,755	52,818	55,652
Denmaek	11,572	11,133	9,369	5,643	4,545	5,647	7,499	4,408	4,228	5,928	7,195	8,964
Finland	10,249	9,050	6,202	3,510	2,566	2,420	2,674	2,343	2,109	3,671	7,755	12,017
France	24,804	27,669	25,920	21,296	16,207	12,828	19,106	23,087	13,508	20,009	27,810	22,366
Germany	48,278	50,853	50,878	29,212	22,293	17,645	21,874	23,529	24,495	31,733	46,559	45,619
Italy	14,294	13,835	10,146	7,842	5,108	5,839	9,459	19,256	8,368	8,625	8,923	14,953
Netherlands	12,923	11,937	10,078	10,780	8,544	9,102	17,576	11,087	9,464	13,555	12,992	14,490
Norway	9,191	9,140	8,489	4,694	2,957	5,341	6,746	3,427	3,805	5,076	7,000	9,654
Sweden	34,633	35,019	27,703	14,229	6,395	8,219	7,640	5,841	6,517	13,132	24,988	37,838
Switzerland	15,351	15,499	13,658	10,413	6,810	6,278	9,150	5,904	6,835	8,931	12,859	16,841
United Kingdom	50,189	49,209	54,933	43,964	38,852	41,517	42,410	41,841	42,093	48,022	55,071	65,906
Australia	33,503	24,234	27,464	27,524	26,593	29,588	32,612	29,382	33,108	37,438	25,879	31,291
New Zealand	4,777	3,189	3,905	4,469	4,963	6,379	7,197	5,967	6,636	5,724	7,063	4,920
India	17,141	13,039	17,759	20,502	29,739	27,172	20,542	20,114	20,115	24,369	20,842	22,141
China	71,628	103,747	50,923	71,316	63,498	43,578	53,119	56,929	59,725	57,479	64,764	67,002
Hong Kong	25,429	55,166	59,802	35,145	43,369	45,689	60,133	64,078	36,002	37,942	32,895	38,148
Japan	96,345	109,573	119,012	93,443	85,756	86,770	99,450	116,532	116,749	93,892	109,616	106,101
Korea	75,506	55,530	60,562	66,635	50,978	48,060	55,951	64,181	38,637	59,988	69,623	71,710
Taiwan	57,720	68,593	57,232	57,637	58,002	64,400	69,989	71,632	52,987	46,909	37,693	35,717
Indonesia	11,709	8,648	12,949	10,937	10,457	13,185	17,692	11,446	10,815	13,178	10,616	33,663
Malaysia	88,751	112,522	96,857	111,998	123,769	87,932	100,384	97,176	105,125	103,997	114,054	155,054
Philippines	9,613	9,212	14,833	12,529	14,652	10,463	10,270	12,097	11,278	13,695	12,169	12,543
Singapore	41,496	54,133	66,619	48,860	58,278	70,099	46,397	49,297	45,119	50,690	76,211	80,783

Source: Tourism Authority of Thailand

Table A.13 International Tourist Arrivals to Thailand, 2003

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	13,615	13,469	10,538	5,717	5,087	4,532	5,912	6,115	5,299	7,489	9,740	10,348
USA	54,474	44,732	43,249	25,741	25,772	29,348	37,015	35,061	31,249	41,350	48,735	52,439
Denmaek	11,363	11,141	8,645	5,402	3,429	4,806	6,218	3,798	4,117	5,678	6,460	9,127
Finland	12,111	9,963	6,779	2,828	1,910	1,730	2,104	2,118	1,910	3,112	7,227	11,268
France	26,351	28,371	25,382	13,433	8,974	9,088	15,343	18,215	12,262	17,726	22,915	22,599
Germany	47,433	44,407	43,100	29,480	15,613	13,817	21,589	23,928	23,523	28,360	46,944	51,099
Italy	14,001	12,626	7,745	2,864	2,231	3,043	5,048	13,991	4,606	5,584	7,678	13,662
Netherlands	13,722	11,847	10,106	8,459	6,350	7,689	17,030	8,532	9,092	11,276	12,352	14,412
Norway	9,897	9,953	7,124	5,451	2,115	3,925	5,166	2,536	3,456	4,183	8,401	9,169
Sweden	37,066	33,312	27,348	12,812	5,069	9,294	6,399	4,746	5,760	11,344	24,003	33,729
Switzerland	14,592	12,872	11,378	9,126	5,240	4,944	8,133	5,113	7,455	8,737	12,854	15,883
United Kingdom	57,728	53,977	53,972	45,211	32,673	32,663	40,598	41,425	36,751	43,329	50,874	60,886
Australia	27,861	21,016	21,817	20,589	17,703	19,340	21,218	22,630	26,496	29,362	25,815	30,902
New Zealand	4,866	3,166	3,664	3,875	4,185	5,103	6,473	7,408	6,317	5,661	4,972	4,855
India	18,827	17,713	18,264	11,079	11,689	17,038	19,385	21,875	23,446	24,365	23,695	23,414
China	76,398	91,516	59,162	25,528	6,817	11,608	25,739	51,399	61,250	62,662	76,473	76,371
Hong Kong	37,869	48,973	39,829	18,338	40,669	74,929	93,182	98,947	51,389	47,220	48,037	58,076
Japan	107,362	118,607	103,938	58,344	39,053	44,435	66,116	90,882	99,357	86,099	104,081	108,013
Korea	94,612	73,186	57,781	15,529	16,397	36,644	61,319	65,877	50,491	64,941	79,087	79,170
Taiwan	46,640	48,460	36,928	11,941	8,091	29,047	79,121	79,478	48,153	48,680	42,582	46,795
Indonesia	11,589	10,269	12,184	4,976	7,142	10,823	15,630	13,921	14,527	13,149	29,192	24,324
Malaysia	81,070	125,262	89,262	50,955	54,064	75,578	101,440	124,026	132,367	151,286	175,459	179,424
Philippines	10,749	10,810	11,728	8,064	8,179	9,371	11,649	14,008	12,811	16,197	16,028	13,818
Singapore	44,069	51,628	52,636	14,522	23,594	54,143	56,878	54,643	56,350	56,480	74,358	94,504

Source: Tourism Authority of Thailand

Table A.14 International Tourist Arrivals to Thailand, 2004

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	12,879	11,713	9,935	7,806	6,916	5,930	8,035	6,851	5,876	9,396	10,787	11,381
USA	53,037	46,627	48,209	41,251	40,451	46,734	51,304	38,209	37,173	51,296	55,234	57,201
Denmaek	12,519	12,436	9,049	5,709	4,235	5,942	7,232	4,262	4,803	6,736	8,404	8,345
Finland	11,981	10,440	7,278	3,916	2,441	2,362	2,464	2,049	2,441	3,970	9,882	13,006
France	28,567	26,424	18,649	18,518	13,901	14,038	22,031	25,602	14,981	20,522	25,173	24,052
Germany	56,559	55,993	47,880	34,729	23,488	18,054	24,427	27,428	26,955	38,041	50,346	45,865
Italy	17,605	10,159	7,433	6,084	5,459	5,337	10,245	19,671	6,639	8,441	9,761	12,805
Netherlands	14,133	12,810	9,403	7,949	8,485	8,309	17,290	9,934	8,832	11,823	14,018	14,596
Norway	10,082	11,112	7,908	4,973	2,735	5,321	6,144	2,978	3,606	4,855	8,020	9,950
Sweden	39,097	33,561	24,249	14,006	5,460	8,182	7,621	4,770	6,328	13,390	28,146	38,221
Switzerland	15,534	14,385	9,849	9,748	7,203	6,163	10,051	6,010	8,324	11,880	15,626	14,574
United Kingdom	57,420	56,437	54,061	52,232	41,600	40,374	52,561	50,841	43,278	54,377	60,466	71,103
Australia	34,170	26,888	29,646	30,994	26,038	30,117	34,245	30,281	38,147	40,531	34,966	40,936
New Zealand	5,116	3,575	3,866	5,344	5,639	6,804	7,781	6,675	7,712	7,323	6,152	5,625
India	20,426	21,127	18,948	24,728	30,216	29,438	25,835	24,520	26,599	26,763	23,594	28,440
China	107,786	38,297	48,828	76,721	60,314	47,752	70,811	63,695	58,293	67,165	71,668	68,720
Hong Kong	74,088	23,693	35,046	57,180	50,785	62,186	76,113	82,926	58,391	48,187	41,106	55,287
Japan	111,389	106,188	85,912	85,269	83,807	80,681	92,281	115,265	116,628	99,141	107,303	110,616
Korea	102,299	59,455	47,499	58,876	71,516	70,418	74,736	89,965	65,546	77,567	103,051	89,963
Taiwan	60,311	30,733	35,405	39,786	43,828	58,070	65,769	65,215	53,881	37,275	35,157	34,768
Indonesia	16,870	14,148	16,770	13,574	12,792	17,067	18,278	15,225	16,914	13,898	26,813	19,281
Malaysia	148,685	106,190	117,610	104,795	104,926	109,119	110,287	124,369	99,564	119,938	122,700	123,196
Philippines	11,810	11,755	12,989	16,471	16,652	13,833	13,360	13,620	14,257	17,841	15,792	15,238
Singapore	57,134	43,729	53,337	49,199	57,718	80,078	56,586	55,211	59,987	61,753	76,449	86,496

Source: Tourism Authority of Thailand

Table A.15 International Tourist Arrivals to Thailand, 2005

-	January	February	March	April	May	June	July	August	September	October	November	December
Canada	13,498	12,328	11,866	9,090	8,628	7,612	9,605	8,474	7,089	10,535	12,648	14,017
USA	56,889	49,395	52,937	40,999	41,185	46,886	51,857	41,949	38,206	50,176	57,826	59,751
Denmaek	12,376	13,092	10,994	6,393	4,163	6,769	8,404	4,941	5,796	7,107	9,275	9,760
Finland	9,314	10,759	9,302	4,000	2,741	3,367	3,205	2,845	2,994	4,702	11,368	16,125
France	23,800	26,109	21,508	19,852	15,651	14,968	24,701	27,378	15,521	20,287	25,430	25,940
Germany	44,897	46,010	47,781	30,719	24,747	21,236	26,872	28,692	30,157	39,551	52,869	47,097
Italy	9,720	9,338	7,693	6,902	5,794	7,120	10,673	21,537	6,769	8,107	8,264	12,305
Netherlands	15,138	11,336	9,986	10,467	9,483	10,018	17,115	11,848	8,971	12,786	13,810	14,957
Norway	8,864	10,322	9,365	4,488	3,073	5,869	6,147	3,407	3,893	5,912	10,640	12,565
Sweden	26,188	30,092	26,720	11,209	6,205	9,337	8,136	5,848	7,345	15,170	32,193	44,334
Switzerland	13,181	13,147	11,861	9,648	6,922	6,093	9,922	6,040	8,066	12,860	14,640	14,168
United Kingdom	59,002	59,074	66,538	51,758	44,889	47,674	55,699	53,662	46,822	57,039	63,661	77,215
Australia	35,446	27,331	30,834	28,860	27,535	34,087	36,426	32,934	38,309	45,952	37,789	47,178
New Zealand	5,805	3,947	6,307	5,470	5,415	6,412	8,550	7,130	7,979	7,493	6,702	6,275
India	19,183	16,826	26,090	25,448	39,851	36,388	29,871	31,087	32,289	32,481	29,942	33,426
China	29,087	45,635	46,482	61,174	53,145	53,074	79,038	82,601	67,917	79,572	83,643	80,776
Hong Kong	16,299	38,276	39,387	25,757	35,130	40,696	51,819	62,035	36,894	32,809	26,954	34,153
Japan	98,071	90,086	91,002	88,309	78,521	87,505	87,203	110,042	118,574	102,855	122,915	110,475
Korea	52,732	54,819	51,889	47,738	61,973	76,178	82,698	87,993	58,755	75,299	81,760	84,311
Taiwan	20,374	25,607	26,526	27,762	29,139	35,711	48,812	45,940	36,266	36,552	22,152	21,858
Indonesia	11,605	9,904	16,259	12,724	14,037	14,956	19,406	13,021	13,200	14,376	26,933	20,324
Malaysia	91,449	121,844	113,045	100,915	105,018	115,146	112,955	121,200	107,977	121,908	111,404	119,548
Philippines	12,417	13,004	17,924	15,501	18,959	14,137	15,549	15,957	15,196	18,371	16,540	14,921
Singapore	48,521	52,864	68,068	54,359	66,583	77,661	61,714	58,837	63,863	67,011	76,550	100,654

Source: Tourism Authority of Thailand

Table A.16 International Tourist Arrivals to Thailand, 2006

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	16,643	13,984	13,480	10,880	11,492	9,354	12,087	10,552	9,490	11,284	14,003	16,701
USA	62,231	51,420	55,726	47,252	47,837	53,860	56,767	46,983	39,528	50,931	61,679	67,176
Denmaek	17,474	17,633	12,114	9,021	6,181	5,836	11,198	6,713	7,360	7,678	10,661	12,495
Finland	17,067	14,055	11,775	5,407	3,674	5,649	3,868	3,387	4,553	5,154	14,723	22,749
France	30,043	31,890	32,872	25,438	18,324	18,171	28,543	32,330	17,274	23,878	31,271	30,031
Germany	54,693	55,184	53,149	42,358	34,287	27,874	26,073	32,193	32,384	41,581	57,355	52,032
Italy	15,028	12,268	10,080	8,448	6,927	7,697	12,166	25,968	8,276	8,236	11,804	16,506
Netherlands	15,833	13,804	11,683	11,543	9,755	9,968	23,382	14,101	11,756	15,315	15,951	21,331
Norway	14,476	13,633	10,936	7,132	3,740	5,608	7,051	4,815	5,020	5,853	9,988	13,746
Sweden	45,033	43,364	36,114	19,690	8,887	12,569	9,224	7,954	10,128	17,125	35,972	61,386
Switzerland	16,037	15,006	13,331	13,528	9,819	7,320	10,272	6,963	9,215	12,461	15,376	16,536
United Kingdom	63,718	65,733	64,379	65,426	48,055	49,828	60,954	62,042	50,597	60,108	69,065	86,210
Australia	45,167	35,317	38,054	44,661	38,439	40,834	46,324	41,963	48,541	54,142	46,396	58,973
New Zealand	6,430	4,642	5,038	6,790	6,863	8,186	9,350	8,525	8,915	7,944	6,952	7,127
India	28,456	27,544	31,064	35,762	49,264	46,448	34,938	35,715	35,377	34,015	33,005	38,160
China	97,222	90,361	90,831	95,320	86,305	79,167	95,867	105,261	68,052	56,296	89,750	78,962
Hong Kong	40,055	37,208	36,059	44,786	30,637	33,992	46,626	47,507	29,624	36,912	35,810	44,458
Japan	119,753	120,170	124,684	98,504	89,965	92,701	96,733	125,989	110,306	92,155	113,976	109,297
Korea	124,294	114,730	94,444	75,978	77,369	83,963	87,888	95,375	66,587	81,228	101,257	98,488
Taiwan	37,299	37,825	38,833	37,374	33,459	45,362	50,878	44,969	39,960	35,603	38,210	33,679
Indonesia	14,894	14,358	16,078	15,312	16,271	17,935	21,615	21,337	14,804	26,968	16,456	22,144
Malaysia	120,358	124,521	132,282	132,477	123,984	141,818	130,610	151,535	114,734	124,686	116,154	165,725
Philippines	15,104	14,685	17,799	19,160	19,778	16,773	17,466	15,457	17,049	16,736	16,086	16,221
Singapore	61,528	55,141	66,687	52,926	62,390	86,932	64,316	63,023	57,834	60,026	77,242	110,370

Source: Tourism Authority of Thailand

Table A.17 International Tourist Arrivals to Thailand, 2007

	January	February	March	April	May	June	July	August	September	October	November	December
Canada	17,037	15,466	13,641	11,317	10,455	8,794	10,363	9,600	7,509	12,562	15,661	17,358
USA	63,158	55,151	54,931	47,679	42,969	47,122	48,796	43,179	39,270	54,316	62,676	64,391
Denmaek	19,175	18,940	15,843	8,670	5,830	6,282	11,225	6,067	7,080	8,102	13,029	14,763
Finland	24,312	20,511	15,169	6,281	4,390	4,710	3,049	2,828	4,787	6,710	16,023	29,562
France	36,621	37,370	33,733	28,794	20,734	18,447	29,598	34,632	18,616	26,702	34,242	32,162
Germany	61,767	57,842	61,984	41,809	30,876	26,001	30,028	31,731	36,392	43,324	59,278	56,168
Italy	20,360	16,068	14,368	8,711	6,239	6,989	11,804	25,087	8,666	9,877	12,966	17,788
Netherlands	18,458	14,557	12,493	11,969	10,493	11,248	26,697	14,533	11,601	15,604	16,491	19,203
Norway	14,052	14,765	13,684	6,496	3,687	7,163	7,066	4,675	5,561	6,539	10,803	15,585
Sweden	58,036	54,838	47,598	21,746	10,751	11,746	9,311	8,649	10,312	22,744	46,525	72,064
Switzerland	17,123	16,796	14,878	13,705	9,833	6,793	10,783	6,458	8,709	11,109	17,722	18,113
United Kingdom	72,915	70,119	74,088	65,916	47,024	47,726	53,877	54,637	46,698	57,843	72,204	83,375
Australia	58,622	43,261	46,387	56,250	45,951	49,682	51,938	49,842	58,573	59,719	55,544	62,357
New Zealand	7,120	5,098	5,938	7,570	7,133	8,554	8,809	7,934	8,709	8,504	7,013	7,546
India	33,831	28,938	35,546	42,883	61,084	48,957	39,913	42,601	42,354	42,860	43,298	43,972
China	71,892	104,789	67,837	92,251	75,483	71,293	82,923	83,617	79,383	81,776	97,096	94,801
Hong Kong	17,831	47,309	27,446	30,602	30,096	42,927	51,074	55,514	37,369	35,375	33,821	38,693
Japan	119,469	112,034	112,910	92,614	78,000	91,883	92,263	119,059	122,213	92,537	111,829	103,889
Korea	124,072	86,675	95,719	74,860	81,172	76,846	91,905	93,243	71,892	77,056	96,201	105,875
Taiwan	33,293	43,080	34,261	36,521	35,173	43,203	37,151	38,262	38,730	31,294	27,724	28,341
Indonesia	16,614	12,495	17,781	16,271	17,072	17,558	19,969	19,359	15,379	29,682	21,699	30,040
Malaysia	96,151	130,113	117,491	117,280	108,260	118,495	121,078	145,194	116,296	145,352	153,267	182,982
Philippines	14,657	13,062	17,605	18,993	18,473	14,868	14,866	16,071	15,143	18,394	18,558	18,183
Singapore	52,671	55,995	60,139	52,898	60,814	75,047	69,292	73,034	60,769	64,622	82,248	91,571

Source: Tourism Authority of Thailand

APPENDIX B

Headlines of News Shocks Effects on Tourism

Table B.1 Headlines of News Shocks Effect on Natural Disaster

DATE	HEADLINE
December 26, 2004	Tsunami casualty toll now reaches 198 dead and 2,008 injured
December 27, 2004	Six worst-hit provinces in South
December 28, 2004	Aftershock raises fears of further killer waves
December 28, 2004	Thousands still missing in Phangnga
December 29, 2004	Provincial death and injury tolls
December 30, 2004	TSUNAMI: Toll could hit 100,000
December 31, 2004	More than 4,500 confirmed dead in Thailand, half of them foreigners
January 01, 2005	TSUNAMI: More than 10,000 dead or missing
January 02, 2005	Tsunamis date back to ancient time
January 03, 2005	Letters to the Editor: The Thai media's handling of tourists affected by the tsunami was insensitive
January 04, 2005	Official death toll from tsunamis at 5,200
January 05, 2005	Tsunami alerts people to the need for cover
January 06, 2005	Almost 1,100 foreigners missing, search goes on
January 07, 2005	Tsunami disaster to raise awareness of need for coverage
January 08, 2005	Ambassador says 190 nationals still unaccounted for, not 1,500
January 09, 2005	Responding to the psychological damage
January 10, 2005	Nationalities of thousands of dead still not certain
January 11, 2005	Victims to be exhumed
January 12, 2005	Victims' remains will not be sent to Phuket
January 14, 2005	Call to include Bangkok in quake-risk zone
January 17, 2005	After the Tsunami: Chirayus face their worst crisis
January 18, 2005	Scandinavian PMs visit Phuket morgue
January 19, 2005	Thailand to set up makeshift tsunami warning system
January 21, 2005	TSUNAMI Aftermath: Are bubbles quake-related?
January 21, 2005	A long-term commitment to the tsunami's victims
January 26, 2005	Tsunami effects will hit first-quarter growth
January 27, 2005	Artists help tsunami-hit South
January 28, 2005	The environmental effect of tsunamis
January 29, 2005	Victim checks still underway

Table B.2 Headlines of News Shocks Effect on Criminal and Terrorist

DATE	HEADLINE
January 06, 2003	Regional Perspective: The Thai Jemaah Islamiyah is unlike others
April 27, 2003	Two policemen beaten to death by mob
May 01, 2003	Southern Violence: Wanted, dead or alive
May 02, 2003	Narathiwat, Yala Attacks: More arrests made as Wan Noor blames traffickers
May 05, 2003	Soldier arrested for southern attack
May 07, 2003	Nine more suspects in South
May 09, 2003	Four held in killing on policeman in Pattani
May 11, 2003	Troubled South: Muslims seek help from Army
May 12, 2003	Three arrested in lynching of policemen
May 18, 2003	Security tight after police officer killed
May 21, 2003	Another policeman murdered in South
May 27, 2003	Trouble In The South
May 29, 2003	Teacher gunned down in the South
July 08, 2003	Becoming serious about terrorism
August 29, 2003	3 police killed in shootout
September 01, 2003	Southern Separatists: More police will die, says group
October 26, 2003	Policeman, guard killed
November 28, 2003	Violence In The South: 2 volunteers injured in Songkhla raid
December 22, 2003	Man held for killing of Yala policemen
January 05, 2004	Soldiers die, schools burn
January 06, 2004	Bombs explode in Pattani
January 08, 2004	Police, gunmen battle in Yala
January 14, 2004	Policeman killer gets death
January 15, 2004	Unrest in the South
January 18, 2004	Kidnapped Muslim found dead
January 23, 2004	Monk killed in Narathiwat
January 25, 2004	Two monks murdered, one injured
January 26, 2004	Gunmen kill yet another police officer
January 27, 2004	Unrest In The South: Yala schools close down for a week
January 29, 2004	Another police victim in South
February 02, 2004	Policeman in Yala has throat slit
February 07, 2004	Southern Violence: One officer, one soldier shot dead
March 19, 2004	37 attacks set the south ablaze
April 01, 2004	Southern Unrest: Theft triggers terror alert

DATE	HEADLINE
April 02, 2004	Gunmen kill security guard
April 04, 2004	Bomb puts southern hoteliers on high alert
April 06, 2004	Attacks on officials continue unabated
April 12, 2004	Two rubber workers killed in the South
April 21, 2004	More unrest in the South
April 23, 2004	NARATHIWAT: South burns again
April 23, 2004	Two killed, 50 targets torched in southern Thailand
April 27, 2004	Bomb targeting police explodes in Thailand's restive south
April 28, 2004	Bomb explodes near police post in Yala
April 29, 2004	Over 100 dead in 30-hour Pattani mosque shootout
May 04, 2004	Mosque violence hurts tourism
May 17, 2004	Southern Unrest: Three temples bombed
May 23, 2004	Policeman shot dead
May 25, 2004	Fire destroys building at Yala school
May 29, 2004	Soldier shot dead in front of college
June 08, 2004	Crisis In The South: Buddhist teacher, civilian shot dead
June 14, 2004	Ex-police officer shot to death in South
June 15, 2004	2 more shot dead in South
June 19, 2004	Thai policeman shot dead, four wounded by bomb blasts in restive south
June 20, 2004	Southern Violence: Pattani policeman shot dead
June 23, 2004	Muslim teacher shot dead in South
June 24, 2004	Army post attacked, ranger killed, two others injured
June 28, 2004	Bomb blast kills one marine
July 08, 2004	Policemen, teachers attacked
July 16, 2004	Two shot dead in Narathiwat, rifle offers clue to Jan 4 attack
July 19, 2004	Four die in attacks in Yala and Pattani
July 29, 2004	Two killed as unrest continues
August 09, 2004	Southerners warned of firearms crackdown
August 16, 2004	Soldier, policeman shot dead
August 22, 2004	3 bomb blasts in Yala
August 26, 2004	One dead, dozens hurt as bomb rocks Narathiwat
August 30, 2004	Gunmen kill three in South
September 16, 2004	Two men wounded, dog
September 18, 2004	Judge killed by gunmen in Pattani
September 19, 2004	Separate attacks leave 3 hurt, 1 dead
September 26, 2004	Teacher, police helper shot dead

DATE	HEADLINE
September 27, 2004	Violence In The South: Nine hurt in blast at Yala fair
September 28, 2004	Another policeman shot dead in Pattani
October 05, 2004	Policeman's uncle, 70, shot dead by motorcycle hitmen
October 10, 2004	Student shot dead outside campus
October 27, 2004	81 more dead; riot toll hits 87
October 28, 2004	Village official shot dead in Yala
October 30, 2004	YALA BOMBINGS: Policeman killed, 24 injured in twin blasts
November 01, 2004	Volunteer shot to death
November 04, 2004	Man found dead with throat slashed in Yala
November 13, 2004	Two bombs explode, 22 injured
November 14, 2004	Villager killed in Yala market bomb attack
November 15, 2004	Two men shot dead
November 19, 2004	One student killed, another hurt in security patrol 'error'
November 21, 2004	Four men admit bomb attack
November 24, 2004	SOUTHERN VIOLENCE : Schools burnt, deputy gov shot
November 25, 2004	SOUTHERN UNREST : Security guard shot dead by militants
December 01, 2004	Marines shot at while on temple guard duty
December 02, 2004	Teachers targeted in bomb, gun attacks
December 04, 2004	Two buildings burnt down in arson attacks
December 06, 2004	Two shot dead as spate of attacks continues in South
December 07, 2004	Bomb blasts injure five in South, third device found
December 10, 2004	Three bombs target railways
December 14, 2004	Two men shot in ambushes
December 17, 2004	Pattani policeman shot dead
December 25, 2004	Bomb kills two outside bank
December 26, 2004	Bank-bomber linked to two more incidents
December 28, 2004	3 border policemen killed
December 30, 2004	Policeman shot, relative killed in checkpoint clash
December 30, 2004	Two men shot dead, police outposts raided
January 01, 2005	Attacks continue: 8 injured by Yala bomb, schools burnt
January 11, 2005	Bomb explosion in Yala, 4 injured
January 12, 2005	Bomb blast injures five in Yala
January 14, 2005	Two bombs target shops, policeman shot in South
January 16, 2005	Bomb blast in Yala, one killed, over 30 injured
January 17, 2005	Bomb kills one, injures dozens in noodle shop
January 19, 2005	Gunmen kill food shop owner, one customer seriously injured

DATE	HEADLINE
January 20, 2005	Muslims condemn attack on school bus
January 25, 2005	Policeman murdered in cold blood
January 26, 2005	More deaths, injuries and rebel arson
January 29, 2005	Three phone booths torched in Yala
January 30, 2005	Man shot dead; school, phone booths set ablaze
February 03, 2005	Crackdown on Tak Bai protest dims chances of TRT hopefuls
February 08, 2005	Man killed, bomb defused
February 09, 2005	2 injured by bomb blast in love motel
February 10, 2005	One killed, 7 injured in as southern violence continues
February 13, 2005	Southern violence continues
February 14, 2005	Headman killed in Narathiwat
February 15, 2005	Nine injured in a string of bomb attacks
February 16, 2005	Four hurt in bomb blast at grocery
February 17, 2005	Urgent !!! Four dead, up to 40 wounded in car bomb in Narathiwat
February 18, 2005	Car bomb kills five as Thaksin visits the south
February 22, 2005	Two killed, four injured in fresh spate of attacks
February 25, 2005	Six people shot dead in the south
February 28, 2005	Two more shootings, spate of small fires
March 02, 2005	Three more killed in terrorist attacks in South
March 03, 2005	Ex-policeman, local leader killed
March 05, 2005	Three police die in bomb blast
March 06, 2005	Pattani village chief killed
March 08, 2005	Three die in motorcycle gun attacks
March 11, 2005	Man killed in south
March 15, 2005	Bomb in Yala, 1 killed, 3 wounded
March 20, 2005	Bomb attacks in YALA and NARATHIWAT
March 22, 2005	One killed, 3 hurt in shooting
March 25, 2005	Three bombs explode, guns stolen, man shot
March 27, 2005	Railway worker shot dead in Narathiwat
March 28, 2005	Railway bombs, ambush hurt 22
April 01, 2005	Another killing amid arson attacks in south
April 04, 2005	Two die in triple Hat Yai blasts
April 06, 2005	Bomb in Narathiwat : 2 injure
April 07, 2005	Police injured in blast at food shop
April 11, 2005	Policeman shot dead in weekend of gun attacks
April 12, 2005	Three more killed in the South

DATE	HEADLINE
April 18, 2005	Brace of bomb attacks hurt six soldiers in deep South
April 20, 2005	Village official hurt in shooting
April 21, 2005	Two men shot dead in South
April 24, 2005	Kamnan shot dead on way to mosque
April 25, 2005	Two policemen killed by bomb
April 25, 2005	Two bomb blasts in Narathiwat
April 26, 2005	Man shot dead, two Army trucks bombed
April 28, 2005	Vehicles damaged in bomb blast
May 03, 2005	Three more killed in southern violence
May 05, 2005	Two bombs detonated in Narathiwat
May 11, 2005	Teacher, 3 others killed in South
May 14, 2005	Narathiwat bomb kills one, hurts 8
May 16, 2005	Attack on truck kills soldier, injures five
May 19, 2005	Village defense volunteer kill, police injured in Narathiwat
May 24, 2005	Pattani park bomb injures policeman
May 25, 2005	Police killed, 2 injured in Pattani
June 01, 2005	Monk, soldiers injured by bomb near temple in Narathiwat
June 06, 2005	Three more shot dead in South
June 07, 2005	Three shot dead, policemen injured in the south
June 08, 2005	Soldier shot in Narathiwat
June 13, 2005	Two bomb attacks in Narathiwat
June 14, 2005	Southern violence leaves 2 dead and 5 injured
June 21, 2005	Bomb attacks in the South
June 23, 2005	Two monks injured in Narathiwat bomb blast
July 06, 2005	Violence in Narathiwat and Pattani
July 11, 2005	Ex-village chief, 78, shot dead
July 15, 2005	Another bomb attack in Yala
July 18, 2005	Three more attacks; one dead
July 19, 2005	School head shot dead on Pattani road
July 21, 2005	Two killed in southern violence on Asarnha Bucha Day
July 29, 2005	Home-made bomb found in front of bank in Yala
August 01, 2005	Small bomb detonated inside Big C Pattani's car park
August 02, 2005	More blasts rock Pattani, Narathiwat
August 08, 2005	Bomb attack in Narathiwat
August 18, 2005	Southern violence - Pattani
August 23, 2005	4 killed, 2 injured in southern attacks

DATE	HEADLINE
August 31, 2005	Southern violence: police and soldiers wounded
September 01, 2005	Bomb blasts
September 01, 2005	More bombings in the South
September 02, 2005	Monks, soldiers seriously injured by bomb in Narathiwat
September 03, 2005	Four injured by Narathiwat bomb
September 08, 2005	Woman killed, 3 injured in car bomb
September 13, 2005	One killed, 27 detained in South
September 15, 2005	Man shot and burned in Yala
September 23, 2005	Two more villagers shot dead
September 28, 2005	4 Rangers shot dead in the South
October 06, 2005	Five rangers killed
October 21, 2005	Bombs hit Pattani, Yala
October 22, 2005	Four injured in Yala violence
November 10, 2005	Five buildings torched in Pattani attack
November 19, 2005	Shootings kill 3 in South
November 22, 2005	Three dead in attack on Buddhists' homes
December 01, 2005	Yala man shot dead
December 17, 2005	Policeman murdered in South
December 26, 2005	Two more shot dead in Yala
January 03, 2006	Soldier killed, 2 hurt in ambush in Yala
January 08, 2006	SOUTHERN VIOLENCE: Officers killed in market
January 09, 2006	Gun attacks kill one, injure one in South
January 10, 2006	Two dead, one hurt in Yala attacks
January 19, 2006	Young soldier killed in morning of violence
January 22, 2006	Woman teacher shot dead
February 05, 2006	20 injured in Yala restaurant
February 17, 2006	Police escort killed in southern ambush
February 23, 2006	Woman shot dead in Pattani
March 01, 2006	Bomb injures 9 at Sungai Kolok market
March 02, 2006	Nine injured in bomb blast in Songkhla
March 05, 2006	Young man killed, school attacked
March 13, 2006	Southern Violence Home-made bomb leaves girl, mother injured
March 17, 2006	Six killed in Pattani
March 20, 2006	Violence continues in Songkhla and Narathiwat
March 21, 2006	Rubber tapper killed as rampage continues
March 22, 2006	Pattani village head shot dead

DATE	HEADLINE
March 27, 2006	Soldier, civilian killed in South
March 29, 2006	Three more killed; two charged, five detained in South
April 03, 2006	Four hurt as 3 explosions rocks South
April 04, 2006	Two deaths in South
April 05, 2006	Man shot dead, one hurt in deep South
April 15, 2006	Two shot dead in South
April 17, 2006	Bomb explodes near Narathiwat school; no injuries
April 18, 2006	Southern violence continue as two men killed
April 19, 2006	2 men shot dead in attacks in South
April 20, 2006	Attacks on polls, ballot convoys in South kill 3
April 22, 2006	Southern violence spills over into Songkhla, 2 hurt
April 30, 2006	4 more shot dead in South
May 02, 2006	Railway worker, 21, shot dead
May 06, 2006	A bomb explosion seriously injure six police
May 08, 2006	Man shot dead; bomb blast at Yala school
May 10, 2006	Pattnai bombs killed three women
May 11, 2006	Violence Down South Blast kills 3, injures 16
May 12, 2006	Fireman killed in shooting
May 18, 2006	Violence continues in Pattani
May 19, 2006	Police officer injured, villager dead in Pattani
May 24, 2006	Two police shot dead
June 07, 2006	Bomb explosion kills two soldiers in Yala
June 08, 2006	Two soldiers killed in Yala
June 09, 2006	Southern Violence Bomb kills five police officers
June 16, 2006	Seven more bombs hit Yala
June 19, 2006	SOUTHERN UNREST Bombs, bullets kill 3 on weekend
June 25, 2006	Official and his son shot dead in Pattani
June 27, 2006	Seven killed as violence continues in the south
July 03, 2006	One killed in raids, school attack in Yala
July 14, 2006	Soldier killed by bomb in Narathiwat
July 15, 2006	One dead, four injured
July 18, 2006	One killed, 4 injured in drive-by shootings
July 27, 2006	2 shot dead, man set on fire in South
July 31, 2006	Shootings leave two more dead in South
August 14, 2006	Southern Violence Three killed in shop attack
August 17, 2006	Gunmen shoot dead 74-year-old man in Yala

DATE	HEADLINE
August 18, 2006	More dead in South
August 20, 2006	Village chief and two civilians shot dead in deep South
August 27, 2006	Bombs kill 2, hurt 7 in deep South
August 31, 2006	Eight Yala banks attacked by bombs
September 06, 2006	Poultry farmer killed, house burnt
September 12, 2006	Yala bomb, shooting
September 25, 2006	Soldier in Yala killed
September 27, 2006	Janitor shot dead in Pattani
September 28, 2006	Four shot dead in Yala and Pattani
September 29, 2006	Three more killed, six hurt in South
October 02, 2006	Headman shot dead in South
October 13, 2006	Violence continues in Yala
October 16, 2006	Four more killed in shootings in South
October 17, 2006	Nine killed in wave of shootings in Yala, Pattani, Narathiwat
October 19, 2006	Soldier killed, four hurt
October 20, 2006	Violence leaves 2 dead, 3 critical
October 21, 2006	Songkhla death toll rises to four
October 23, 2006	Soldier killed, 5 monks hurt in blast during morning rounds
October 27, 2006	Two shot and four police hurt by bomb
October 28, 2006	Soldier shot dead while guarding Pattani market
October 30, 2006	Attacks on weekend kill two in South
November 04, 2006	Three more shot dead in South
November 06, 2006	Blast kills two soldiers
November 13, 2006	Southern Violence: Two dead, four hurt in attacks
November 18, 2006	Blasts in South kill 1, injure 29
November 20, 2006	Violence continues in Narathiwat
November 21, 2006	Morning market bomb kills 2, maims 15
December 05, 2006	Two killed, 15 injured in Yala bomb attack
December 06, 2006	Bomb in grocery bag kills 2 in Yala
December 07, 2006	Two students seriously injured in bomb attack in Narathiwat
December 17, 2006	One dead, three injured in Southern shootings
December 20, 2006	Violence continues in the south
January 12, 2007	Yala teacher shot dead in his car
January 14, 2007	Policeman, fireman shot dead in South
January 17, 2007	Southern blast kills village leader, injures journalist
January 25, 2007	One dead, 6 hurt

DATE	HEADLINE
January 29, 2007	Bomb injures three Pattani policemen
February 05, 2007	Violence continues in deep south
February 06, 2007	Fourteen injured in southern bombings
February 25, 2007	One killed, two groups attacked in Pattani, Yala
March 01, 2007	Man killed, 3 soliders wounded
April 07, 2007	Four killed, two injured in Narathiwat shootings
April 10, 2007	7 killed in Yala, school bus shot up
April 12, 2007	11 injured in Yala bomb attack
April 16, 2007	South Violence Insurgentskill 70 yo, fire at train
April 21, 2007	Bomb blast injures 5 soldiers
April 22, 2007	Southern Violence Roadside bomb kills 3 soldiers
April 24, 2007	18 soldiers injured in attacks in South
May 01, 2007	Bomb attack in Pattani kills a university student
May 07, 2007	Two shot dead in deep South
May 09, 2007	Seven soldiers killed in Pattani
May 12, 2007	Policemen killed, burnt in Rangae
May 24, 2007	Six die in southern violence
June 10, 2007	Five police injured by 'second bomb'
June 17, 2007	Three killed in South shootings
June 23, 2007	3 killed, 10 injured, schools torched
July 01, 2007	Four killed, 26 injured by bomb in Songkhla
July 17, 2007	19 injured in Yala bomb attack
August 10, 2007	Two Muslim men shot dead in Narathiwat
August 16, 2007	Three soldiers injured in Narathiwat bomb attack
August 25, 2007	1 killed, 10 injured in Pattani bombing
September 15, 2007	1 solider killed, 4 injured in Pattani ambush
October 03, 2007	Two dead in attacks in South
October 19, 2007	7 injured in Yala bombing
October 26, 2007	3 soldiers injured in Narathiwat bomb attack
November 02, 2007	Urgent: 9 injured in explosion in Yala downtown
November 06, 2007	25 injured in Yala foods shop explosion
November 10, 2007	2 killed, 1 injured in Narathiwat shooting
November 22, 2007	Three women killed in pickup
December 04, 2007	At least six killed in bomb attack in Pattani
December 05, 2007	Restaurant bomb kills 6, 20 injured
December 24, 2007	Three militants shot dead in Yala

Table B.3 Headlines of News Shocks Effect on Asian Avian Influenza

DATE	HEADLINE
June 07, 2003	Ninth Thai Sars case confirmed
January 27, 2004	Thailand to hold crisis talks as deadly bird flu hits nine countries
February 06, 2004	Bird flu claims 18th victim as as disease detected in Vietnamese pigs
February 09, 2004	Foot and mouth disease hits Vietnam
February 18, 2004	Japan, China confirm new outbreaks
April 30, 2004	First death from SARS in nine months as millions on move in China
July 12, 2004	Bird-flu fear at Malaysian high school
February 27, 2005	Bird flu infects second man in north Vietnam
March 28, 2005	North Korea confirms bird flu outbreak
July 24, 2005	200 pigs being culled near Indonesian capital to contain spread of bird flu
July 26, 2005	Farm Disease : Unknown illness kills 17 in China
August 02, 2005	Hong Kong gets tough on disease
September 27, 2005	Dengue outbreak claims 11 in S'pore
November 05, 2005	BIRD FLU: New cases found in Vietnam and China
November 10, 2005	China not in control, warns of “disaster’
November 15, 2005	Bird-flu mutates and claims more lives
November 17, 2005	China Avian Influenza,Mining Disaster
November 18, 2005	Bird Flu In China, Indonesia: Deaths confirmed as due to H5N1
November 25, 2005	Bird Flu:H5N1 virus strikes at Aceh poultry farms
December 17, 2005	Jakarta confirms bird-flu fatality
January 01, 2006	Livestock disease breaks out in China
January 12, 2006	BIRD FLU
February 23, 2006	Bird Flu: KL admits seven to hospital
February 27, 2006	Avian Flu: China warns of huge outbreak
March 08, 2006	Malaysia keeps close tabs on disease in Sarawak
March 13, 2006	Hand, foot and mouth fatalities rise to 6 in Malaysia
March 14, 2006	Bird flu in Burma
March 16, 2006	Bird Flu: Rangoon blacks out news over outbreak
March 17, 2006	Malaysia finds H5N1 virus in northern resort
March 31, 2006	New bird flu outbreaks stoke fears in Cambodia
April 05, 2006	Myanmar kills 400,000 birds
April 11, 2006	Bird flu 'rages across' Burma
May 15, 2006	Bird flu claims 5th family member
May 17, 2006	Un tells Jakarta to do more in flu war

DATE	HEADLINE
May 18, 2006	Indonesia bird flu toll hits 30
July 29, 2006	Laos confirms bird flu killed chickens, but type unknown
August 04, 2006	3 children suspected of bird flu
August 09, 2006	29 provinces ‘disaster areas’
August 09, 2006	Avian Influenza More Deaths, New Information: Bird flu kills teenage pair
August 13, 2006	New H5N1 flare-up in Cambodia
August 13, 2006	New bird-flu outbreak in cambodia
August 21, 2006	bird flu: Indonesia on alert for feared cluster outbreak
November 25, 2006	Second bird flu outbreak suspected on farm
December 23, 2006	Three new flu outbreaks found in Mekong Delta
January 11, 2007	Bird Flu Fresh Outbreaks: Cool season sees resurgence of H5N1 in Asia
January 14, 2007	Japan confirms outbreak of H5N1 bird-flu strain in latest bout of chicken deaths
January 15, 2007	Bird flu hits Vietnam
January 16, 2007	bird flu indonesian crisis, vietnam outbreak: Jakarta hospital overwhelmed
January 28, 2007	Japan confirms farm outbreak was H5N1
March 02, 2007	Bird flu found at Rangoon farm
March 04, 2007	Bird-flu outbreaks confirmed in Burma
March 08, 2007	H5N1 bird flu virus surfaces in Hanoi
April 03, 2007	Rangoon reports fifth H5N1 outbreak
May 07, 2007	Vietnamese duck farm hit by bird flu
May 23, 2007	Six bird-flu outbreaks in Vietnam
July 30, 2007	Avian Influenza: Burma reports new outbreak
October 14, 2007	Boy dies of bird flu in Indonesia
November 25, 2007	Bird-flu outbreak in Burma
November 25, 2007	Bird flu virus hits several Asian states
December 14, 2007	People cooperation needed to tackle bird flu
December 16, 2007	Bird flu resurfaces in Asia
December 29, 2007	Case of human transmission is confirmed
December 30, 2007	Fresh bird-flu outbreak in Burma

Table B.4 Headlines of News Shocks Effect on Bird Flu in Thailand

DATE	HEADLINE
January 22, 2004	First case of bird flue confirmed in Thailand: Senator Nirun
January 24, 2004	Avian Flu: Suspected victims die
January 26, 2004	Red alert in Kanchanaburi
January 28, 2004	Thai provinces affected by bird flu double, Bangkok hit: minister
January 29, 2004	Bird flu now spreads to 31 provinces in Thailand (Names provided in Thai)
January 30, 2004	Thailand reports four more suspected bird flu cases, spread to south
February 05, 2004	Thailand suspects more bird flu cases
February 09, 2004	Japan to send team to test for bird flu in Thailand
February 14, 2004	Uttaradit hit by fresh outbreaks
February 16, 2004	Bird-Flu Crisis: Boy, 13, becomes the sixth fatality
March 05, 2004	Bird-Flu Victims: Govt urged to review pay-outs
March 12, 2004	Avian Flu Virus: Outbreak fears strike Uttaradit
March 17, 2004	Birdflu Deaths: Woman becomes eighth fatality
April 28, 2004	Opinions split on Sars threat
May 27, 2004	Bird flu hits research farm in Chiang Mai
July 06, 2004	Suspected case of bird flu found in Thailand
July 08, 2004	Ministry declares two yellow zones
July 13, 2004	New bird flu cases flare up in 2 provinces
July 14, 2004	Bird flu confirmed in 7 provinces
July 16, 2004	Surge in Thai provinces hit by bird flu
July 25, 2004	Bird Flu: 18 provinces affected
September 20, 2004	Five more suspected bird-flu cases found
September 28, 2004	Country on high birdflu alert following new case
September 29, 2004	Fear grips village in Kamphaeng Phet
October 05, 2004	Young girl becomes third bird flu fatality
January 21, 2005	First confirmed bird flu this year in Rayong and Phitsanulok
January 29, 2005	Bird-Flu Watch: High-risk areas marked
February 09, 2005	Boy tested for bird flu
July 01, 2005	Samut Prakan kindergarten shut down after outbreak
July 11, 2005	Bird flu found is Suphan Buri
July 14, 2005	Outbreak of disease shuts kindergartens
October 15, 2005	‘Warning’ needed for avian flu
October 22, 2005	Bird-Flu Outbreak: Father infected son, say family
October 25, 2005	Bird-Flu Outbreak: Virus now in 39 provinces

DATE	HEADLINE
November 01, 2005	Signs of bird-flu in 19 Bangkokians
November 23, 2005	Bird-flu alarm
December 13, 2005	Bird-Flu Death: Authorities unsure how dead boy, 5, got H5N1
July 11, 2006	Ministry monitoring possible outbreak after four kids die
July 24,2006	Birds in Phichit has bird flu virus
July 25, 2006	H5N1 virus outbreak confirmed in Phichit
July 26, 2006	A teenage boy from Pichit died of bird flu : Thaksin
July 29, 2006	112 people from 14 provinces under watch for bird flu
July 31, 2006	Bird flu outbreak spreading
August 04, 2006	Girl, 9, dies; suspected infections soar to 164
August 06, 2006	Uthai Thani man dies of bird flu
August 10, 2006	Govt warned of bird flu risk
August 18, 2006	China's H5NI bird flu strain spotted in Thailand
January 23, 2007	Second birdflu outbreak in Nong Khai
January 24, 2007	2nd bird-flu outbreak in Nong Khai
January 26, 2007	Bird-Flu Alert Nong Khai man died of human flu: official
February 02, 2007	Bird Flu Angthong becomes third affected province
March 09, 2007	Teenage Lao girl dies from bird flu at Nong Khai provincial hospital
March 20, 2007	Bird-flu strikes Mukdahan
June 01, 2007	Sakon Nakhon bird flu fear
July 07, 2007	Birdflu: Govt confirms new outbreak
July 08, 2007	Minister issues alert on bird flu
July 31, 2007	Health Thai-Burmese Border: Cholera contained in Mae Sot
September 28, 2007	Scores of chickens culled asbird-flu outbreak confirmed
November 30, 2007	Foot and mouth outbreak
November 21, 2007	Kindergarten school closed following hand-foot-mouth disease outbreak
November 22, 2007	Kindergarten in disease closure
November 23, 2007	Kindergarten classes of another school in Lampang closed following disease outbreak
November 29, 2007	22 nurseries in Uttaradit shut down following hand-foot-mouth disease outbreak
December 14, 2007	Kindergarten school in Rayong closed following hand foot mouth disease outbreak
December 15, 2007	Disease scare

BIOGRAPHY

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ACADEMIC BACKGROUND	1991-1995 Bangkok University, Thailand Bachelor of Business Administration
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PRESENT POSITION	Trade Officer, Professional Level, Office of Product Value Promotion for Export, Department of Export Promotion, Ministry of Commerce, Royal Thai Government.
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