MODELING THAILAND INBOUND TOURISM

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MODELING THAILAND INBOUND TOURISM

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ABSTRACT

The purpose of this research was to find out which economic/none-economic factors in other nations influence the amount of inbound tourism in Thailand, focusing on a ten-year period from 1998-2007. The researcher performed this observational study using data from 43 sample countries from around the world, whose citizens frequently came to Thailand each year, and selected variables that have shown significant results, such as exchange rate, GDP per capita, population, and distance between borders.

Secondary data were used and taken from the Tourism Authority of Thailand (TAT) and Penn World Table Version 6.3 as well as the Center for International Comparisons of Production, Income and Prices of the University of Pennsylvania. The researcher utilized the gravity model to find the outcome using a 95% statistical confidence level to test results.

The results indicate that GDP per capita is the variable with the most impact as it has the ability to motivate a higher amount of tourists to visit Thailand. Furthermore, GDP per capita shows the strongest positive effect in inducing an increased number of arrivals. Including the size of population, distance, and border-sharing also increase the amount of inbound tourism each year to Thailand.

KEY WORDS: INBOUND TOURISM/ ARRIVALS/ GRAVITY MODEL/ GDP.

48 pages

แบบจำลองจำนวนนักท่องเที่ยวขาเข้าในประเทศไทย

MODELING THAILAND INBOUND TOURISM

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บธ.ม. สาขาวิชา (การวิเคราะห์และการสร้างตัวแบบธุรกิจ)

คณะกรรมการที่ปรึกษาวิทยานิพนธ์ : ปานเดช ชินตระการ, Ph.D., ฉายรวี อนามธวัช, Ph.D.

บทคัดย่อ

จุดประสงค์ของการศึกษาครั้งนี้มุ่งเน้นการสำรวจปัจจัยทางเศรษฐกิจ และ ปัจจัยอื่น ๆ ที่มีผลกระทบต่อจำนวนนักท่องเที่ยวขาเข้าในประเทศไทย ในระยะเวลาสิบปี ตั้งแต่ปี พ.ศ. 2541-พ.ศ. 2550 โดยคัดเลือก 43 ประเทศทั่วโลกที่มีสถิติจำนวนนักท่องเที่ยวเดินทางเข้ามาในประเทศไทยมากที่สุดตามลำดับในการวัดผล ในส่วนของปัจจัยต่าง ๆ ที่อาจมีผลกระทบต่อการตัดสินใจของนักท่องเที่ยวที่จะเลือกเดินทางมาประเทศไทย ได้แก่ อัตราการแลกเปลี่ยนเงินตราต่างประเทศ ผลิตภัณฑ์มวลรวมภายในประเทศ จำนวนนักท่องเที่ยว และ ระยะทางจากประเทศต่าง ๆ ถึงประเทศไทย เป็นต้น

การสำรวจในการทำสารนิพนธ์ครั้งนี้ใช้ข้อมูลแบบทุติยภูมิ จาก เว็บไซต์การท่องเที่ยวแห่งประเทศไทย (ททท.) และ เว็บเพจของ Penn World Table Version 6.3, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania. หลังจากได้ข้อมูลครบถ้วนแล้ว การวิเคราะห์ข้อมูลทำโดยการใช้กฎของ Gravity model ประมวลผลตามหลักการสถิติที่ค่า t เท่ากับ 95%

ผลจากการวิจัยครั้งนี้สรุปได้ว่า ปัจจัยที่มีผลกระทบต่อการเพิ่มขึ้นของจำนวนนักท่องเที่ยวขาเข้าประเทศไทยคือ ปัจจัยจาก ผลิตภัณฑ์มวลรวมภายในประเทศ จำนวนประชากรของแต่ละประเทศ ที่เพิ่มขึ้น ระยะทางที่สั้นลง และ การมีขอบเขตของประเทศติดต่อกัน ปัจจัยต่าง ๆ เหล่านี้ จึงเป็นแรงผลักดันต่อการตัดสินใจของนักท่องเที่ยวที่จะเดินทางเข้ามาในประเทศไทย

48 หน้า

CONTENTS

CONTENTS (Cont.)

CONTENTS (Cont.)

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

1.1 Background

Tourism is an important part of Thailand's economy. Each year, Thailand earns a big amount of money via tourism businesses. The value of tourism services has made Thailand popular among ASEAN countries in this field. It is an accepted belief that tourism businesses drive the Thai economy in the acquisition of wealth and enhance Thai GDP growth of around 6 percent each year at 323.5 billion baht (Hoontrakul and Ryan, 2004). Moreover, tourism is the one factor that attracts people to invest in Thailand, and the Thai population relies on tourism jobs. As a result, it can reduce unemployment. Tourism involves Thailand exposing itself to the international market and in the process, induces the exposure of Thai products and services, enabling them to be better known worldwide. In a related matter, the World Tourism Organization believes that international tourism will grow approximately 4% per annum, through the year 2010 (World Tourism Organization, 1996). Moreover, the GDP of the services sector of Thailand in 2009 was 43.7%of total GDP. It was GDP from tourism about 6%. Agriculture GDP was 12.3% and industry GDP was 44%. Therefore, the services sectors comprised a large amount of Thailand's economic growth (CIA World Factbook, 2009).

From the information above, it can be inferred that tourism and services are significant factors that impact the Thai economy in terms of increasing GDP. Hence, Thailand tries to promote itself to the world with the slogan "Amazing Thailand" and uses significant advertising to entice foreigners to come to Thailand. As a result, Thailand has become a popular destination in Asia and everyone knows of Thai culture, Thai traditions, Thai food and the like.

Thailand is a major country in Asia with an outstanding tourism trend. Each year, Thailand welcomes more inbound foreigners than many different countries around the world. As an example, there were over 14 million international guests who

visited Thailand in 2007 (Tourism Authority of Thailand, 2008). In 2008, the largest amount of foreigners inbound were East Asian, mostly Malaysian and Japanese. Therefore, one can assume that the short trip between Thailand and Malaysia is an influencing factor. Other visitors who frequently visit are European, American, South Asian, African and Australian. Moreover, it is worth noting that the United Kingdom sent 1-million plus visitors in 2009 (Groeneveld and Watson, 2007). However, the rate of visits slowed down in 2009 because of the Thai political situation.

However, there are many factors that affect tourists' decisions to choose destination countries. Aside from politics or environment as mentioned above, another factor is the economy. For example, a low GDP in the visitors' countries, economic crisis, inflation, currency fluctuation and so on can affect the decision of tourists, because these economic issues can reduce their purchasing power. Hence, they end up being more concerned about money issues and planning for their own financial future.

Thus, this paper will focus of these economic factors which affect the number on foreign visitors in Thailand. The researcher shall study the GDP of visitors' countries, and find the relationship between the number of foreign arrivals in Thailand and other economic indicators. The reason that international GDP figures are being used for the study is that GDP is a tool in assessing the economy in each country. Moreover, GDP is an indicator of the wealth of people in a nation and standard of living of its population. If populations have positive income and good living standards, they also have more purchasing power to buy things that they want and more ability to travel to places which satisfy such wants. Thus, this research wishes to find out if the visitors' countries' GDP influence Thailand's visitor arrivals or not.

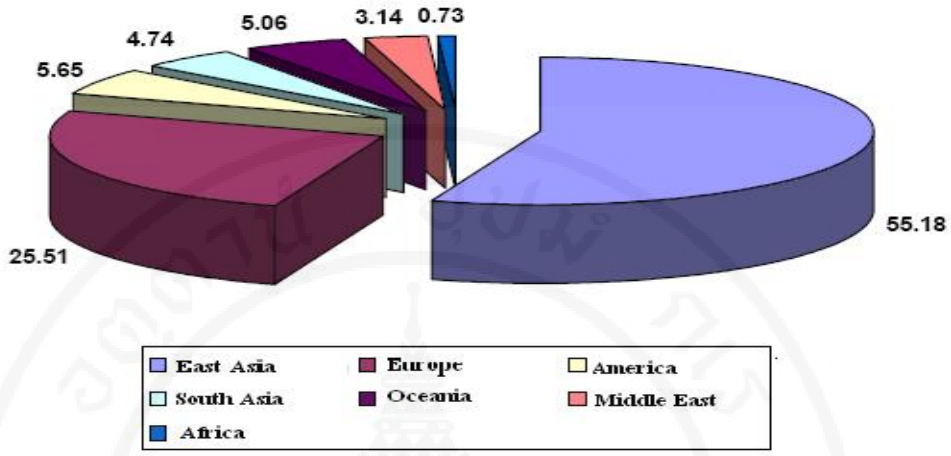
The researcher aims to find the relationship by using the gravity method and using secondary data regarding international GDP figures, including population and exchange rate, during a 10-year period from 1998-2007. The researcher will acquire data from the Thailand Office of Tourism Development, Tourism Authority of Thailand and DataStream database. The researcher believes that the results of this study can be beneficial in helping forecast the amount of inbound tourists in the future.

1.2 Significance of the study

The researcher aims to investigate how international economic factors affect the amount of visitors who specifically visit Thailand and to find the impact of each variable factor by using the gravity model. Such researcher will analyze data by observing the relationship of each variable and plot graphs to see the change in visitor arrivals each year. The reason the study focuses only economic indicators is because Thailand faced many world economic recessions after the Tom Yam Kung crisis in 1997 and the researcher has observed that it may be related to a change in visitor numbers.

The uniqueness of this paper is manifested in the fact that selected data is separated into 7 regional categories; East Asia, Europe, the Americas, South Asia, Oceania, Middle East, and Africa. Moreover, the study has picked over 40 countries around the world from which Thailand visitors have originated. Thus, the data is expected to give a clearer result than other similar studies in terms of inbound visitor numbers each year. For example, a paper of the office of Tourism Development of Thailand studied only 5 countries; Malaysia, Japan, UK, U.S. and Australia. In another study, (Raymond, 2001) studied the impact of economic factors in Hong Kong only. Arsalan (2007), on the other hand, also did a research about tourism but the scope of the research was limited to 4 countries; Uzbekistan, Pakistan, Iran, and Turkey. Hence, the outcome of this study can be more beneficial in predicting the Thailand tourism industry's trend in the future with respect to inbound tourists from many countries each year.

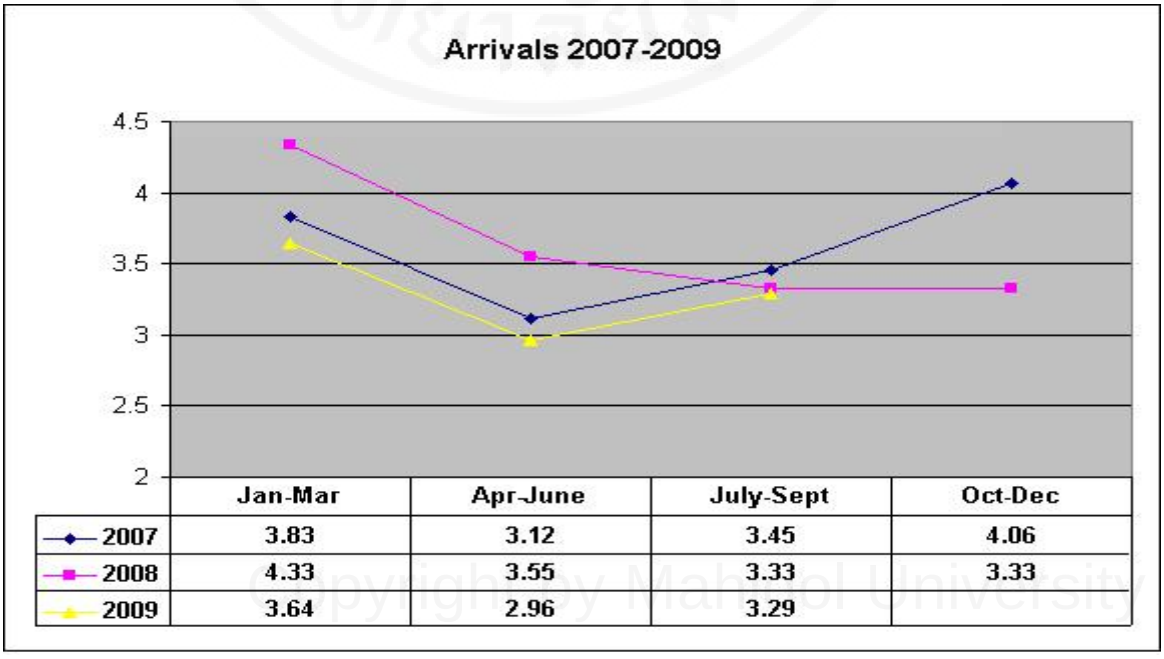
Figure 1.1: The proportions of inbound tourists 2007



Source; Office of Tourism Development

The graph below shows the number of visitors who came to Thailand from the beginning of 2007 to the third quarter of 2009. However this graph was plotted to analyze only domestic factor influences.

Figure 1.2: Number of Arrivals 2007-2009



	Jan-Mar	Apr-June	July-Sept	Oct-Dec
2007	3.83	3.12	3.45	4.06
2008	4.33	3.55	3.33	3.33
2009	3.64	2.96	3.29	

Source: Thaiwebsite.com

1.3 Objectives

With this thematic paper, the researcher aims to:

1. Study the changing amount of inbound Thailand tourists from different countries within 10 year periods.
2. To know which factors affect the changes in number of inbound tourists.

1.4 Scope

The researcher has chosen to classify inbound visitors by ***NATIONALITY*** and study the 10-year period from 1998-2007 using secondary data from the Thailand Office of Tourism Development, TAT and DataStream databases. There are around 40 countries from which visitors were chosen for testing and these have been categorized into 7 regions shown in the table below.

Table 1.1 Region Categories

East Asia	Europe	Americas	South Asia	Oceania	Middle East	Africa
Brunei	Austria	Argentina	Bangladesh	Australia	Egypt	South
Indonesia	Belgaum	Brasil	India	New	Israel	Africa
Laos	Danmark	Canada	Nepal	Zealand	Kuwait	
Malaysia	Finnland	USA	Pakistan		Saudi Arabia	
Philippines	France		Sri Lanka		U.A.E.	
Singapore	Germany					
Vietnam	Italy					
China	Netherlands					
Hong Kong	Norway					
Japan	Russia					
Korea	Spain					
Taiwan	Sweden					
	Switzerland					
	United Kingdom					

Source: Thailand Office of Tourism Development

1.5 Benefit

The researcher believes that the results of this research can be used to help forecast inbound visitor numbers in the future. Moreover, it may help tourism marketers think of ways to attract tourists and can be used as a reference when coming up with techniques in promoting and managing Thailand tourism.

CHAPTER II
LITERATURE REVIEW

This chapter starts by giving insight on some related details from other papers. The researcher begins first with an insight on inbound tourism, colonial relationship and then separates the factors that have influenced Thai tourism, including both domestic and international factors.

2.1 The inbound tourism

The inbound tourist or a traveler who arrives in different countries coming is a valuable source of income for the host country and the local economy. It is not just the hotels and attraction that benefit from the spending power of tourists. Money spreads out to benefit all sorts of local people.

Middleton and Clark (2001) explain that inbound tourism is a subset of the more general tourism category. Tourism comes in four basic types;

- **Inbound Tourism:** the residents of other countries come to visit host countries.
- **Outbound Tourism:** the residents of their home country go out to visit another country.
- **Domestic Tourism:** the residents of a country travel within their own country.
- **International Tourism:** the residents of a home country go to travel and stay in other countries for less than one year.

In line with this, the Office of Tourism Development of Thailand divides inbound tourism into two categories;

1. International Tourist Arrivals to Thailand by ***Nationality*** – the traveler who comes to Thailand via all airports, borders, ships, trains etc.
2. International Tourist Arrivals to Thailand by Nationality at ***Suvarnabhumi Airport*** (Tourism Authority of Thailand, 2008)

2.2 Colonial Relationship

In this paper, the researcher took bilateral data to analyzing: the different of distance measures and dummy variables indicating whether the two countries are contiguous, share a common border, landlocked, and Island shapes in common colonizer. Hence, the researcher would like to explain the meaning about Colonial Relationship. Colonial Relationship is the two countries in a pair with Thailand have sharing a common border, landlocked, and Island area in both countries. Colonization is here a fairly general term that the researcher use to describe a relationship between two countries that has relationship in the same group of its regions.(Mayer T. and Zingago S, 2006)

2.3 Domestic factor influences

Thailand was first affected by the Severe Acute Respiratory Syndrome (SARS) disease in 2003. SARS had an impact on the Thai economy, including the tourism industry. The amount of inbound visitors decreased by 30-40 percent in that year because visitors feared the disease went out of control and posed a risk to the security of tourists. In addition, the estimated loss of tourism income was around 31 billion baht and its GDP share decreased to 5.25 percent in that same year (Steinmueller, 2005). However, it was not only Thailand which faced this problem, as SARS also had a big impact on many other countries around the world. Airports were strictly controlling the flow of passengers that it became difficult to go anywhere at the time. Thus, SARS directly affected the arrival of those who wanted to travel to Thailand. Moreover, Asia lost 60 billion U.S. dollars in terms of business revenues. In the table 2.1, it is shown that Thailand lost 1.7 percent of tourism revenue, 1.4 percent of GDP, and also final expenditure of 3.2 % (ADB, 2003).

Table 2.1 Costs of SARS for East and Southeast Asian Economies in 2003 (% of GDP)

Countries/areas	Estimated loss of tourism revenue	OEF Model GDP loss	OEF Model total final expenditure loss
East Asia			
China	0.4	0.5	1.3
Hong Kong	1.7	2.9	7.6
South Korea	0.2	0.1	1.2
Taiwan	0.4	0.5	1.6
Southeast Asia			
Indonesia	0.2	0.1	0.9
Malaysia	1.7	1.4	2.9
Philippines	0.3	0.0	0.7
Singapore	1.2	3.0	9.0
Thailand	*1.7*	*1.4*	*3.2*
Vietnam	0.9	1.1	1.1
Total	**0.5**	**0.6**	**2.0**

Source: ADB. 2003. Oxford Economic Forecasting (OEF).

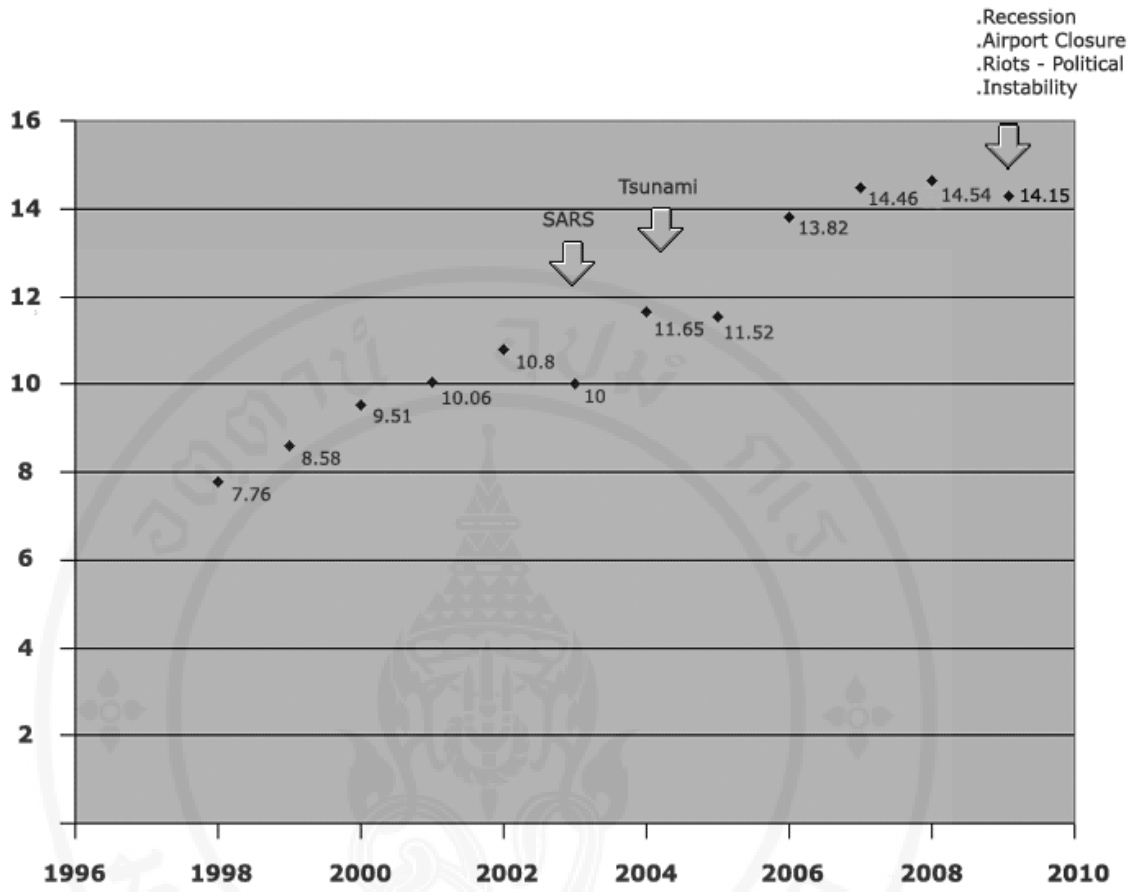
In the beginning of 2004, Thailand encountered the bird flu (H5N1) after it faced SARS the year before. The bird flu had a negative impact on the Thai economy in the amounts of 0.2 and 0.5. In addition, SARS and the bird flu caused inbound visitors to drop by 10 percent in 2004 (Sriyaporn, n.d.).

Moreover, in the same year, the tsunami hit Thailand and also had a negative impact on the Thai tourism industry. Hotels had to close in over 400 places, while restaurants and souvenir shops laid off over 5,000 workers. The south of Thailand is mainly where the tourism industry encountered this problem. Furthermore, it affected the amount of tourist arrivals in 2005. Phuket International Airport recorded that there were 159,423 tourist arrivals between January and May 2005, compared to 487,419 arrivals during the same period in 2004; indicating that the

arrivals dropped by 67 percent. Thus, it can be said that an environmental problem can influence the amount of inbound tourist coming to Thailand (Sritama, 2005).

Regarding the political situation in November 2008, the closure of Suvarnabhumi Airport by yellow-shirt protesters made Thailand lose 210 billion baht. Of that amount, 100 million baht was attributed to the tourism sector, causing a loss of 2% of GDP overnight (Bank of Thailand, 2009). Afterwards, the red shirt mob invaded the East Asia Summit in Pattaya on April 11, 2009. Such situation leads Thailand to cancel the summit. Moreover, it was during the same period that the Songkran Day violence occurred in Bangkok, all this paired with the terrorism problem in the South of Thailand. All of these problems have not only caused the Thai tourism industry to lose a great number of inbound visitors, but have also caused a rising amount of unemployment.

In mid-2009, the swine flu had a big impact which has affected Thai tourism from then until now. The Thai government announced on May 12, 2009 that Thai people had been infected by swine flu from Mexico. After this announcement, the amount of inbound tourists decreased because everyone feared the virus. Hence, it affected the Thai economy and tourism industry again from January - April 2009 when the total of visitor arrivals were around 4.7 million, down 14.7 percent compared with the same period the year before. Consequently, the Thai government tried to use marketing strategies to promote Thailand tourism, with tactics such as waivers of visa fees as well as discounts for entrance fees to national parks, historical sites, wildlife reserves, and marine national parks. Moreover, the Thai government allowed the extension of the exemption of visa fees for tourist visa applications until March 4, 2010 to keep inbound visitors flowing into Thailand (Koumelis, 2009).



Source; Tourism Authority of Thailand

Figure 2.1: Evolution of international visitors to Thailand 1998-2008

2.4 International factor influences

There are various factors that have many influences on tourists who decide to travel internationally but the most important factor is the home country economy of tourists because good economies affect population incomes. Thus, if populations have more purchasing power, it's easy for them to be influenced into making decisions to travel abroad. The economy pertains to the wealth of a nation, goods production or income, and is commonly measured by GDP. GDP is a factor related to economic consumption and thus, the increase in number of inbound tourists may be related to the national GDP of the tourists' respective countries (Fletcher and Latham, 1997). A country that has a high GDP may indicate that the population has high income, and may also indicate that the population has a high standard of living. GDP can be determined in three ways. First, the product approach sums up the outputs of every

class of enterprise to arrive at a total. Second, the income approach assumes that the income of production factors must be equal to the value of their product, so GDP is determined by the sum of all producers' incomes as seen in the formula below (Watkins, 2009).

GDP= R + I + P + SA + W

Where: R= rents

I = interests

P = profits

SA = statistical adjustments (corporate income taxes, dividends, undistributed corporate profits)

W = wages

Third, the expenditure approach assumes that all products must be bought by somebody, and the value of total products must be equal to the people's total expenditures in buying things. The formula of the expenditure approach for GDP is;

GDP = C + Inv + G + (Ex-Im)

Or **GDP = private consumption + gross investment + government spending + (exports − imports)**

In 2008, an economic recession happened again after the Thai Tom Yam Kung crisis of 1997. The "U.S. Hamburger Crisis" was a negative factor that impacted foreigners around the world and also contributed to the declining amount of inbound tourists to Thailand. Due to the recession, the income of the people dropped and as a result, they became more thrifty and careful about expenses when thinking about or planning to visit a travel destination. More tourists in other parts of the world decided to postpone their travel plans and others altered their plans to travel to closer destinations by choosing to go to neighboring countries instead of far-away countries like Thailand (Kongprasert, 2010.*)*.

Similarly, (Landau, 2009) also says that cost-conscious guests reduce long distance trips. The countries that have been severely impacted by the financial crisis such as the United Kingdom, other countries in European Union, Japan, and the United States are major sources of foreign visitors to Thailand. Hence, when this group was affected by the Hamburger Crisis, there was also an effect on the Thai tourism market. Thus, the remaining visitors were Asian tourists that came from

nearby neighboring countries such as Malaysia and Singapore. Moreover, the Hamburger Crisis effects also continued during Thai tourism's high season. For example, the total number of room reservations in southern Thailand in November 2008 was 15 percent lower than the same month of the previous year. Likewise, in December 2008, there were no new reservations for hotel rooms. In addition, the number of tourists in northern and southern of Thailand dropped 50 percent in 2008. Hence, it can be observed that an economic crisis has a strong effect on the Thai tourism industry and it can reduce the number of inbound Thailand tourists (Kongprasert, 2010*.)*.

Of course, Thailand is not the only country in the region that attracts visitors from abroad as there are other country competitors in the vicinity such as Vietnam, Laos, Cambodia and Burma, which are also popular places and that have double-digit growth in arrivals. In addition, China, Taiwan and Macau are competing with Thailand. Thus, the Tourism Authority of Thailand is trying to promote Thai tourism by introducing the nation to new group visitors by advertising in the Middle East and promoting itself to nine Arab countries (Groeneveld and Watson, 2007). Although Thailand has attempted to launch new strategies targeting visitors, other country competitors seem to have a stronger effect on Thailand in terms of the amount of inbound visitors because there are now more significant choices to choose from. The difference in cultural, traditional, historical and other factors can impact tourists' decision making as well.

CHAPTER III
MATERIALS AND METHOD

3.1 Introduction

The researcher has chosen to use the gravity model to find the results of this study. Applied is the general gravity model to analyze data of each country in seven regions. Hence, this paper intends to study whether economic indicators of each country (Population, international GDP, exchange rate and number of arrivals) affect the number of inbound tourists to Thailand or not. The study has picked data pertaining to Thailand from 1998-2007, and this data shall be compared with data from each of the other countries. The researcher will then analyze by each country's ranking each year and then compare it with the amount of Thai inbound visitors that increase or decrease depending on calculation outcomes.

3.2 Methodology

3.2.1 Gravity Model

The gravity model is based on Isaac Newton's law of gravity. The model is often used in social science to predict many results such as the flow of population and capital. Social science generally uses the gravity model by containing elements of mass and distance for calculation (Lewer, 2008). The model has successfully predicted the outcome of many social science cases, and is used in international economics to predict two countries' trade flow based on economic indicators such as GDP and the distance between two countries. The trade flow model was initially used in 1954 by Walter Isard. Hence, it is observed that this model can be used with this research's data because the research aims to predict a flow of numbers based on the economic size of each country and distance from a destination country. Thus, the formula of this

model below is used to analyze the relationship of data between Thailand and other countries (Deardorff, 1998).

$$T_{ij} = a\frac{P_i P_j}{D_{ij}}$$

Where;

T_{ij} = number of visitors from origin i to destination j

P_i = economic size of origin i

P_j = economic size of destination j

D_{ij} = distance between origin i to destination j

a = Parameter

3.2.2 Generalization of the Gravity Model

With the basic formula above, many researchers found that there were many errors in the relationship between two countries and that representation was needed for an error term in the relationship such as, between the GDP of country i and GDP of country j. Hence, the gravity formula was generalized in the following multiple regression model (Santos and Silvana, 2006.) However, the research applies the basic form of gravity model to suit with this detail paper. Hence, the research applies to use this formula below:

$$T_{ij} = \beta_0(GDP_i) + \beta_1(POP_i) + \beta_3(XRET_i) + \beta_4(D_{ij}) + \beta_6(Land_{ij}) + \beta_7(Island_{ij}) + \beta_8(Border_{ij}) + \mathrm{E}_{ij}$$

Where:

T_{ij} = inbound tourism flow to Thailand from international countries

β = constant β

GDP_i = gross domestic product of international countries

POP_i = size of population of international countries

$XRET_i$ = exchange rate of international countries compare with U.S. Dollar

$\boldsymbol{D_{ij}}$ = distance between Thailand and international countries

$\boldsymbol{Land_{ij}}$ = the number of landlocked country in a pair with Thailand

$\boldsymbol{Island_{ij}}$ = the number of island country when take a pair with Thailand

$\boldsymbol{Border_{ij}}$ = the number of country that has a sharing border in a pair

$\mathbf{E_{ij}}$ = error

3.3 Source of data

The data for this study has been taken from the Office of Tourism Development, Tourism Authority of Thailand (TAT) statistics 1998-2007 for the amount of inbound tourism within 10 year periods. Additional source of information is the, CIA World Factbook (Central Intelligence Agency), for the amount of population of 43 countries and some of statistical information of arrivals who came to Thailand. Such data was drawn from Data Stream database such as some GDP per capita of 43 countries, and also Penn World Table Version 6.3, and the Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania (Aten, Heston, and Summers, 2009) for all converted exchange rate, real GDP, GDP per capita and other information of all 43 countries. The researcher took the number of country variables, data of Land, Island, Border and other factors influences Thailand tourism industry from CIA's *World Factbook*.

CHAPTER IV
EMPIRICAL RESULT

4.1 Introduction

In Chapter 3, it was explained that the gravity model would be used to find which variable had effect on the number of Thailand's inbound tourists. The researcher focuses on economic factors each year for each country, and uses the gravity model to take into consideration the proportions of mass and distance. Hence, the purpose of this chapter is to analyze the results of the estimated final outcome and present results of the data. Finally, the hypothesis of the estimated result will be tested.

4.1.1. Analysis of the estimated results of the amount of inbound tourists when using the gravity model

The researcher first specifies the results by using the gravity model to analyze host country data according to economic factors (population, GDP, exchange rate, and distance). Afterwards, the researcher analyzes the outcome based on each factor that can attract an amount of tourist flow. The first equation consists of T_{ij}, representing the flow of tourists into Thailand, population, GDP, exchange rate, and distance which represent the variables that can affect the amount of inbound tourists each year.

$$T_{ij} = [GDP_i + POP_i + XRET_i + D_{ij} + Land_{ij} + Island_{ij} + Border_{ij}] \quad \textbf{(1)}$$

Where GDP_i is gross domestic product of host countries, POP_i is the size of population of departure i, $XRET_i$ is the exchange rate of international countries represented in United States dollars (USD). The reason that the USD is used in this manner is that it is the standard value of world currency and thus, it is easy for

the international community to understand the exchange rate conversion. D_{ij} , representing the distance between Thailand and international countries, same as $Land_{ij}$, $Island_{ij}$, and $Border_{ij}$ representing the number of landlocked, island, and sharing border countries when take a pair with Thailand. Thus, the value of those variables would be 0 and 1. If the value is 0 which mean that, those countries have no condition of land, island or border when take a pair with Thailand, but if the value is 1 is otherwise meaning.

To estimate the equation, (1), the researcher took a log-linear representation in accordance with the gravity model method to be equation (2).

$$LnT_{ij} = \beta_0(LnGDP_i) + \beta_1(LnPop_i) + \beta_2(LnXRET_i) + \beta_3(LnD_{ij}) + \beta_4(Land_{ij}) + \beta_5(Island_{ij}) + \beta_6(Border_{ij}) \quad \textbf{(2)}$$

The scope of the study pertains to data from 43 countries around the world in a 10-year period from 1998-2007. Therefore, the results will explain the flow of inbound tourists each year and shall be analyzed by observing the impact of economic factors that affect the number of tourist arrivals.

4.1.2. The empirical result

In this part, the researcher uses the basics of the gravity model to identify the equation (3) for estimating the flow of international tourism arrivals to Thailand by using the relationships of economic factor impact to explain the result.

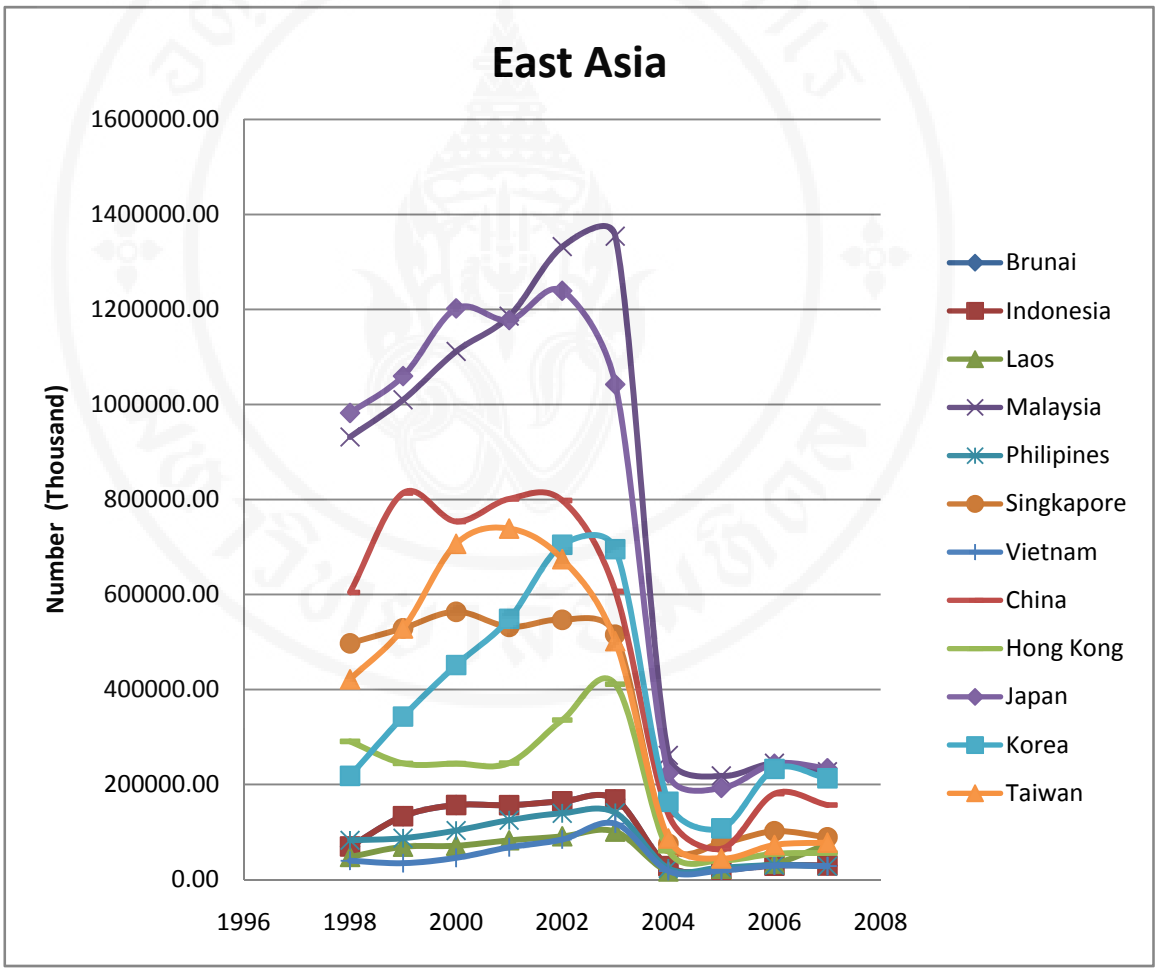
Hence, the third equation that is used to estimate the result is;

$$T_{ij} = \beta_0(GDP_i)\beta_1(Pop_i)\beta_2(XRET_i)\beta_3(D_{ij}) \beta_4(Land_{ij})\, \beta_5(Island_{ij})\beta_6(Border_{ij}) \quad \textbf{(3)}$$

4.1.3. Tourism flow of Thailand since 1998-2007

Figures 4.1 to 4.7 below shows the amount of tourism flow into Thailand each year. The number of inbound tourists is then divided by each region with respect to the 43 countries.

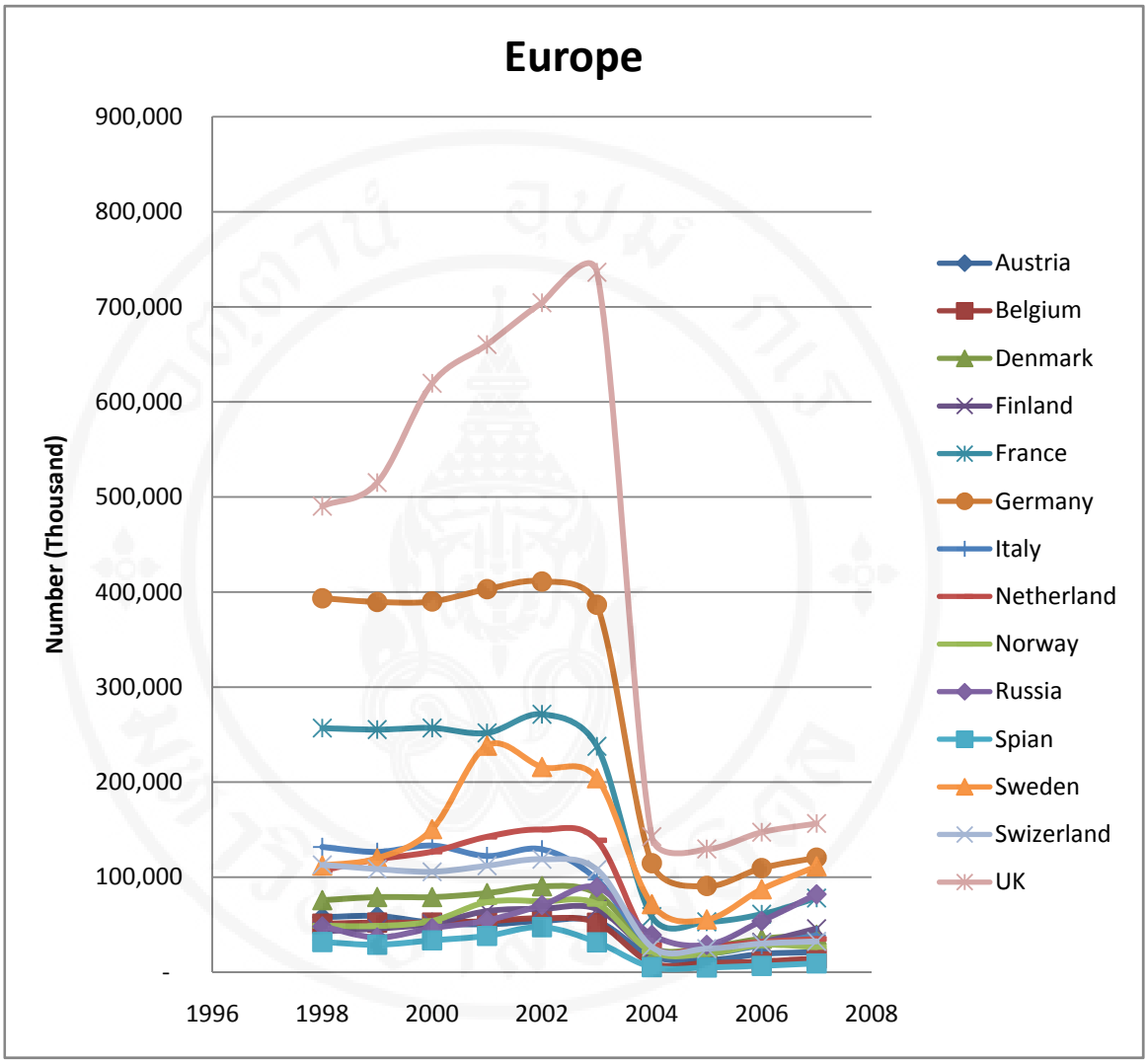
Figure 4.1: Number of East Asian tourist arrivals to THAILAND by nationality each year.



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.1 shows that during the 10-year period from 1998 to 2007, Japan is the country that had the largest amount of tourists visiting Thailand in 2000; and in 2004, Malaysia provided the largest amount of tourists arrivals.

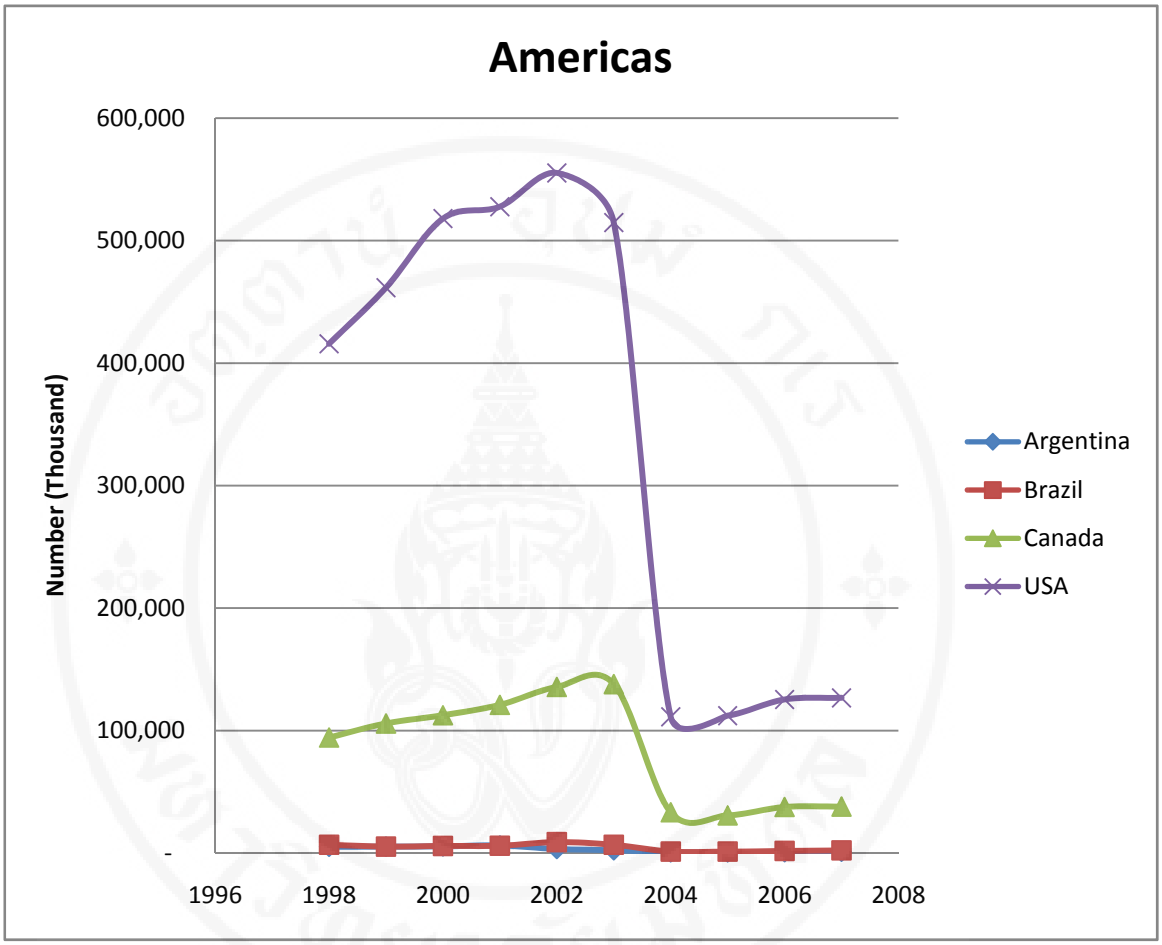
Figure 4.2: Number of European tourist arrivals to THAILAND by nationality each year.



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.2 features the number of European inbound tourists who visited Thailand from 1998 to 2007. The country with the highest number of tourists to visit Thailand in 2004 is the United Kingdom, as it provided the largest amount of visitors of around 142,665 people. The next largest groups of tourists came from Germany followed by France.

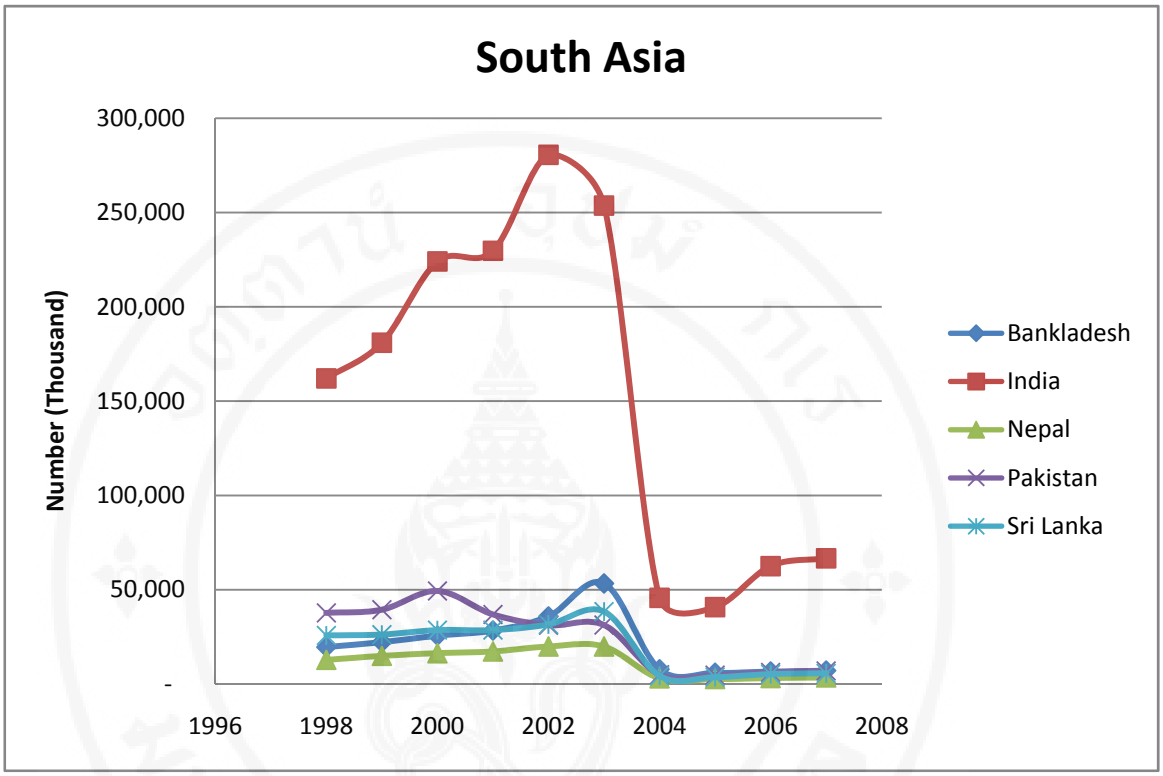
Figure 4.3: Number of North and South American tourist arrivals to THAILAND by nationality each year.



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.3 is quite clear in showing that the country that provided the greatest amount of inbound visitors is the United States of America. American people came to Thailand more than all other countries in the region, in every year of the period. The second largest group is from Canada and the third is Brazil followed by Argentina.

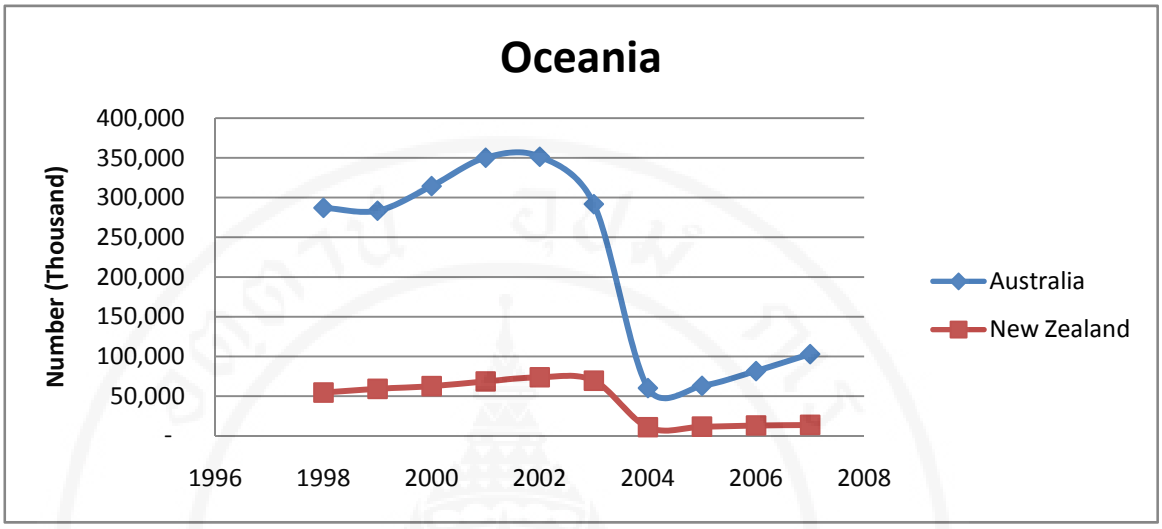
Figure 4.4: Number of South Asian tourist arrivals to THAILAND by nationality each year



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.4 shows the amount of tourist arrivals from South Asia. The graph shows that India is the number one country in this respect, as it has the largest amount of inbound tourists who came to Thailand from 1998 to 2007. The highest number of Indian people visited Thailand in 2002, when around 280,641 Indians came to the country.

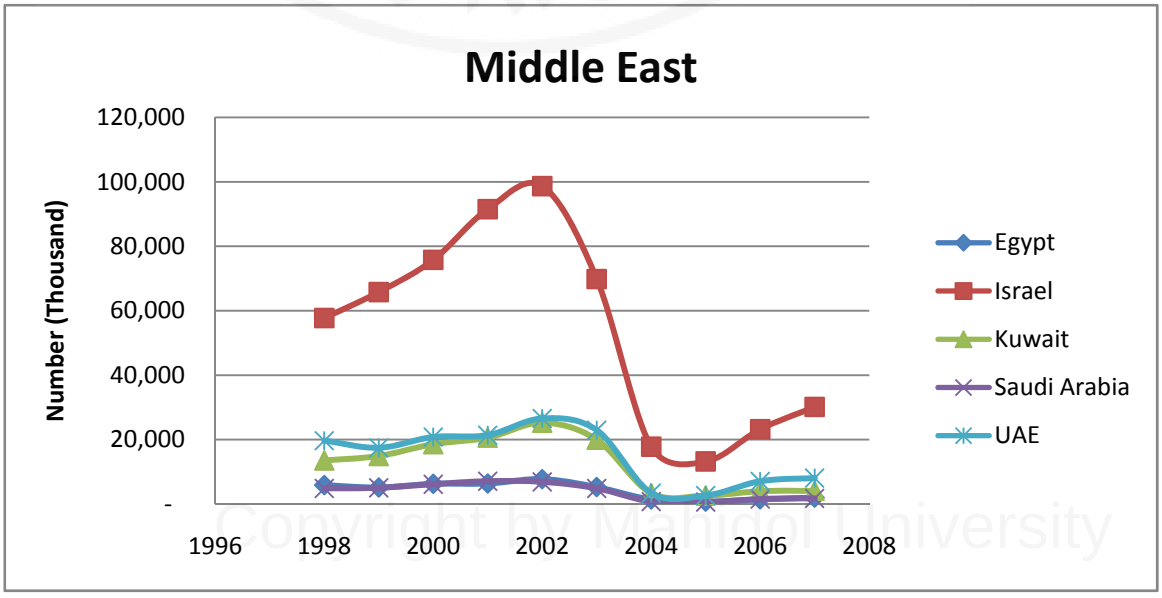
Figure 4.5: Number of Oceania tourist arrivals to THAILAND by nationality each year



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.5 shows only two countries in the Oceania region. The graph is very clear in showing that Australia dominates tourist arrivals to Thailand every year followed by New Zealand. Australia sent the most visitors in 2002 and New Zealand sent the most in 2003.

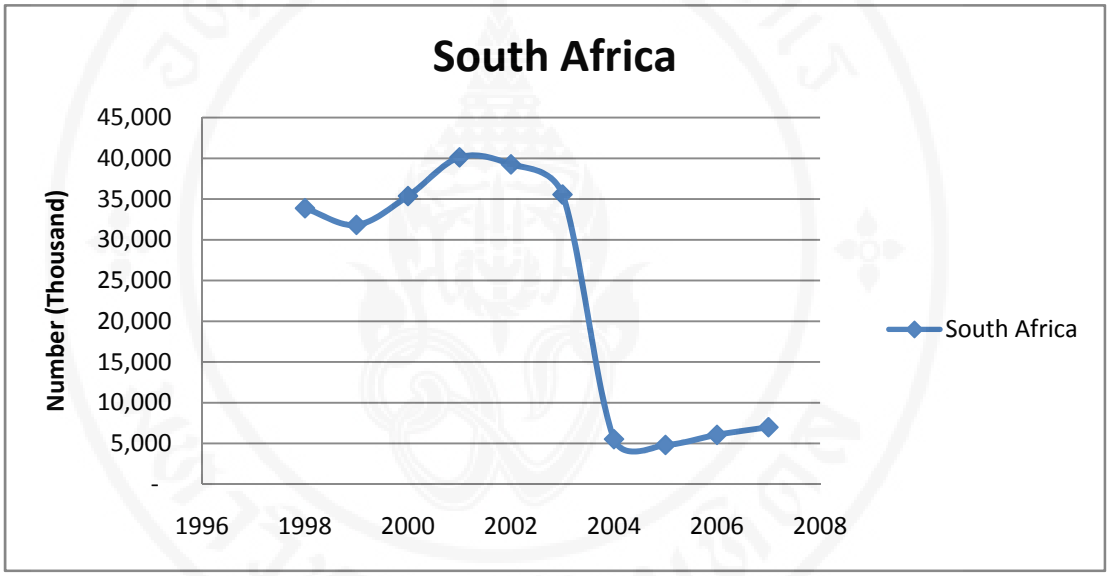
Figure 4.6: Number of Middle Eastern tourist arrivals to THAILAND by nationality each year



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.6 summarizes the number of Middle Eastern visitors who came to Thailand from 1998 to 2007. The largest amount of tourists came from Israel and the graph shows that in 2002, around 98,691 Israelis came; but that this decreased from 2003 to 2005. As also seen in the graph, the second largest amount of tourists from the region came from the United Arab Emirates.

Figure 4.7: Number of South African tourist arrivals to THAILAND each year



Source: Penn World Table Version 6.3, University of Pennsylvania.

The last graph is shown in Figure 4.7 and shows only figures from South Africa because tourists in this region generally do not go to travel in Thailand. Sometimes, this may be due to obstacles related to distance and transportation. As seen above, South Africa had the highest amount of Thailand-bound tourists in 2001 with around 40,133 people and the lowest number of tourists in 2005 with only 4,815 people.

4.2 Estimation of Results

Table 4.1: Descriptive statistic of inbound tourism in Thailand

Variables	*Obs*	*Mean*	*Std.Dev.*	*Min*	*Max*
Arrivals number	430	147888	236284.5	610	1354295
Population	430	105580	245140.6	310.52	1321852
exchange rate	430	810.677	2929.322	0.28421	16073.6
GDP	430	20141.7	13075.69	1394.59	57259.2
Distance	430	3961.373	2571.401	390.174	10773.28
Landlocked	430	.0930233	.2908034	0	1
Island	430	.1651163	.3717179	0	1
Border	430	.0465116	.2108357	0	1

Source: The researcher's finding.

Table 4.1 shows the descriptive statistic and variables of inbound tourism amount of 43 countries within 10 years period. The table explained the number of observation, mean value, standard deviation, Minimum and Maximum numbers of Thailand inbound Tourism. For the dummy variables; Landlocked, Island, and Border, there are dichotomous variables (1,0). It will take a value of one, if the countries in the pair are landlocked, Island, or sharing border and zero if otherwise

4.2.1. The Estimate results regarding 43 tourism countries

The researcher applied data to use with the estimation model of a 10 year period from 1998-2007 and specified 43 countries in each region to match with the variables. In table 4.2 below, shown are all variables of 43 countries that have effect to attract arrivals that go to Thailand.

Table 4.2 The estimated results of 43 countries 'tourist arrivals to Thailand on tourism attraction.

Variables	**Coefficient**
constant	0.0444922
t-stat	0.04
Population	0.5446113
t-stat	11.86
Exchange rate	0.023265
t-stat	0.68
GDP	1.371799
t-stat	15.09
Distance	-1.013352
t-stat	-7.81
Land	0.2919474
t-stat	1.63
Island	0.5932058
t-stat	3.71
Border	1.65173
t-stat	5.97
number of observations	430

Source: The researcher's finding.

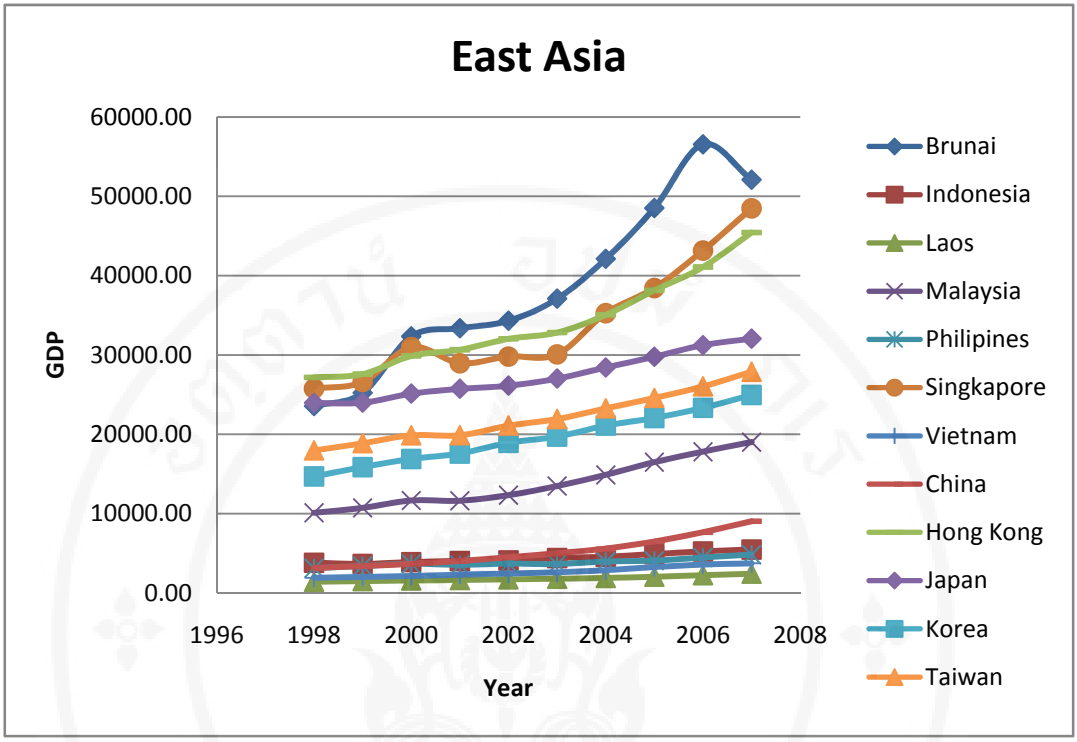
Table 4.2 suggests that if a particular country has its own population increase by 1%, the effect on its own Thailand-inbound tourists is an increase 0.55%. Thus, it can be presumed that a population increase can motivate an increased amount of tourists to go to Thailand.

Exchange rate is the factor that shows non-significant level value, because t-stat shows the number that less than 1.96. However, it shows positive effect and we can conclude that exchange rate have no effect to attract tourists in all 43 countries. It may be that each country spends money in different currency unit and the economic

situations are also different from each other. Distance has a negative sign and thus, the negative effect on the outcomes with a statistically significant 95% confidence level Hence, it can be explained that if distance between destination and departure becomes far from each other increasing by 1%, it influences the arrivals to Thailand will decrease by 1.013%. For example, UK and US where distance from the US is almost double to the UK when compare with Thailand. Thus, arrivals from UK would go to travel in Thailand more than US tourists. Cause of long distance, it made number of US arrivals decrease around 1.013%. Therefore, longer distances discourage tourists from taking trips. Also shown in the table, when home country GDP per capita increases by a percent, it has a direct positive effect on the amount of Thailand arrivals of 1.37%. This is because GDP per capita represents the income and standard of living of people in each country. Thus, if a country has a high GDP per capita, the population has a good standard of living and the people may earn high income. Hence, people can spend more money to go travel abroad. However, if among 43 countries take a pair with each other in the same colonial and those pair of country has an island shapes or sharing border, which mean that, it will increase the amount of arrivals more than other countries that have no island and sharing border by nature, because both of them show the positive significant impact values with amount of inbound tourists. According to a log-linear theorem (log base e), the researcher would read the number of those dummy variables by subtract 1 from its result and multiply by 100. Hence, for the island shape with a pair that has relationship in the same colonial can attractive amount of tourist about 80 percent [(exp(0.59)-1)*100)] more than two countries which are not islands by nature. For the border sharing between a pair country would encourage amount of tourists who go to Thailand too.

Therefore figures 4.8 to 4.14 show GDP per capita in each region separated by years. From all of GDP per capita of each country, the researcher took this data to analyze the impact of GDP to amount of tourism in Thailand each year. GDP per capita might has an effect to planning decision of tourists.

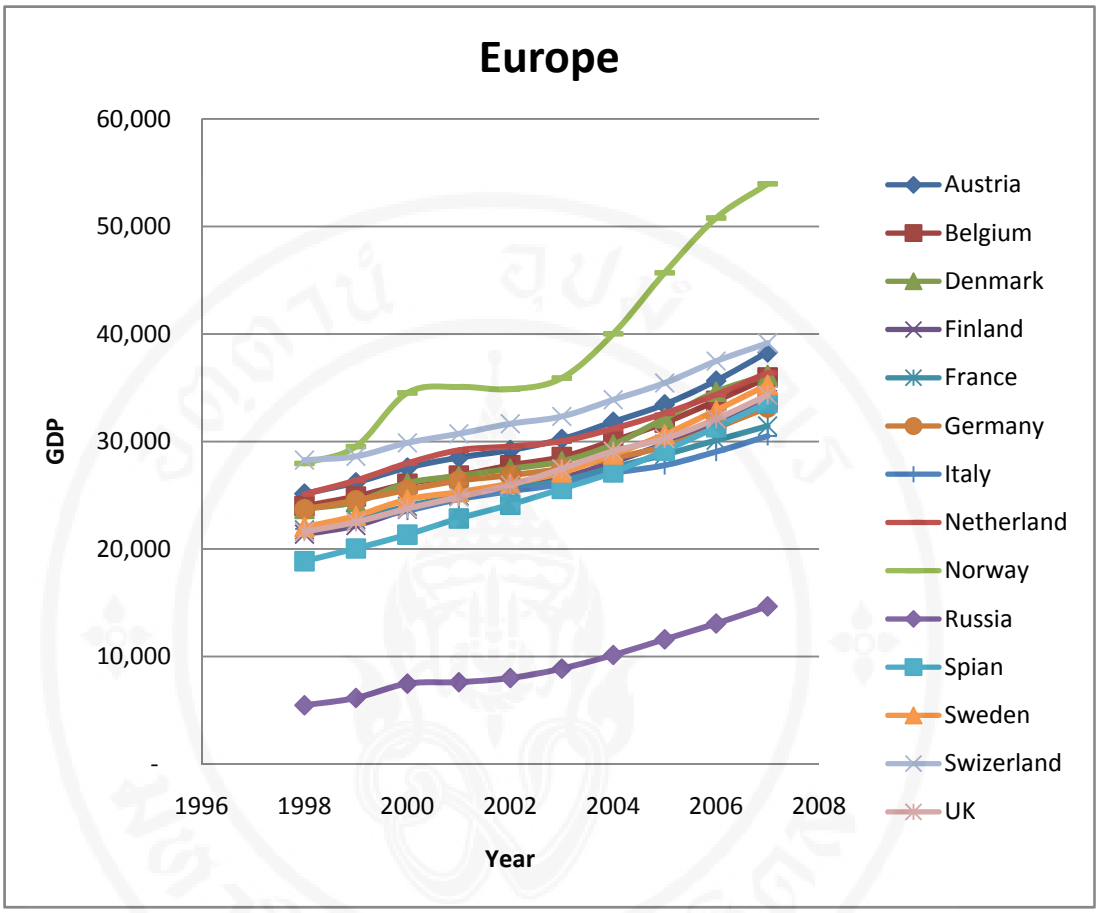
Figure 4.8: GDP per capita of East Asian countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.8 shows that the country with the highest GDP per capita is Brunei. In 2006, Brunei was the richest country with the highest GDP per capita of around $56,574. This was followed by Hong Kong and Singapore.

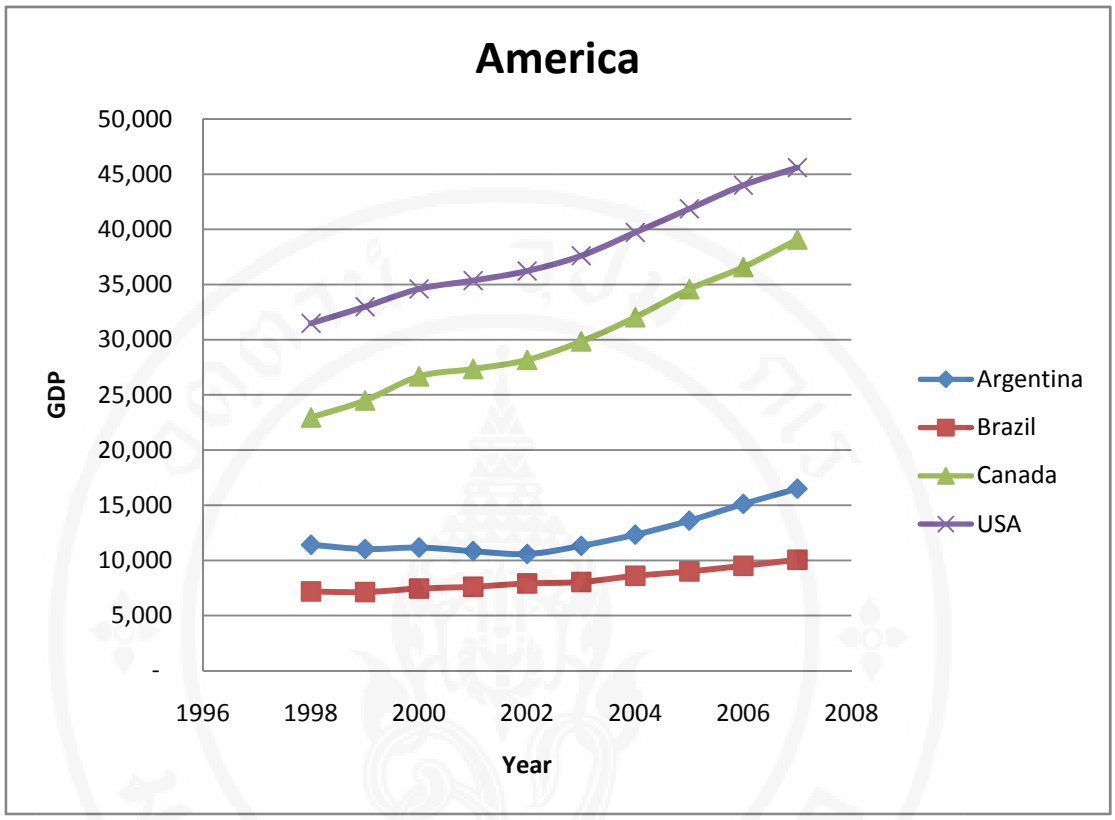
Figure 4.9: GDP per capita of European countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.9 clearly shows that in Europe, the highest GDP per capita is in Norway. The growth rate of Norway's GDP per capita was outstanding compared to other countries in the same group and in 2007, Norway's GDP per capita stood very high at around $53,967. The country with the lowest GDP per capita in all years was Russia. Hence, the researcher can presume that the richest GDP per capita of Norwegian have effected to decision making of Norway's citizen who want to travel from far away country like Thailand, because Norwegian have more spending power to go travel everywhere around the world.

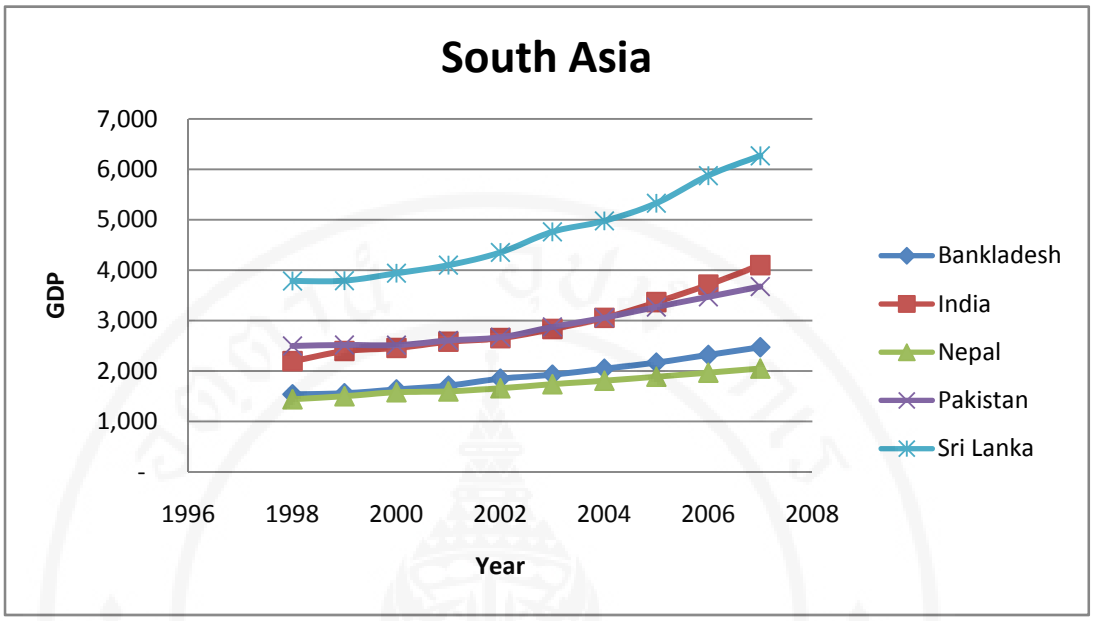
Figure 4.10: GDP of American countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.10 shows that the USA had the highest GDP per capita in this region and the GDP per capita trend line touched its highest point in 2007 at around $45,597. When compared with the amount of inbound tourism in Figure 3, it can be observed that the USA has both the highest GDP per capita and largest amount of Thailand arrivals. Hence, it can be presumed that GDP per capita may be one factor influencing the amount of Thailand's inbound tourism. Second in the graph is Canada which also had its own GDP per capita peak in 2007 of about $10,056, followed by Argentina and Brazil.

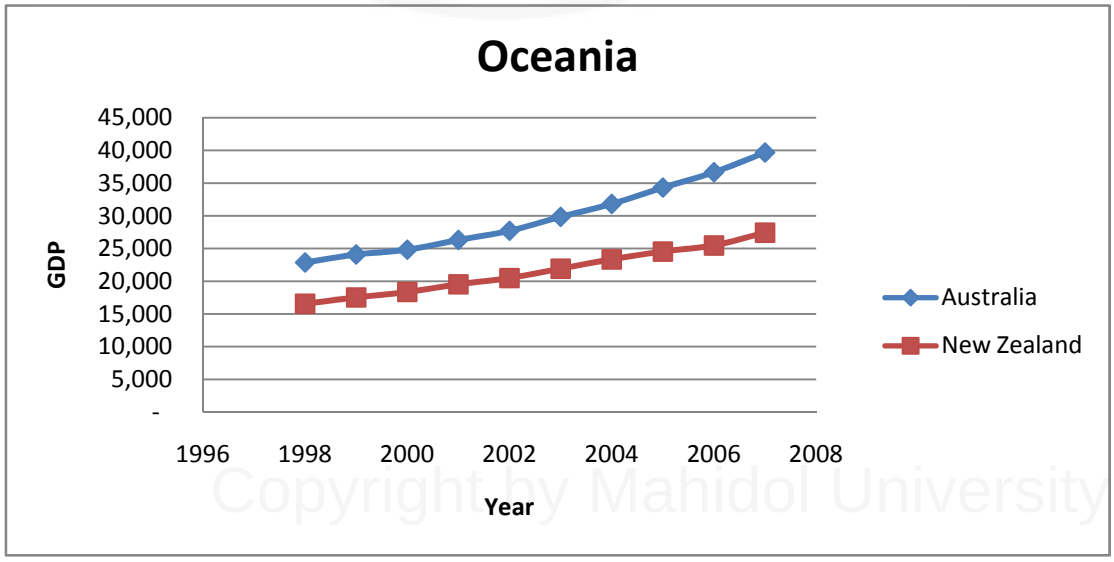
Figure 4.11: GDP of South Asian countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.11 shows the trend lines of GDP per capita in South Asia. Countries in this region have similar trends of GDP growth and the richest country is Sri Lanka. In 2007, Sri Lanka had a GDP per capita of approximately $6,270 while India and Pakistan had similar GDP amounts to each other.

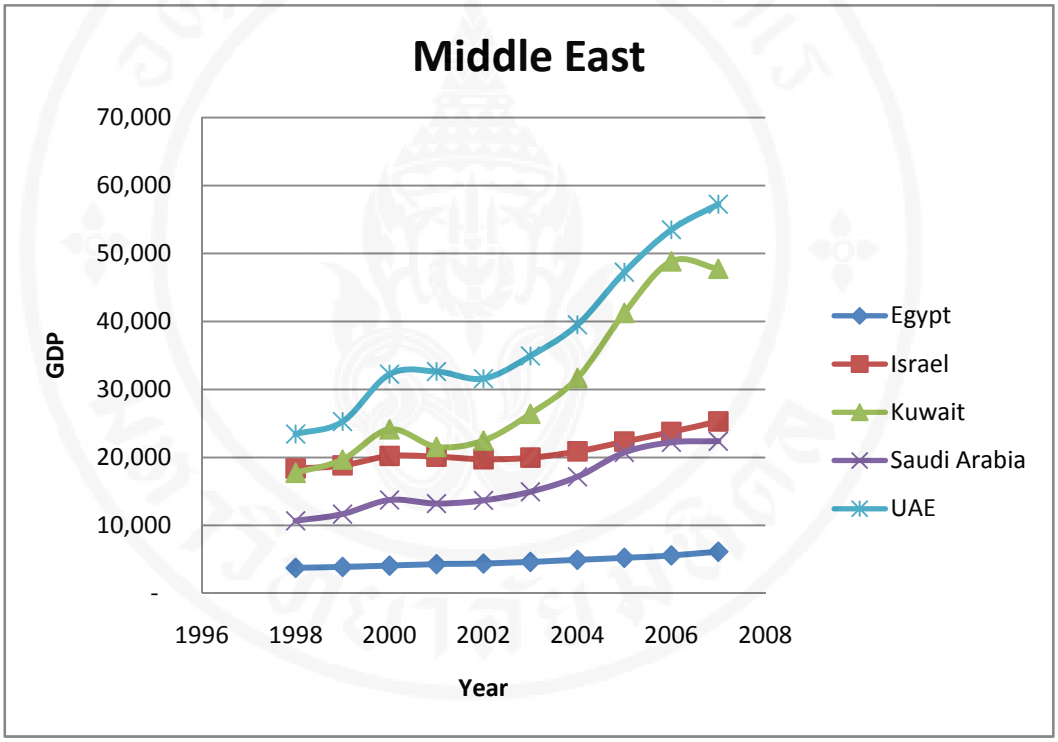
Figure 4.12: GDP of Oceania countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.12 shows only two countries in Oceania. The graph is quite clear in showing that Australia is the country with the highest GDP per capita and the trend line moves upward as does the trend line of New Zealand's. Although New Zealand has lower GDP per capita than Australia, its trend line shows a constant increase in such. Australia had its highest GDP per capita in 2007 with about $39,694 and on the same year, New Zealand had a GDP per capita of around $27,439.

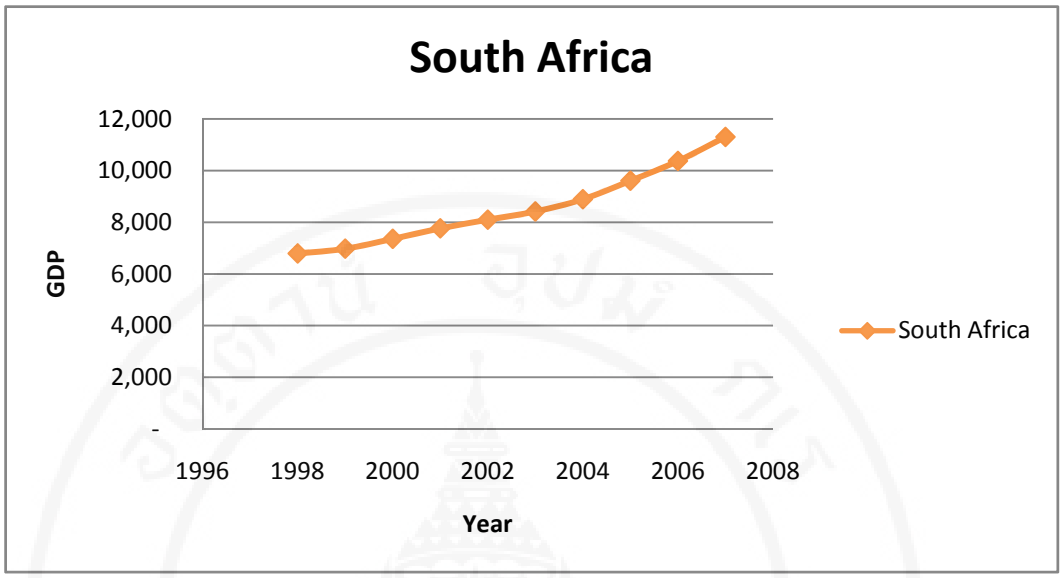
Figure 4.13: GDP per capita of Middle East countries from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.13 shows the trend lines of GDP per capita in the Middle East. The country with the highest amount is UAE or the United Arab Emirates. The trend line of UAE shows an increase more quickly than other countries within the same group and in 2007, UAE earned its highest amount of GDP per capita with about $57,259. Second place was Kuwait which had GDP per capita moving in a similar direction to UAE. Kuwait got its highest GDP per capita in 2006 with around $48,854 but the trend line moved downward in 2007.

Figure 4.14: GDP of South African from 1998-2007



Source: Penn World Table Version 6.3, University of Pennsylvania.

Figure 4.14 demonstrates the growth of GDP per capita in the country of South Africa only. The trend line connecting every year slopes upward and the country got its highest GDP per capita in 2007 with about $11,307.

Table 4.3 The estimated result of arrivals varying in over 10 years period

Variables	**Coefficient.**
constant	-2.958643
t-stat	-4.74
Population	0.672299
t-stat	23.37
Exchange rate	0.0583026
t-stat	3.33
GDP	1.789984
t-stat	23.37
Distance	-1.205029
t -stat	-15.34
Land	0.5759909
t-stat	5.55
Island	0.529489
t-stat	6.06
Border	1.687056
t-stat	14.64
number of observation	430

Source: The researcher's finding.

This table shows all the variables that impact to number of arrivals within 10 years period. We can conclude that all of variables have significant effect to decision making of tourists in positive way, except the distance that shows the negative effect because tourists no need to take long distance trip.

Table 4.4 The summarized results of estimated variables of Thailand inbound tourism since 1998-2007

Table 4.4.1 years 1998-2002

Variables	Coefficient				
	1998	**1999**	**2000**	**2001**	**2002**
Constant	-1.8514	-2.0626	-2.4649	-2.5386	-2.2282
t-stat	-1.12	-0.92	-1.11	-1.24	-1.16
Population	0.70244	0.68996	0.69894	0.66502	0.67231
t-stat	8.36	6.76	7.17	7.06	7.69
Exchange rate	-0.0244	0.01049	0.03645	0.05911	0.04988
t-stat	-0.55	0.16	0.6	1.05	0.92
GDP	1.78439	1.82004	1.76516	1.78028	1.81285
t-stat	11.13	10.62	10.25	10.22	10.39
Distance	-1.355	-1.3654	-1.2739	-1.2408	-1.3217
t-stat	-5.58	-4.77	-4.74	-4.78	-5.24
Land	0.54262	0.56589	0.47264	0.38258	0.40516
t-stat	1.76	1.66	1.34	1.03	1.08
Island	0.61269	0.59472	0.66898	0.63927	0.54077
t-stat	2.43	2.03	2.35	2.3	1.95
Border	1.61477	1.63966	1.65384	1.69035	1.59014
t-stat	5.05	4.23	4.18	4.35	4.24
Number of observation	43	43	43	43	43

Source: The researcher's finding.

Table 4.4 separates each part by year for ease of understanding and to clearly see results in-depth. The research result starts with Table 4.4.1 from 1998-2002; the results indicate that if the population of each country increases by 1%, it positively affects the number of tourists visiting Thailand by 0.702% in 1998 and 0.68%, 0.69%, 0.66% and 0.69% according years until 2002. On the other hand, the exchange rate shows non-significance value in all first five year and it shows a negative sign in 1998, it might be this year currencies was vary with Tom Yam Kung

crisis in 1997 and it induced Thai currency that faced with economic problem. However, exchange rate is the variable with no effect to arrival decision, because of the low absolute numbers of t-stat. Some countries spend money in USD while, some spend in Euro and other. There are many sources that show that many currency units do not vary with USD. It means that if USD depreciates the other currency such as Euro does not need to depreciate like dollar. Compose with main tourists in each part of Thailand is not the same group such as the main client of Phuket are European and Australian. Thus, exchange rate is not the factors that significantly impact to number of arrivals each year.

GDP data shows that in 1998-2002, if each country's GDP goes up by 1%, the number of people motivated enough to take a trip to Thailand should increase by 1.78%, 1.82%, 1.76%, 1.78%, and 1.81% orderly. In addition to this, a longer distance to a destination influences the amount of tourists to decrease amount of arrivals. Cause of distance still shows a negative coefficient, which means that if distance from Thailand to elsewhere increased by 1%, it caused the amount of Thailand arrivals from that country to decrease by 1.35% in 1998 and 1.36%, 1.27%, 1.24%, 1.32% arranging by year.

Table 4.4.2 years 2003-2007

Variables	Coefficient				
	2003	**2004**	**2005**	**2006**	**2007**
Constant	-1.6659	-6.4846	-6.9455	-7.2008	-5.9563
t-stat	-0.82	-3.06	-3.03	-3.21	-2.84
Population	0.668	0.70465	0.66322	0.67646	0.61209
t-stat	7.6	7.16	6.45	6.61	6.22
Exchange rate	0.05987	0.08695	0.09867	0.12532	0.09974
t-stat	1.12	1.5	1.72	1.98	1.68
GDP	1.8245	1.92021	1.79038	1.84909	1.69198
t-stat	9.47	10.22	8.45	9.22	9.3
Distance	-1.4235	-1.2058	-0.9898	-1.0231	-0.8981
t-stat	-5.58	-4.46	-3.76	-3.69	-3.45
Land	0.4775	0.67959	0.77261	0.76241	0.77179
t-stat	1.34	2.07	2.17	2.42	2.37
Island	0.49782	0.34151	0.57267	0.4394	0.39106
t-stat	1.66	1.09	1.66	1.38	1.34
Border	1.4727	1.5812	1.90773	1.69791	1.98412
t-stat	3.93	4.17	6.08	6.04	5.57
Number of observation	43	43	43	43	43

Source: The researcher's finding.

Table 4.4.2 could explain in the same way as table 4.4.1, but the researcher separated the last five years in this table. Population shows the positive effects throughout 5 years. Hence, if the population in each nation increased by 1%, it increased the amount of arrivals by 0.67%, 0.70%, 0.66%, 0.67%, and 0.61%, arranging since 2003-2007. Currency exchange rates in the last five years still show non-significant levels, hence, the researcher can conclude the result like the first five years above. GDP shows significant impact to number of arrivals. If GDP per capita increased 1%, this influenced the number of arrivals to increase by 1.82% in 2003 and 1.92%, 1.79%, 1.84%, and 1.69% respectively until 2007.

In addition, distance still shows the negative sign. It means that if distance increased by 1%, this reduced the amount of Thailand tourists since 2003-2007 by 1.42%, 1.20%, 0.98%, 1.02, and 0.89%, respectively.

For a sharing border between countries, there is an effect to increasing amount of arrivals in all 10 years, The coefficient on the dummy variable for a common border itself is estimated around an average of 1.68. As this paper is specified in logarithmic form, we interpret the coefficient on the dummy by taking the anti-log of the estimated dummy coefficient, subtract 1 from it and multiply the difference by 100. Hence, a coefficient of average 1.68 implies that, sharing border holding everything else constant, and the two countries that share a common border are estimated to engage arrivals in about 436 percent on average more than two countries who do not share a common border.

As the same being of Island would have an effect to encourage arrivals since 1998-2001. Cause of the coefficient on this dummy variable in 10 year periods on average is around 0.63. This implies that, the island shapes in a pair holding everything else constant, and the two countries, which are islands by nature, are likely to encourage arrivals in about 87 percent [(exp (0.63)-1)*100)] more than two countries which are not islands by nature.

The landlocked countries that have a colonial relationship with each other also impact to increasing amount of tourists since 2004-2007. Hence, the researcher has also included an effect for landlocked country that shows the significant positive impact to amount of arrivals. Hence, the researcher implies that, landlocked countries holding constant for increasing amount of arrivals between countries in a pair by about 95%[(exp (0.67)-1)*100)] more than two countries that have no landlocked area in 2004 and around 115% since 2005-2007. Thus, those of dummy variables can induce more arrivals.

4.3 Conclusion

In this chapter, the study explains the results of different variables in each case in the selected 43 countries around the world, measured by the many factors and variables that are concerned with both of economy and non-economy. The gravity model is used to find the outcome using a 95% statistical confidence level to explain each result. At the end of this chapter, it can be concluded that the estimated coefficient of all economic factors such as exchange rate, number of population, and GDP per capita were significant and it had affected to the number of Thailand inbound tourism in different term.

Moreover, non-economic indicators such as distance, land, island, and sharing border also have different effects to the amount of arrivals, although, coefficient of distance shows the negative sign. Thus, distance shows the inverse relationship with number of inbound tourists. This factor is distance between destination and departure. It can be said that distance is also a factor that affects visitors' minds because all results show that longer distance from destination to departure reduces the amount of arrivals. It is interesting to note that although distance is not an economic indicator, it has more influence on Thailand's inbound tourism than other factors. For the two countries in a pair, which are sharing border, landlocked, and islands by nature, are likely to encourage arrivals more than two countries which are not islands, landlocked or sharing border in common.

CHAPTER V
RESEARCH SUGGESTION AND CONCLUSION

5.1 Introduction

There are many factors that can influence the amount of inbound tourists traveling to Thailand such as culture, weather, geography, and so on. However, this research studies the number of arrivals focusing only on economic indicators. Thus, the results are explained from an economic point of view regarding Thailand and 43 other countries. Since Chapter 4, this study has discussed and analyzed results. In this chapter, the researcher will analyze each outcome in more detail and give some suggestions in clear detail as well.

5.2 Results conclusion

5.2.1 Economic indicators

The outcomes obtained are calculated using the gravity model. The researcher has analyzed 43 countries around the world and used economic factors as indicators and variables including population (thousands), GDP per capita, exchange rate (home-country currency vs. the US dollar), and distance. Moreover, the researcher has analyzed data, all coming from a 10-year period from 1998-2007.

5.2.1.1 Population

The researcher selected population figures from 43 countries to be included in this study's model, and the results show a statistically significant positive effect with a 95% confidence level. Hence, it is clear that the number of arrivals will increase if the numbers of citizens of the 43 countries increase.

5.2.1.2 Exchange rate

The researcher compared all currencies from the 43 countries to the U.S. dollar for an ease of understanding because the U.S. dollar is the standard unit of exchange rate comparison around the world. Most results show positive effect on the outcomes with a statistically significant 95% confidence level. Although, the exchange rate could not motivate visitors to travel to Thailand, but it showed positive effect to the number of arrivals each year. Hence, we can conclude that the exchange rate is depending on many economic factors in each country, because the differences of currency units and economic situations. Moreover, each currency units have independent trend that no need to vary with dollar. For example, in 2008 dollar was depreciated while, Euro and other currencies still appreciated. Thus, from this reason, the researcher can presume that different currencies have not the same impact to each nation's arrivals.

5.2.1.3 Gross Domestic Product (GDP)

GDP per capita is the one indicator that was an important factor which shows the highest positive effect in attracting a greater amount of inbound tourists to Thailand, as shown in all results. This is because GDP per capita represents the income, revenue, and standard of living of people in every country. When countries have a high GDP per capita, their citizens are more likely to have more spending power. Thus, the outcome indicates that if GDP per capita in the 43 countries increases, more visitors are likely to come to Thailand as well.

5.2.2 None-Economic indicators

5.2.2.1 Distance

Distance is a factor that shows a different value in this study's result, in the sense that the outcomes show a negative effect on the number of arrivals at a 95% confidence level. These results are explained by the observation that traveling shorter distances between destination and departure is more attractive than traveling longer distances for the same task. Passengers may feel that traveling longer distances is more of a waste of time as well as more expensive.

5.2.2.2 Land

Land in this paper, the researcher would mean that the countries are being a landlocked area, paired with the common colonizer area such as India and Kenya, both former are UK colonies (Derosa, 2007) would have value equals to 1. The value of 1 means that if a country that takes a pair with the other landlocked country and both share border together. On the other hand, for another pair that has no landlocked border sharing, will get the value of 0. However, the researcher found that, a pair country that has a landlocked colonial relationship together, there would be increased tourists since 2003-2007 more than the countries without any colonial relationship with landlocked country between each other.

5.2.2.3 Island

Island also has the meaning as landlocked in common. Assume that if the value of island is one when the countries in the pair are islands and zero if otherwise. Whether a pair of countries shares a common of Island colonial (Japan and Singapore), or the two countries, which are islands by nature, are likely to encourage arrivals more than two countries which are not islands by nature

5.2.2.4 Border

Border in this research would explain between countries that take a pair together and it has a sharing border or has a colonial relationship (Thailand and Lao). This dummy variable is equal to one when both countries in a given pair belong to the same regional trade agreement and zero if otherwise. The results show that, it's also useful to encourage many percent of arrivals when two countries have a sharing border together. However, border shows the huge amount percentage of its result; because the researcher found that there are only 2 countries among 43 countries (Lao and Malaysia) have a sharing border with Thailand, while the other countries show nothing. Thus, this is the cause that sharing border got weird number, not only this research got huge amount of coefficients, but also other papers got similar amount of them such as, the paper of Salvador-Gil-Pareja, Rafael Llorca-Vivero and J.A. Matinez-Serrano (2005) found around 178% of his dummy variables can increase more of trade than other countries that have no sharing border together. The paper of

Yenteshwar and Biman (2007) found that more than 90% of sharing border also engage more number of trade than a pair country that do not share a common border.

However, for Land, Island, and Border, the researcher would not take log-linear when analyzing the data in gravity model, because all of them are dichotomous variables (1,0). Moreover the researcher analyze all results by logarithmic form (base e), the researcher interpret the coefficient on the dummy by taking the anti-log of the estimated dummy coefficient in term of exponential form [(exp(x)-1)*100], So all results of Landlocked, Island and Border would subtract by 1 and multiply by 100 to analyze the outcomes.

5.3 Recommendations

The researcher has analyzed this report primarily using only economic factors and distance, but there are many ways to analyze the results. Hence, other methods may get different results, especially considering the fact that this study selected only 43 countries to find the outcome in a 10-year period. Thus, the outcome may have wide-ranging explanations depending on the countries selected. Moreover, only 10 years from 1998-2007 were chosen for the study and thus, the results are explained in detail for this range of time. For researchers who are willing to develop deeper into this topic, it may be beneficial to select a longer time period and use this study's data and findings as a basis for further research.

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