แบบจำลองอุปสงค์ของการท่องเที่ยว: ปัจจัยที่มีผลต่อรายได้จากนักท่องเที่ยวต่างชาติของประเทศไทย

เมธา ชำนิ

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
สาขาวิชาเศรษฐศาสตร์และการเงินระหว่างประเทศ
คณะเศรษฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2544
ISBN 974-03-0709-4

TOURISM DEMAND MODEL: DETERMINANTS OF THAILAND'S INTERNATIONAL TOURIST RECEIPTS

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A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Arts in International Economics and Finance
Faculty of Economics
Chulalongkorn University
Academic Year 2001

ISBN 974-03-0709-4

Thesis Title	Tourism Demand Model: Determinants of Thailand's International Tourist Receipts
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เมธา ชำนิ : แบบจำลองอุปสงค์ของการท่องเที่ยว: ปัจจัยที่มีผลต่อรายได้จากนักท่องเที่ยวต่างชาติของประเทศไทย. (TOURISM DEMAND MODEL: DETERMINANTS OF THAILAND'S INTERNATIONAL TOURIST RECEIPTS) อ. ที่ปรึกษา : รศ. ดร. สมชาย รัตนโกมุท, 102 หน้า. ISBN 974-03-0709-4.

เนื่องจากความสำคัญของอุตสาหกรรมการท่องเที่ยว โดยเฉพาะรายได้จากนักท่องเที่ยวต่างชาติ วิทยานิพนธ์ฉบับนี้จึงมุ่งที่จะวิเคราะห์ถึงปัจจัยสำคัญที่มีผลกระทบต่ออุปสงค์ของรายได้จากนักท่องเที่ยวต่างชาติของประเทศไทย รวมทั้งวิเคราะห์ถึงสถานการณ์และข้อมูลทางสถิติของอุตสาหกรรมการท่องเที่ยวของประเทศไทย วิทยานิพนธ์ฉบับนี้จะทำการศึกษาเฉพาะนักท่องเที่ยวต่างชาติเท่านั้น ไม่รวมถึงนักท่องเที่ยวภายในประเทศ โดยใช้ข้อมูลอนุกรมเวลารายปีแบบทุติยภูมิจากปี 2521 ถึงปี 2542 แบบจำลองทางเศรษฐมิติได้ถูกนำมาใช้กับห้าประเทศต้นทางของนักท่องเที่ยวเพื่อวิเคราะห์ถึงปัจจัยสำคัญดังกล่าว

ผลของการศึกษาชี้ให้เห็นว่าตัวแปรรายได้มีนัยสำคัญทางสถิติและมีความยืดหยุ่นต่ออุปสงค์สูงถึง 1.57 และ 1.94 ในสองประเทศ ตัวแปรทางด้านราคามีนัยสำคัญในสองประเทศและมีค่าความยืดหยุ่นเท่ากับ -0.81 และ -1.02 ในขณะที่ตัวแปรอัตราแลกเปลี่ยนมีนัยสำคัญเพียงแค่ประเทศเดียวและมีค่าความยืดหยุ่นเท่ากับ 0.79 ตัวแปรรายได้ในปีที่ผ่านมามีนัยสำคัญในสามประเทศและมีค่าความยืดหยุ่นระหว่าง -1.21 ถึง 2.89 ส่วนตัวแปรทางด้านค่าใช้จ่ายของสำนักงานการท่องเที่ยวมีนัยสำคัญถึงสี่ในห้าประเทศ โดยมีค่าความยืดหยุ่นระหว่าง 0.27 ถึง 0.46 ส่วนตัวแปรหุ่นของการตลาดแบบพิเศษ (ปีท่องเที่ยวไทย 2530) นั้นไม่พบว่ามีนัยสำคัญเลย ในขณะที่ตัวแปรหุ่นของวิกฤตการณ์ทางการเมืองของโลก (สงครามอ่าวเปอร์เซีย) นั้นพบว่ามีนัยสำคัญเพียงประเทศเดียว โดยมีค่าบวกลบของความยืดหยุ่นต่างจากที่คาดการณ์ไว้ มัลติโคลิเนียริตี (Multicollinearity) เป็นปัญหาหลักของการศึกษาครั้งนี้ ซึ่งผลการศึกษาคงจะดีกว่านี้ถ้าปราศจากปัญหาดังกล่าว

สาขาวิชา ..... ลายมือชื่อนิสิต.....
ปีการศึกษา 2544 ลายมือชื่ออาจารย์ที่ปรึกษา.....

4185844629 : MAJOR INTERNATIONAL ECONOMICS AND FINANCE

KEY WORD: tourism / demand / tourist receipts / determinants / elasticity

MAETA CHUMNI : TOURISM DEMAND MODEL: DETERMINANTS OF THAILAND'S INTERNATIONAL TOURIST RECEIPTS. THESIS ADVISOR : ASSOC. PROF. SOMCHAI RATANAKOMUT, Ph.D., 102 pp. ISBN 974-03-0709-4.

Due to the significance of tourism industry, especially international tourist receipts, this study aims to identify and examine some major determinants affecting the demand for Thailand's international tourist receipts and also to examine the situation and statistics of Thailand tourism industry. This study is restricted to only international tourist not domestic. The annually time-series data of 1978 to 1999 from secondary sources is employed. Econometric models were constructed and estimated on five selected countries of tourists' origin, in order to measure the response of demand to the change in determinants.

The empirical results show that income variable is statistically significant and highly elastic in two cases with elasticity of 1.57 and 1.94. The relative price is statistically significant in two cases with elasticity of -0.81 and -1.02, while the exchange rate variable is found to be significant in only one case with elasticity of 0.79. The lagged income variable is also found to be significant and highly elastic in three cases with elasticity range from -1.21 to 2.89. The variable of national tourism office marketing expenditures is found to be significant in four out of five cases with elasticity range from 0.27 to 0.46. The dummy variable on special marketing program (the Visit Thailand Year 1987) is insignificant in all cases, while the dummy variable on the world political crisis (the Persian Gulf War) is found to be significant in only one case with unexpected sign of coefficient. Multicollinearity were detected and is the biggest problem of the study, the results should be better without such problem.

Field of study ..... Student's signature .....

Academic year 2001 Advisor's signature .....

ACKNOWLEDGEMENT

Many people were very kind to help me in finishing this thesis. I would particularly like to sincerely thank my thesis advisor, Associate Professor Somchai Ratanakomut, Ph.D., for his insightful suggestions, which have given me the valuable knowledge needed for this thesis.

I would like to express my grateful appreciation to my thesis committee chairman, Assoc. Prof. Sriwongse Sumitra, for her kindness and cheerful comments. I also express my sincerest appreciation toward Assoc. Prof. Budhagarn Rutchatorn, Ph.D. and Assoc. Prof. Kitti Limsakul, Ph.D. for their valuable comments.

I thankfully appreciate the generosity of Miss Karuna Jaruraks, who has always kept me updated and informed, without her help this thesis would not have been completed. I also would like to thank all my friends for their encouragement. Finally, I would like to express my sincerest gratitude to my father and mother, for their generous patience and supports all through my life.

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CHAPTER I

INTRODUCTION

Tourism has been one of the most significant essences of human nature for a long time. A large portion of people in this world must have traveled from their usual environment at least once in their lifetime. This study recognizes the important of tourism and the need of insightful researches covering the area of tourism; therefore, this study follows such interesting subject of tourism. In the first chapter, this study rationalizes significant background of the study, and what the study aims to accomplish through following topics: Statement of the Problem, Objectives of the Study, Hypothesis of the Study, Scope of the study, Definitions of Tourism, Benefits of the Study, and Organization of the Study.

1.1 Statement of the Problem

The world today is more economically interdependent than any other time in the history, which has led to the globalization of product, service and capital market. The change of economic situation and the whole world becoming closely inter-linked result from technological advances in communication which makes international trade becomes more and more important.

Many economists and business experts believe that no country can totally concentrates on domestic market or trade solely within its own. The realities of the modern world make all business international so every country are forced to concentrate on international trade not only in goods, but also services.

Tourism, one of international trades in services, now become an important share in global market. Lee, Var, and Blaine (1996: 527) stated that tourism today carries not only sociocultural and political significance but also provides

considerable economic benefits. In the 20th century, tourism has emerged as one of the largest and the fastest growing industry in the global economy (Eadington and Redman, 1991 cited in Lee et al., 1996: 527). Some say that travel and tourism is the "world's largest industry and generator of quality jobs" (World Travel and Tourism Council [WTTC], 1995: 1 cited in Frechtling, 1996: 1). They estimate that travel and tourism directly and indirectly contributes more than 10 per cent of the gross world product, the most comprehensive measure of the total value of the goods and services the world's economy produce (Frechtling, 1996: 1).

Also stated by Frechtling (1996: 1), the World Travel and Tourism Council estimated that in 1995 gross world product, both directly and indirectly related to travel and tourism, would total about $3.4 trillion, supporting 212 million jobs, and generating $655 billion in taxes. This activity is supported by $7 trillion invested in world plant, equipment and infrastructure related to travel and tourism. While these numbers are difficult to verify, there is no doubt that tourism activities, encompassing travel away from home for business or pleasure, are a substantial part of lifestyles of the world's residents, or that a very large industry has grown up to serve these travelers.

Tourism exports have become an important sector in many countries as a growing source of foreign exchange earnings. This has arisen through the rapid expansion of international tourism, which is mainly attributed to high growth rates of income in developed and newly industrialized countries, and the substantial decrease in real transportation costs between countries. Besides, generating foreign exchange earnings and alleviating the balance of payments problems encountered in many countries, international tourism also creates employment. As a labor-intensive industry, it absorbs an increasing percentage of the workforce released from agriculture and the manufacturing industries, and prevents large-scale unemployment. Other benefits contributed by international tourism include increasing income, savings, investment, and economic growth (Lim, 1997: 835).

Tourism also contributes to the distribution of income through the transfer of wealth from North to South and from the industrialized to the developing

countries. Many countries, however, use tourism to be a opportunities to promote their arts, culture and improve their life quality of the people, increase employment in less-developing region. Now, because of the outstanding role of tourism, most countries try to promote cooperation between the public, private sector and local communities as well as international cooperation with neighboring countries in tourism development, development of communications and transportation networks and facilitation systems on various tourism service in assuming a role in the efforts to resolve or prevent tourism resources to maximizing their value in order to attract more interest from international visitors. With the help of Internet this industry have many more advantages to come in the near future.

Many small countries without precious natural resources and raw materials to support export sector, such as Taiwan, Hong Kong and Singapore, have a positive balance of payment or current account surplus because they have foreign currencies inflow from international visitors of other countries.

For Thailand, the government has also perceived the potential contribution of tourism to the economy as witnessed by the inclusion of tourism promotion in every economic and social development plan, especially starting from the fourth economic and social development plan which devoted an entire separate section for tourism development (National Economic and Social Development Board, 1976 cited in Bang-ornrat Rojwannasin, 1982: 2).

With regard to tourism situation in Thailand, in 1997, It stands in the third rank of top tourism destination in East Asia and The Pacific behind China and Hong Kong and the fourth rank of top twenty tourism earners in East Asia and The Pacific (See Table 2.1 and 2.2).

During the past five years, tourism generates the highest income in terms of foreign exchange, as compared with all exports of goods. Its ratio of raw material import content is also lower than many other important exporting industries, subsequently its net income is comparatively much higher.

In 1998, Thailand become one of the only two countries, another country is China, has enjoyed a positive growth of 7 % in the number of foreign tourist arrivals despite a slump in Asian tourism in general resulting from the regional economic doldrums. This is the result from the bath depreciation against US dollar and political unrest in neighboring countries, which have been major delivers for the Thai tourism boom.

Tourism meets very well the objective of income distribution set out in the National Economic and Social Development Plan. It also helps in spreading of modernization to the region. It is believed to help solve Thailand's economic crisis, so the Amazing Thailand campaign is launched for such purpose.

During the Amazing Thailand 1998 and 1999 campaigns, total arrivals to Thailand is 6,230,000 between January and October 1998, up 7.34 % from the same period in 1997. The success of Amazing Thailand campaigns leads to the introduction of Amazing Thailand 2000, "the Enchantment in the New Millennium" campaign. 2000 is also the year Tourism Authority of Thailand celebrates its 40th anniversary. Another campaign, "Thailand as a shopping paradise", is also introduced by refunding the value-added tax (VAT) to international tourists.

Resulted from the economic crisis Thailand has faced, revenue from tourism is one of the two main categories the government used to bring in foreign currencies. Many countries, such as Malaysia and Korea, have followed Thailand's path and emphasize on their tourism industry.

Obviously, tourism is a major force in global trade. It plays a vital role in the social, cultural and economic development of most nations, and has the potential both to preserve heritage and to destroy it. Despite the importance of the industry, reliable, verifiable and objective information can be frustratingly difficult to obtain (Smith, 1995: 1).

John Naisbitt, in his best-selling book "Global Paradox", subscribes to the concept that tourism will be one of the three industries that will drive the world

economy into the twenty-first century. He is also author of the idea that small and medium-sized organizations are growing in importance in the expanding global economy. The managers of these organizations have the agility to act quickly and efficiently to take advantage of trend changes, emerging markets and new business opportunities (Frechtling, 1996: 1).

Measures must be taken to encourage the positive effects and reduce the negative effects. These measures must be incorporated into tourism plans and more generally into the country's international tourism policy. Without meaningful and accurate estimates of international tourism demand, the public and private sectors will not invest scarce resources efficiently (Lee et al., 1996: 540). In setting monetary, fiscal and exchange rate policy, governments must take account of the likely futre course of the economy. Macro-economic models play an important role in the formulation of macro-economic policy. The formulation and analysis of macro-economic policy decisions requires the consistent framework provided by macro-economic models (Currie, 1994: 4).

In conclusion, Thailand is one of the countries which is famous in tourism and it is strongly believed that tourism play an important role in economy and also related business, employment, national standard and government's policies. There is significant need of insightful and accurate information, understanding, and estimate based on appropriate analytical methods on Thailand's tourism demand is important for policy makers, both in public and private sectors, in Thailand and elsewhere. In order for the government to make effective decisions on a range of important policy issues (i.e. economic development, strategic planning, balance of payments, employment, and the marketing programs of national tourism offices), it should have an appreciation of factors influencing international tourism demand (Vanegas and Croes, 2000: 946). There are 3 important factors generating revenue for the industry, which are number of tourists, length of stay and tourist receipts. As a result, this study tries to show that it's valuable to determine which factors affect tourism demand in term of international tourist receipts. This study aims to identify the determinants of demand for Thailand's international tourist receipts and estimate their impact multipliers by using tourism

demand model for further policy recommendation. This study also presents and analyses some important perspectives and statistics of Thailand's international tourism as well.

1.2 Objective of the Study

Due to the importance of the tourism sector, ways should be found to maintain or increase the potential growth of the industry. In order to do so, a better understanding of the tourist industry must be made available to policy makers by completing the following objectives:

1. To identify and analyze the impact of some of the main factors affecting Thailand's international tourist receipts over time.
2. To present and analyze tourist receipts in Thailand using the data from surveys conducted by TAT for further policy recommendation.
3. To present and analyze some of the statistics and trends on Thailand's international tourism industry.

1.3 Hypothesis of the Study

The estimation of tourism demand model in term of Thailand's international tourist receipts and its determinants follows the following hypothesis:

1. Demand for Thailand's international tourist receipts is a positive function of income, exchange rate, marketing expenditure, past income, and special marketing program.
2. Demand for Thailand's international tourist receipts is a negative function of price and world political crisis.

1.4 Scope of the Study

This study is restricted to only foreign tourists visiting Thailand and will not cover domestic tourists because determinants of foreign and domestic tourists may be different. Moreover, even for the same determinants, the response of tourists may be different.

The study employs annually time series data from the period of 1978 to 1999. All of the data collected from secondary sources such as Tourism Authority of Thailand and International Monetary Fund. Although data prior to this period are available, they are not complete and inconsistent with data in the period under study.

1.5 Definitions of the Study

Frechtling (1996: 2-3) stated: while there are many definitions of tourism in use today, the World Tourism Organization (WTO), the affiliate of the United Nations serving as a global forum for tourism policy and issues, is working to standardize tourism terminology and classifications throughout the world. Such standardization will permit comparisons across studies, encourage the accumulation of knowledge about tourism activities, and assist those beginning to study tourism in defining their terms. These standards have been adopted by the United Nations Statistical Commission as well.

In the process of encouraging uniformity in tourism data collection and improving world knowledge about tourism behavior and consequences, the following World Tourism Organization definitions are observed.

The **visitor** is the foundational unit in the UN/WTO structure and is defined as any person travelling to a place other than that of his or her usual

environment for less than 12 months and whose main purpose of the trip is other than the exercise of an activity remunerated from within the place visited.

Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes.

Tourists are visitors who stay at least one night in a collective or private accommodation in a place visited.

The **same-day visitor** is a visitor who does not spend the night in a collective or private accommodation in the place visited. This includes cruise passengers who disembark in a country but spend their nights on board ship.

Tourism expenditure is the total consumption expenditure made by a visitor on behalf of a visitor for and during his or her trip and stay at a destination.

The **tourism industry** is the set of enterprises, establishments and other organizations one of whose principal activities is to provide goods and/or services to tourists.

A term central to this study yet not officially defined by the World Tourism Organization is "tourism demand". As employed by Frechtling (1996: 3):

Tourism demand is a measure of visitors' use of a good or service.

'Use' in this case means "to avail oneself of; apply to one's own purposes". Such use includes the economists' concept of consumption, as well as the presence of a visitor at a destination, port of entry, or other tourism facility, and on a transport vehicle, regardless of whether an exchange takes place. Consequently, visitor arrivals in a country or local area constitute tourism demand since visitors avail themselves of the services of a destination in arriving there. Tourism demand can be

measured in a variety of units, including a national currency, arrivals, nights, days, distance traveled, and passenger-seats occupied.

Another important term central to this study is:

Tourist receipts or **tourism receipts** is receipts in form of direct of indirect currency payments made by tourists from abroad to cover the cost of goods and services excluding expenses of international transportation. The calculation of tourist or tourism receipts is made by multiplying the total number of international tourists by the average length of stay and by the average expenditure per person per day.

1.6 Benefits of the Study

According to the significance of demand for Thailand's international tourist receipts, this study would provides following benefits:

1. Supplies basic knowledge and better understanding of demand for Thailand's international tourist receipts and its reaction to some determinant factors.
2. Supplies basic knowledge and better understanding of Thailand's international tourism situation and statistics.
3. Can be applied as a guideline in policy planning and demand management of Thailand's tourism industry by government and private sectors.
4. Can be used as guideline in future studies.
5. Can be used in tourism demand forecasting.
6. Encourages attention in tourism industry.

1.7 Organization of the Study

This study is organized into five chapters. The first chapter, Introduction, describes significant background, rationale, and aims of the study through statement of the problem, objectives of the study, hypothesis of the study, scope of the study, definitions of tourism, benefits of the study, and organization of the study. The second chapter, discusses situation and statistics of international tourism in Thailand and are described through share from East Asia and the pacific, international tourism receipts, comparison of tourism receipts and other major exports, tourism balance, international tourist arrivals, and Length of stay. In chapter three, this study reviews relevant literatures both in theoretical background and empirical studies, and describes methodology for this study. The fourth chapter examines data use in the study, then estimates and presents empirical results of the study. The final chapter, chapter five, explains the conclusions obtained from the study by exhibiting summary, policy implications, limitations of the study, and suggestion for further study.

CHAPTER II

INTERNATIONAL TOURISM IN THAILAND

Knowing the significance of this study and what the study tries to accomplish stated in chapter I; in chapter II, the study discusses international tourism in Thailand. This chapter provides some important character and statistics of international tourism situation in Thailand through the following topics:

2.1 Share from East Asia and the Pacific

2.2 International Tourism Receipts

2.3 Tourism Receipts and Other Major Exports

2.4 Tourism Balance

2.5 International Tourist Arrivals

2.6 Length of Stay

2.1 Share from East Asia and the Pacific

In the first part of this chapter, this study discusses share of Thailand's international tourism from East Asia and the Pacific. Overall situation, share of Thailand in term of tourism receipts and international tourist arrivals are presented in order to provide a better view of the topic.

Although destinations in the Asia Pacific such as Bali, Penang, Langkawi, Singapore, and Hong Kong, which are competitors to Thailand, have recovered and applied a strategy to offer competitive special tourism prices to help recover their economy, they did not succeed in attracting markets from Thailand. The key factors that are advantageous to Thailand's inbound tourism were safety from

natural disasters, the political stability in comparison to Indonesia and Taiwan, including the cooperation from tourism business operators that provided various tourism selling promotions, as well as the VAT refund for tourists program. Generally in 1999, Thailand was successful in its inbound tourism promotion under the campaign "Amazing Thailand 1998-1999" (Tourism Authority of Thailand [TAT], 1999: 7).

In term of international tourism receipts, Thailand ranked fourth in both 1985 and 1997. In 1997, the Thai share of the region's total came behind China, Australia, Hong Kong, respectively. The international tourism receipts in 1997 was 8,700,000,000 US$. The Thai share of international tourism receipts in East Asia and the Pacific in 1997 was 10.5 %, which increase by 0.4 % compare to the year 1996. In term of South East Asia, Thailand ranked after Singapore in 1985. However, in 1997, Thailand had the highest share in South East Asia; followed by Singapore, Indonesia, and Malaysia. (See Table 2.1)

Table 2.1 Share of Thailand from East Asia and the Pacific by International Tourism Receipts

TOP TOURISM EARNERS IN EAST ASIA AND THE PACIFIC International tourism receipts (excluding transport)					
Rank	Rank	Country	Receipts (Million US$)	% change	% of total
1985	1997		1997	1997/96	1997
3	1	CHINA	12074	18.4	14.5
6	2	AUSTRSLIA	9324	5.8	11.2
1	3	HONGKONG	9242	-14.7	11.1
4	4	THAILAND	8700	0.4	10.5
2	5	SINGAPORE	7993	0.4	9.6
11	6	INDONESIA	6625	5.0	8.0
9	7	KOREA REP.	5200	-4.2	6.2
5	8	JAPAN	4425	8.5	5.3

10	9	MALAYSIA	3850	-1.9	4.6
8	10	TAIWAN	3705	1.9	4.5
-	11	MACAU	3317	2.9	4.0
7	12	PHILIPPINES	2750	1.8	3.3
12	13	NEW ZEALAND	2510	3.2	3.0
13	14	GUAM	1450	2.5	1.7
15	15	N.MARIANA IS	672	0.3	0.8
TOTAL EAST ASIA/PACIFIC			83211	2.0	100
Source: World Tourism Organization (WTO)					

In term of International tourist arrivals, Thailand ranked fifth in top tourism destinations in 1985. However, in 1997, Thailand ranked third in top tourism destinations after China and Hong Kong. The number of international tourist arrivals in 1997 was about 7,263,000 which obtain about 8.1 % of the region' s share; 1 % higher than 1996. In 1985, in term of South East Asia, Thailand came third after Malaysia and Singapore respectively. However, in 1997, Thailand had the highest share in South East Asia; followed by Malaysia, Singapore, and Indonesia. (See Table 2.2)

Table 2.2 Share of Thailand from East Asia and the Pacific by International Tourist Arrivals

TOP TOURISM DESTINATION IN EAST ASIA AND THE PACIFIC International tourist arrivals (excluding same-day visitors)					
Rank	Rank	Country	Arrivals (Thousand)	% change	% of total
1985	1997		1997	1997/96	1997
1	1	CHINA	23770	4.4	26.4
2	2	HONG KONG	10406	-11.1	11.5
5	3	THAILAND	7263	1.0	8.1
3	4	MALAYSIA	7200	0.9	8.0
4	5	SINGAPORE	6542	-1.0	7.3
12	6	INDONESIA	5065	0.6	5.6

7	7	MACAU	4915	0.5	5.4
10	8	AUSTRSLIA	4286	2.9	4.8
6	9	JAPAN	4226	10.1	4.7
9	10	KOREA REP.	3908	6.1	4.3
8	11	TAIWAN	2371	0.6	2.6
11	12	PHILIPPINES	2223	8.5	2.5
-	13	VIET NAM	1716	6.8	1.9
13	14	NEW ZEALAND	1615	5.6	1.8
15	15	GUAM	1382	1.4	1.5
	TOTAL EAST ASIA/PACIFIC		90201	1.1	100
Source: World Tourism Organization (WTO)					

2.2 International Tourism Receipts

This part of chapter II goes into International Tourism Receipts of Thailand by providing insights of some significant information and statistics relates to the topic. In order to do so, this study discusses first, Past trend, and second, the overall situation of international tourism receipts in Thailand.

2.2.1 Past Trend

This study examines the trend of international tourism receipts of Thailand by two separations, in term of Baht and US$. In both cases, international tourism receipts of Thailand seems to have upward trends though differ a little after the economic crisis, which began in 1997. Such difference is resulted by the depreciation of Thai Baht.

In term of Baht, 1970 total international tourism receipts of Thailand was about 2,175 million Baht. The total receipts did not increase much until

1978 which the number almost double from 1977. The upward trend continued gradually through early 80s. After reaching 50,000 million Baht in 1987, the gradient increased in a steeper manner. An evidence of a drop could only be seen in 1991, apart from that, the rise continued rapidly through the 90s. In 1999, the total international tourism receipts of Thailand was 253,018 million Baht.* (See Figure 2.1)

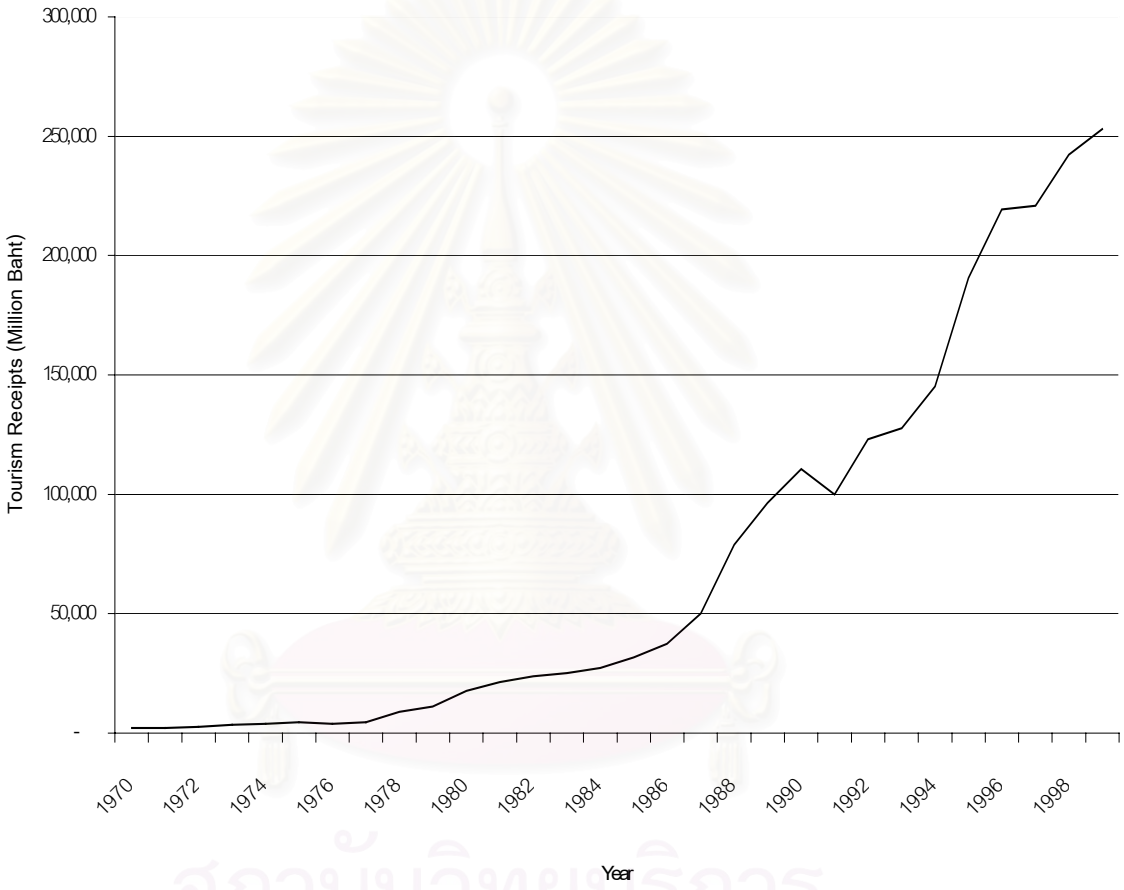

Figure 2.1 International Tourism Receipts of Thailand 1970-1999 (Baht)

Source: Tourism Authority of Thailand

* See data in Appendix A, p. 85

In term of US$, 1970 total international tourism receipts of Thailand was about 105 million US$. The same as receipts in term of Baht, the difference was not clear until 1977. Followed the same pattern, in 1982, the number reach 1,000 million US$. The number started rising rapidly in 1986, with a drop in 1991. The only difference was that after reaching the highest of 8,664 million US$ in1996, the number dropped to 7,048 and 5,934 million US$ respectively, as a result of the Baht depreciation during the economic crisis. The total international tourism receipts of Thailand had picked up to 6,695 million US$ in 1999.* (See Figure 2.2)

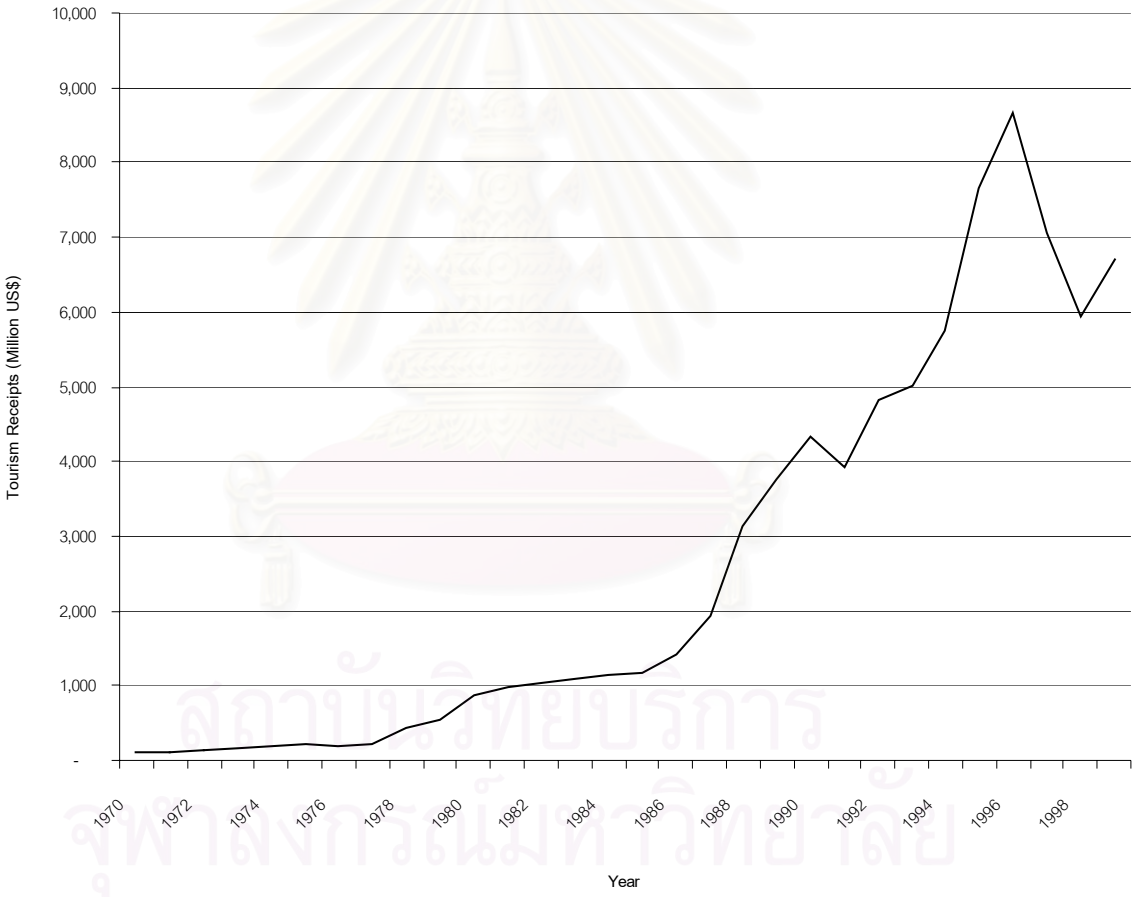

Figure 2.2 International Tourism Receipts of Thailand 1970-1999 (US$)

Source: Tourism Authority of Thailand

* See data in Appendix A, p. 85

2.2.2 Overall Situation

The calculation of international tourism receipts is made by multiplying the total number of international tourists by the average length of stay and by the average expenditure per person per day. In 1999, Thailand experienced international tourism receipts of 253,018.29 million Baht or 6,695.38 million US$, raising by 4.48 percent from 1998. The average expenditure per person per day was 3,704.54 Baht or 98.03 US$ per person per day. Next, this study presents the statistics of international tourism receipts by each of the market group and by country of residence.

Table 2.3 International Tourism Receipts of Thailand 1999 (East Asia)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
East Asia	5,195,972	5.31	4,270.07	112.99	117,813.88	3,117.59
ASEAN	1,941,415	4.03	4,138.75	109.52	32,381.70	856.87
Brunei	9,277	1.41	6,682.86	176.84	87.42	2.31
Indonesia	132,216	6.10	3,991.89	105.63	3,219.53	85.20
Laos	71,722	8.35	4,273.07	113.07	2,559.05	67.72
Malaysia	991,060	3.19	3,985.90	105.47	12,601.35	333.46
Philippines	87,326	6.47	3,448.85	91.26	1,948.60	51.56
Singapore	604,867	4.08	4,545.33	120.28	11,217.23	296.83
Vietnam	44,947	4.83	3,445.52	91.18	748.00	19.79
China	775,626	7.69	4,262.70	112.80	25,425.13	672.80
Hong Kong	429,944	4.11	4,502.26	119.14	7,955.18	210.53
Japan	1,064,539	6.42	4,507.04	119.27	30,802.68	815.10
Korea	338,039	3.90	4,352.60	115.18	5,738.25	151.85
Taiwan	557,629	5.92	3,882.40	102.74	12,816.43	339.15
Others	88,780.00	6.65	4,563.80	120.77	2,694.41	71.30

Source: Tourism Authority of Thailand

Notes: - Tourism receipts exclude expenditures by overseas Thais

- Exchange rate 1 US$ = 37.79 Baht

In 1999, total international tourism receipts from East Asia market was 117,813.88 million Baht or 3,117.59 million US$ which is the highest within all groups. From ASEAN, the number was 32381.17 million Baht or 856.87 million US$ and Malaysia had the highest share with 12,601.35 million Baht or 333.46 million US$ follow by Singapore, although Singapore had higher average expenditure. Malaysia and Singapore were only markets from ASEAN which the receipts exceed 10,000 million Baht. In term of average expenditure, Brunei had the highest share, follow by Singapore, Laos, and Malaysia. (See Table 2.3)

International tourism receipts of 30,802.68 million Baht or 815.10 million US$, which is the highest in East Asia, came from Japan. China came second with 25,425.13 million Baht or 672.80 million US$. In term of average expenditure, Japan had the highest, follow by Hong Kong and China respectively. (See Table 2.3)

Table 2.4 International Tourism Receipts of Thailand 1999 (Europe)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
Europe	1,990,449	13.67	2,861.08	75.71	77,848.34	2,060.02
Austria	42,874	14.66	3,114.47	82.42	1,957.55	51.80
Belgium	46,352	14.97	2,833.98	74.99	1,966.47	52.04
Denmark	78,446	14.54	2,693.04	71.26	3,071.70	81.28
Finland	49,465	13.39	2,880.53	76.22	1,907.88	50.49
France	227,219	12.31	2,486.63	65.80	6,955.28	184.05
Germany	375,345	15.83	2,453.28	64.92	14,576.67	385.73
Italy	113,884	12.44	3,172.39	83.95	4,494.38	118.93
Netherlands	105,825	14.44	2,626.11	69.49	4,012.99	106.19
Norway	55,062	11.99	2,664.66	70.51	1,759.19	46.55
Russia	36,574	10.19	3,474.64	91.95	1,294.96	34.27
Spain	29,939	9.58	2,790.21	73.83	800.28	21.18
Sweden	162,465	13.85	2,727.88	72.19	6,138.12	162.43
Switzerland	108,632	14.70	2,868.48	75.91	4,580.65	121.21

United Kingdom	425,688	14.13	3,274.46	86.65	19,695.79	521.19
East Europe	50,973	9.49	3,771.50	99.80	1,824.40	48.28
Others	81,706	9.00	3,824.09	101.19	2,812.06	74.41
Source: Tourism Authority of Thailand						
Notes: - Tourism receipts exclude expenditures by overseas Thais - Exchange rate 1 US$ = 37.79 Baht						

Total international tourism receipts from Europe, in 1999, was 77,848.34 million Baht or 2,060.02 million US$. Total average expenditure was 2,861.08 Baht or 75.71 US$ per person per day. United Kingdom had the highest receipts within Europe with 19,695.79 million Baht or 521.19 million US$, followed by Germany with 14,576.67 million Baht or 385.73 million US$. Those were the only two countries that had the receipts more than 10,000 million Baht. France and Sweden were also important markets in term of tourism receipts. In term of average expenditure, Russia and East Europe were important markets, followed by United Kingdom, Italy, and Austria. (See Table 2.4)

Table 2.5 International Tourism Receipts of Thailand 1999 (The Americas)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
The Americas	514,595	8.79	4,395.61	563.75	19,881.61	526.11
Argentina	4,989	11.32	4,584.64	121.32	258.92	6.85
Brazil	3,761	8.54	4,312.18	114.11	138.50	3.67
Canada	76,501	10.56	3,463.38	91.65	2,797.89	74.04
USA	417,860	8.54	4,602.34	121.79	16,423.55	434.60
Others	11,484	5.27	4,341.47	114.88	262.75	6.95
Source: Tourism Authority of Thailand						
Notes: - Tourism receipts exclude expenditures by overseas Thais - Exchange rate 1 US$ = 37.79 Baht						

In 1999, total international tourism receipts from The Americas was 19,881.61 million Baht or 526.11 million US$ with total average expenditure of

4,395.61 Baht or 563.75 US$ per person per day. USA had the highest, both in term of receipts and average expenditure, share with tourism receipts of 16,423.55 million Baht or 434.60 million US$. Canada had the second highest share with tourism receipts of 2,797.89 million Baht or 74.04 million US$. In term of average expenditure, Canada was the lowest. (See Table 2.5)

Table 2.6 International Tourism Receipts of Thailand 1999 (South Asia)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
South Asia	280,422	9.55	4,691.85	124.16	12,564.91	332.49
Bangladesh	25,300	7.06	6,138.77	162.44	1,096.50	29.02
India	163,980	11.31	4,290.24	113.53	79,56.73	210.55
Nepal	16,681	6.70	4,390.39	116.18	490.68	12.98
Pakistan	39,054	6.60	5,378.94	142.34	1,386.46	36.69
Sri Lanka	26,612	6.85	6,279.33	166.16	1,144.67	30.29
Others	8,795	10.65	5,229.91	138.39	489.87	12.96

Source: Tourism Authority of Thailand

Notes: - Tourism receipts exclude expenditures by overseas Thais
- Exchange rate 1 US$ = 37.79 Baht

In 1999, total international tourism receipts of South Asia was 12,564.91 million Baht or 332.49 million US$ and total average expenditure was 4,691.85 Baht or 124.16 US$ per person per day. In term of tourism receipts, India had the highest share in the group with tourism receipts of 7,956.73 million Baht or 210.55 million US$. Although Pakistan had higher average expenditure, but their tourism receipts was lower than India. (See Table 2.6)

Table 2.7 International Tourism Receipts of Thailand 1999 (Oceania)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
Oceania	350,555	11.08	3,179.35	84.13	12,349.07	326.78
Australia	303,844	10.60	3,240.26	85.74	10,436.06	276.16
New Zealand	44,183	14.61	2,852.71	75.49	1,841.46	48.73
Others	2,528	7.45	3,799.39	100.54	71.56	1.89
Source: Tourism Authority of Thailand						
Notes: - Tourism receipts exclude expenditures by overseas Thais - Exchange rate 1 US$ = 37.79 Baht						

In 1999, total international tourism receipts from Oceania was 12,349.07 million Baht or 326.78 million US$ and total average expenditure was 3,179.35 Baht or 84.13 US$ per person per day. Australia had higher both in term of tourism receipts and average expenditure. Tourism receipts from Australia was 10,436.06 million Baht or 276.16 million US$ and average expenditure was 3,240.26 Baht or 85.74 US$ per person per day. (See Table 2.7)

Table 2.8 International Tourism Receipts of Thailand 1999 (Middle East)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
Middle East	175,106	9.66	4,726.91	125.08	7,995.69	211.58
Egypt	4,920	7.66	5,987.93	158.45	225.67	5.97
Israel	64,981	11.30	3,823.51	101.18	2,807.55	74.29
Kuwait	17,203	13.69	5,588.96	147.90	1,316.25	34.83
Saudi Arabia	12,362	8.30	4,762.39	126.02	488.64	12.93
U.A.E.	29,599	8.82	5,658.24	149.73	1,477.16	39.09
Others	46,041	6.94	5,259.12	139.17	1,680.42	44.47
Source: Tourism Authority of Thailand						
Notes: - Tourism receipts exclude expenditures by overseas Thais - Exchange rate 1 US$ = 37.79 Baht						

In 1999, total international tourism receipts from Middle East was 7,995.69 million Baht or 211.58 Million US$ and total average expenditure was 4,726.91 Baht or 125.08 US$ per person per day. Although was the lowest in term of average expenditure, tourism receipts from Israel was the highest in the group with 2,807.55 million Baht or 74.29 million US$. Average expenditure by Egypt was the highest, followed by U.A.E. (See Table 2.8)

Table 2.9 International Tourism Receipts of Thailand 1999 (Africa)

Country of Residence	Number of Arrivals (Persons)	Length of Stay (Days)	Average Expenditure (Person/Day)		Receipts (Millions)	
			Baht	US$	Baht	US$
Africa	73,233	9.44	6,603.01	174.73	4,564.79	120.79
South Africa	33,821	6.14	5,900.82	156.15	1,225.37	32.43
Others	39,412	12.26	6,911.17	182.88	3,339.42	88.37
Source: Tourism Authority of Thailand						
Notes: - Tourism receipts exclude expenditures by overseas Thais - Exchange rate 1 US$ = 37.79 Baht						

In 1999, total international tourism receipts from Africa was 4,564.79 million Baht or 120.79 million US$ and total average expenditure was 6,603.01 Baht or 174.73 US$ per person per day. International tourism receipts from South Africa was 1,225.37 million Baht or 32.43 million US$ and average expenditure was 5,900.82 Baht or 156.15 US$. For other countries from Africa, international tourism receipts was 3,339.42 million Baht or 88.37 million US$ and average expenditure was 6,911.17 Baht or 182.88 US$ per person per day. (See Table 2.9)

Next, this study examines the structure of 1999 international tourism receipts of Thailand through expenditure items. Shopping was the biggest expenditure item of international tourists with tourism receipts of 87,838.48 million Baht and accounted for 35%. Accommodation and Food & Beverage was the second and third biggest with 61,959.97 and 39,121.85 million Baht which accounted for 24% and 15% respectively. Other items were entertainment, local transport, sightseeing, and

miscellaneous which had the lowest receipts of 9,978.27 million Baht and accounted for only 4%.* (See Figure 2.3)

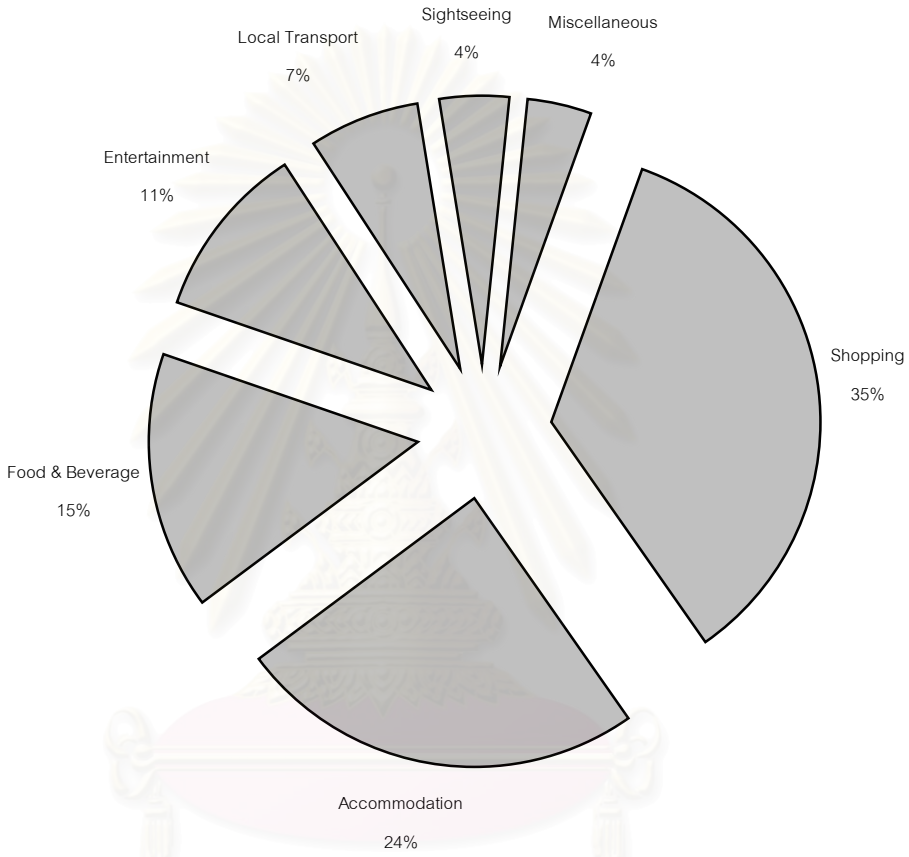

Figure 2.3 Break down of 1999 Tourism Receipts of Thailand

Source: Tourism Authority of Thailand

* See data in Appendix A, p. 86

2.3 Tourism Receipts and Other Major Exports of Thailand

In 1995 and 1996, tourism receipts was the highest export of Thailand with value of 190,765 and 219,364 million Baht respectively. In 1995, textile products came second with computer & parts at the third. In 1996, computer & parts rose while textile products declined, so computer & parts took the second place with textile products at the third. In 1997, 1998, and 1999, computer & parts increased continuously. However, tourism maintained its growth and stayed at the second highest with 220,754 million Baht in 1997, 242,177 million Baht in 1998, and 253,018 million Baht in 1999. Textile products also maintain its rank at third place. (See Table 2.10)

Table 2.10 Comparison between Tourism Receipts and Other Major Exports of Thailand

Unit: Million Baht

1995		1996		1997		1998		1999	
Tourism*	190,765	Tourism*	219,364	Computer & Parts	227,783	Computer & Parts	316,102	Computer & Parts	299,780
Textile Products	142,440	Computer & Parts	165,240	Tourism*	220,754	Tourism*	242,177	Tourism*	253,018
Computer & Parts	128,432	Textile Products	118,521	Textile Products	147,402	Textile Products	183,029	Textile Products	166,108
Plastic Products	62,156	Electrical Appliances	106,569	Electrical Appliances	134,865	Electrical Appliances	161,821	Electrical Appliances	153,768
Rubber	61,262	Rubber	68,370	Integrated Circuits & Parts	75,741	Integrated Circuits & Parts	92,906	Integrated Circuits & Parts	111,645
Source of Data: Bank of Thailand									
Note: * Tourism Authority of Thailand									

2.4 Tourism Balance

Thailand's tourism balance maintained its positive balance from 1995 to 1999. In term of Baht, the balance grew continuously from 106,816.93 million Baht in

1995 to 183,369.72 million Baht in 1999; however, the increase from 1998 to 1999 was very small. In term of US$, the balance experienced a drop in 1998 due to the depreciation of Thai Baht, but bounces back to 4,852.34 million US$ in 1999. While tourism receipts maintaining its growth, Thailand's tourism expenditures experienced huge drop after the economic crisis in 1997 but increases to 69,648.57 million Baht in 1999. (See Table 2.11)

Table 2.11 Tourism Balance of Thailand

Unit: Millions

Tourism Balance		1995	1996	1997	1998	1999
Tourism Receipts	Baht	190,765.25	219,364.42	220,754.50	242,177.29	253,018.29
	US$	7,664.33	8,663.68	7,048.36	5,934.26	6,695.38
Tourism Expenditures	Baht	83,948.32	105,620.96	59,124.92	59,073.21	69,648.57
	US$	3,372.77	4,171.44	1,887.77	1,447.52	1,843.04
Tourism balance	Baht	106,816.93	113,743.46	161,629.57	183,104.08	183,369.72
	US$	4,291.56	4,492.24	5,160.59	4,486.75	4,852.34

Source of Data: Tourism Authority of Thailand

Note: Exchange rates

1995 US$ 1 = Baht 24.89

1996 US$ 1 = Baht 25.32

1997 US$ 1 = Baht 31.32

1998 US$ 1 = Baht 40.81

1999 US$ 1 = Baht 37.79

2.5 International Tourist Arrivals

In 1999, Thailand had expanded with a high growth rate to a new group of tourists. Most tourists are first visit tourists coming from East Asia, Europe, and the Middle East. However, Thailand could still retain a satisfactory growth rate of tourists from previous markets. Certain small markets such as South Asia, Oceania, the Middle East, and Africa, had come to a saturated condition. Therefore, the growth rates of these markets did not expand much (TAT, 1999: 9).

The examination of Thailand's international tourist arrivals is separated into two sections. The first, this study discusses past trend of international tourist arrivals in Thailand. The second part, this study discusses overall situation of international tourist arrivals.

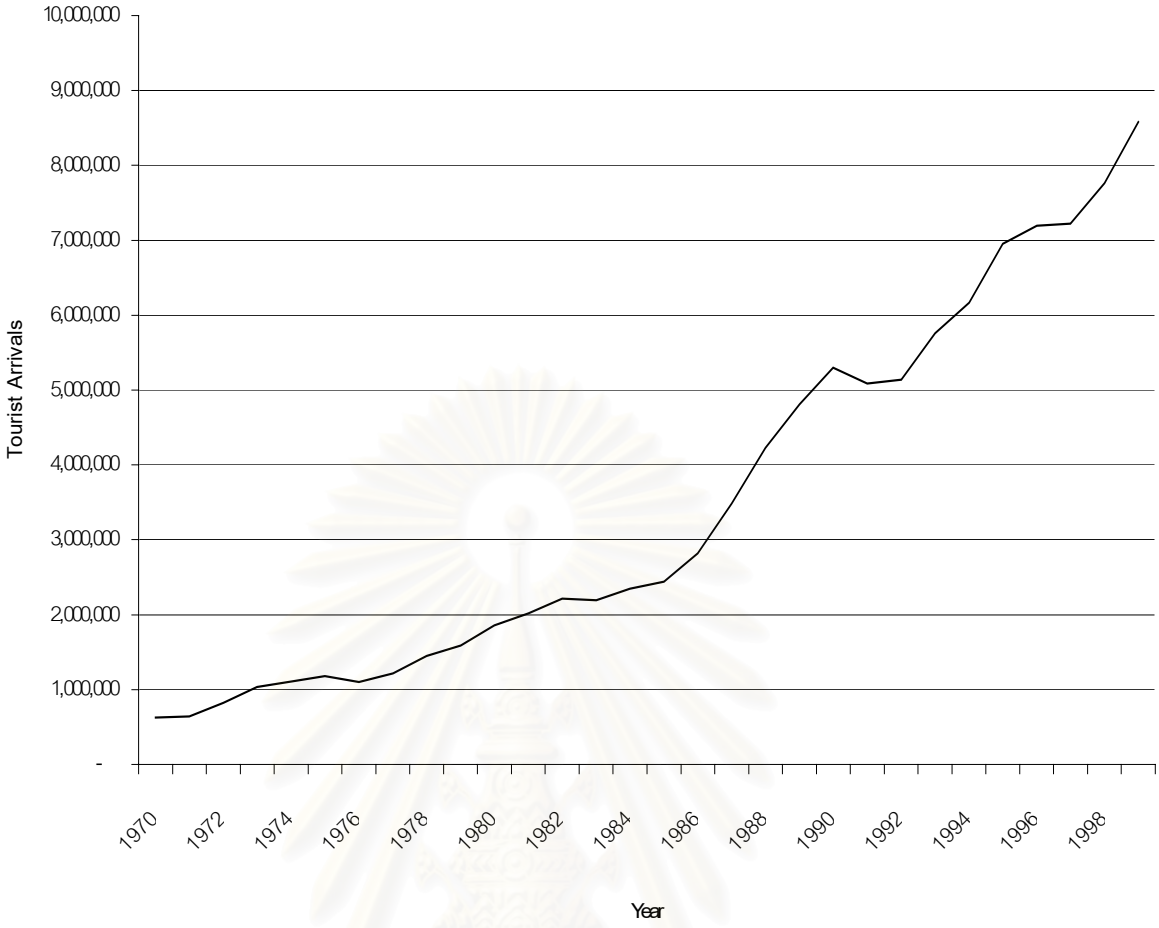

Figure 2.4 International Tourist Arrivals of Thailand 1970-1999

Source: Tourism Authority of Thailand

2.5.1 Past Trend

The Number of international tourist arrivals in Thailand, overall, rose continually from 628,671 in 1970 to 8,580,332 in 1999. There were declines in 1976, 1983, and the biggest in 1991 but the number had always bounced back the year after. The trend of international tourist arrivals rose gradually, after 1976 gradient became a little steeper. In 1986, the slope increased rapidly, after the drop in 1991, it continued to rise at the same rate through out the 90s.* (See Figure 2.4)

* See data in Appendix A, p. 85

2.5.2 Overall Situation

In 1999, Thailand's inbound tourism grew consistently with a growth rate of 10.5%. The total number of tourists was 8,580,332 exceeding what was expected. This is a result of the recovery of East Asia and a continuous high growth rate in the Americas. Other markets grew at an average level, but not as remarkable as last year. The Oceania and Africa markets retained their growth rates. The fact that the basis of every market expanded last year made the expansion rate of tourists this year seems to be lower. However, when considering the number of tourists, the expansion rate was still satisfactory (TAT, 1999: 7).

Most tourists that Thailand had welcomed are from the top and middle markets. Meanwhile, the low market that includes those people who are laborers expanded highly. This is because of the Baht depreciation, which made Thailand and affordable destination to tourists from all markets. Male tourists have a higher ratio than that of females. However, females consistently expanded in a high level in every group. This is particularly for short-distant markets such as East Asia and Oceania whose female and male tourists' figures are almost the same (TAT, 1999: 9).

The tourism situation of the East Asia markets in 1999 expanded highly (13.37%) when compared to 1998 and a fine expansion could be found in almost every market (TAT, 1999: 7). The total number of arrivals was 5,195,972 with 1,941,415 of those number came from ASEAN Markets. Japan had the highest arrivals of 1,064,539 within East Asia and Malaysia had the highest arrivals of 991,060 within ASEAN. China, Singapore, and Taiwan also had significant number of tourist arrivals. (See Table 2.3)

Europe was growing at an average level with a growth rate of 5.39%, although it did not remarkably grow as it did in 1998, the total number of 1,990,449 was satisfactory (TAT, 1999: 7). United Kingdom had the highest arrivals of 425,688 followed by Germany with 375,345 and France with 227,219. Italy,

Netherlands, Sweden, and Switzerland also had more than 100,000 arrivals. (See Table 2.4)

In 1999, the number of tourists travelling from the Americas to Thailand grew strongly and continually expanded at an average rate of 14.67% both in the number of tourists and shared market (TAT, 1999: 7). The highest number of tourist arrivals of 416,860 came from USA and the second highest of 76,501 arrivals from Canada. (See Table 2.5)

In 1999, the tourism situation in South Asia was expanding with a satisfactory growth rate of 8.35%, despite the unreliable political situation in many countries, the total number of tourist arrivals was 280,422 (TAT, 1999: 8). The highest number of arrivals from this group was India with 163,980 tourist arrivals. The second, third, and fourth highest were very close, with 39,054 arrivals from Pakistan which followed by Sri Lanka and Bangladesh respectively. (See Table 2.6)

Generally, Oceania had retained its growth rate of 0.63% with total number of 350,555 visitors (TAT, 1999: 8). Australia had the highest number of 303,844 while New Zealand came second with 44,183. (See Table 2.7)

In 1999, the tourism situation of the Middle East had a tendency to grow at an average level with a growth rate of 6.07%, the total number of arrivals was 175,106 (TAT, 1999: 8). Israel had the highest number of 64,981. U.A.E. came second with 29,599 arrivals, followed by Kuwait and Saudi Arabia respectively. Other countries in the Middle East had the number of 46,041 arrivals in Thailand. (See Table 2.8)

In Africa, the direction of the tourism movement was not very good, the growth rate remained at 1.58% with the total number of 73,233 (TAT, 1999: 8). South Africa had 33,821 arrivals while other African countries had 39,412 arrivals in Thailand

2.6 Length of Stay

Average Length of Stay of international tourist in Thailand is also separated into two sections. First, this study examines the past trend of tourists' average length of stay, then follows by the overall situation.

2.6.1 Past Trend

The trend of average length of stay seemed to follow three different stages. In the first stage ranged from 1970 to 1983, average length of Stay was 4.80 days in 1970 and reach 5.00 days in 1975 for the first time. In this stage the average length of stay did not change much. Mostly, stayed close to 5.00 days with the lowest of 4.51 days in 1977. The second stage ranged from 1984 to 1989, the slope of trend rose continually at a rapid rate. However, in the third stage ranged from 1990 to 1999, the average length of stay dropped to 7.06 days in 1990. The lowest number in this stage was 6.94 days in 1993, but after 1994 the average length of stay rose again at a high rate. The rise seemed to slow down at the end of the 90s and decline to 7.96 days in 1999.* (See Figure 2.5)

* See data in Appendix A, p. 85

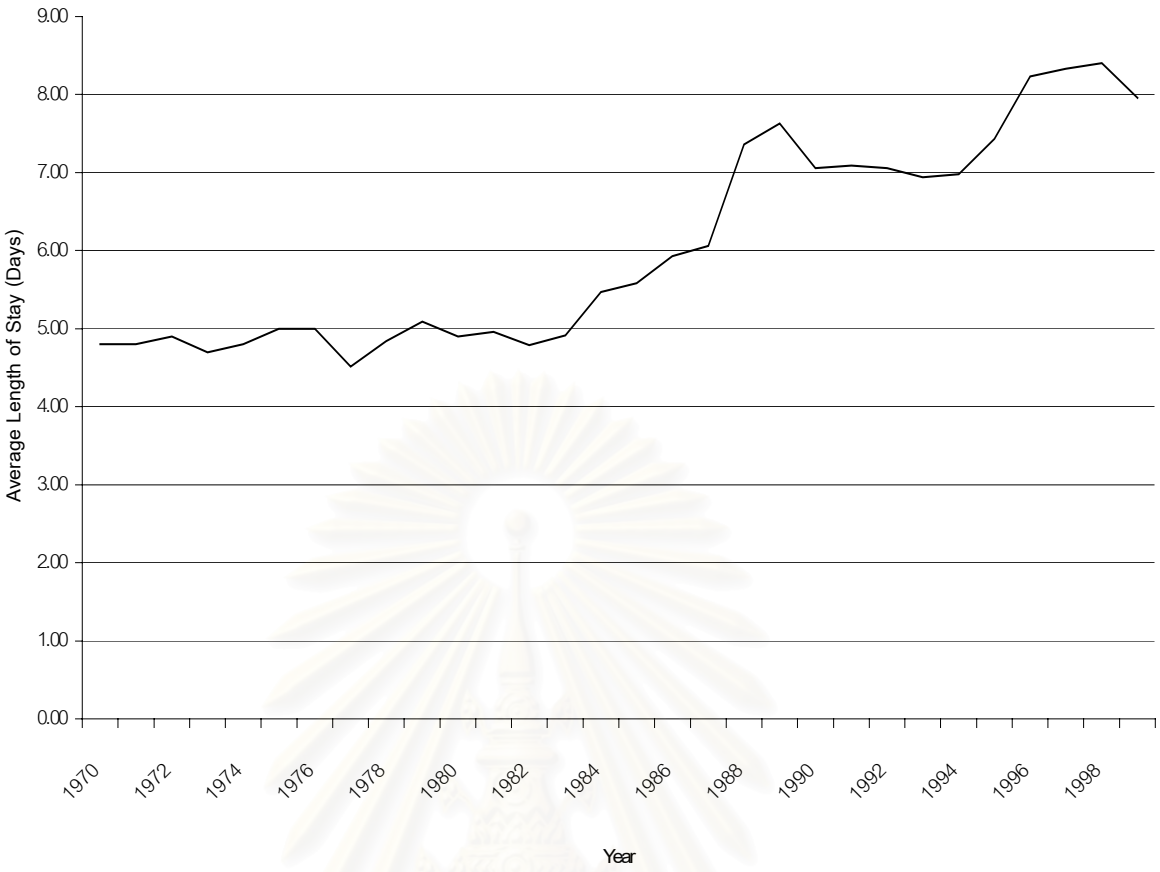

Figure 2.5 Average Length of Stay of International Tourist in Thailand 1970-1999

Source: Tourism Authority of Thailand

2.6.2 Overall Situation

The average length of stay for tourists in 1999 decreased a little from 8.4 days to 7.96 days in almost every market except for Europe, whose average length of stay still expanded. The slow down in the average length of stay led to the less increased number of nights spent by tourists which was 4.69% or 68.29 million nights (TAT, 1999: 9).

In 1999, the average length of stay of tourists from East Asia was 5.31 days. For tourists from ASEAN, the average length of stay was 4.03 days. Tourists from Laos had the highest length of stay with 8.35 days; China had the second highest

share with 7.69 days. Average length of stay for tourist from Japan was 6.42 days. Tourists from Malaysia had the second lowest number of 3.19 days, while Brunei had the lowest number of 1.41 days. (See Table 2.3)

For tourists from Europe, the average length of stay in 1999 was 13.67 days, which is the highest number from every group. Germany had the highest number of 15.83 days, while United Kingdom had 14.13 days. (See Table 2.4)

In 1999, the average length of stay for tourists from the Americas was 8.79 days. Argentina had the highest number of 11.32 days, while Canada had the second highest of 10.56 days. The average length of stay for tourists from the USA was 8.52 days. (See Table 2.5)

For tourists from South Asia, the average length of stay in 1999 was 9.55 days. India had the highest number of 11.31 days, while Pakistan had the lowest average length of stay with 6.60 days. (See Table 2.6)

The 1999 average length of stay for tourists coming from Oceania was 11.08 days. New Zealand, with the highest number of 14.61 days, while Australia's average length of stay was 10.60. (See Table 2.7)

For the Middle East, the 1999 average length of stay for tourists from this group was 9.66 days. The highest number of 13.69 days came from Kuwait. The next highest number belonged to Israel, followed by U.A.E., with 11.30 and 8.82 days respectively. (See Table 2.8)

For Africa, the average length of stay in 1999 was 9.44 days, which was very close to the average of the Middle East. The average length of stay for South Africa was 6.14 days, while other countries from the group had the average of 12.26 days. (See Table 2.9)

CHAPTER III

REVIEW OF LITERATURE AND RESEARCH METHODOLOGY

After examined the situation and statistics of Thailand's international tourism in chapter two, next, this study reviews relevant literature on tourism and tries to establish its own research methodology. This chapter is separated into two parts; the first part describes the relevant literature reviewed, while the second part explains methodology used in this study.

3.1 Review of Literature

In order to conduct this study, the information on the tourism demand theories and past researches has been reviewed. In the first part of this chapter, this study describes relevant literature in the past both in term of theoretical background and empirical studies.

3.1.1 Theoretical background

This study exhibits theoretical background through tourism demand model, determinants of tourism demand, and estimation method.

3.1.1.1 Tourism Demand Model

Lee et al. (1996: 532) stated: there are three approaches of demand modeling: quantitative, qualitative, and combined. The quantitative approaches that are based on historical data are further categorized into time series and causal method. Causal methods such as econometric or regression models are based on the assumption that a dependent variable has a cause-and-effect relationship

with one or more explanatory variable(s). Thus, the objective of the models is to establish the form of a relationship between a dependent and independent variables.

Frechtling (1996: 124-126) stated: there are two major approaches to causal modeling popular in tourism. One is the linear regression method, where our dependent variable is explained by one or more independent, or explanatory, variables. We attempt to quantify this relationship in a single equation through statistical analysis.

The other approach is to develop a set of regression equations linked together by certain variables that are both dependent and independent variables. These are often called structural models. The general form of the linear regression model is:

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + e$$

Where

Y = the dependent variable (e.g. tourism demand)

a = the intercept constant

b = slope coefficients

X = independent, or explanatory variables

n = number of explanatory variables

e = residual

The objective is to derive sound estimates of the coefficients or parameters (a, b_1, b_2, etc.) so that we can estimate the dependent

variable based on the values of the explanatory variables. Although there are some limitations, regression analysis remains the most widely used approach in tourism analysis.

There are two domains where one can profitably conduct regression analysis: cross-sectional analysis and time series analysis. In cross-sectional analysis, we analyze relationships among variables across space with time usually held constant. In time series regression analysis, it is time that varies not space. We look for patterns among variables over time, to determine how to quantitatively relate variables that help explain movements in our dependent variable.

3.1.1.2 Determinants of Tourism Demand

In this part, this study presents some relevant literature on determinants of tourism demand.

Norval A.J., (1936) studied determinant factors in the tourist industry. Those causing variations in the volume of tourist traffic can be classed into two groups a) General and b) Particular.

The general factors are such as tend to increase or decrease the volume of tourist traffic without creating a bias in any particular direction. Particular factors, on the other hand, are such as much as possible of the current of tourist traffic into a particular direction.

General Determinant Factors are:

1. Changes in the demand schedule

The fact that relatively more and more persons are being engaged in the service industries is conclusive proof that relatively more and

more is being spent on non-material needs. Of the amounts spent on non-material needs, the largest single item of expenditure is unquestionably foreign travel. With persistently increasing desire for foreign travel and with the facilities offered to stimulate travel, the former figures will no doubt soon be surpassed.

2. Increase of per capita income

Not only is a relatively greater proportion of the national or personal income being spent on non-material needs, but on an average, there has been more available for such expenditure. The increasing proportions of the national income on non-material needs must affect the volume of tourist traffic.

Other factors are:

Social and political stability and international peace will stimulate tourist traffic.

Improvement in travel accommodation and the reduction of travel expenses. The general improvement in the means of transportation, communication , and hotel accommodation has given a very great impetus to the tourist industry.

Removal of international impedimenta to tourist traffic such as customs, immigration and other consideration.

Particular Determination factors are:

The tendency towards uniformity and standardization of human wants and their satisfaction, the force of customs, habit and fashion , all their part in the tourist movement.

The development of the tourist industry within any country requires three considerations.

a) A thorough and intimate knowledge of what is peculiar to the country that can be offered as an attraction to tourists.

b) The presentation of those attractions in an acceptable and accessible manner to tourists.

c) The creation of a demand for those attractions with prospective tourists.

- demand creation
- supply of tourist attractions
- hotel
- tourists development activities

Frechtling (1996) classified possible determinants as push factors, pull factors, and resistance factors.

Push factors (of origin), sometimes called "emissive" factors, are those characteristics of a population in an origin market that encourage travel away from home:

Population size

GDP and income trends

Income distribution

Age distribution

Education distribution

Leisure time

Family structure

Momentum

Pull factors (of destination) are those which attract visitors to a certain destination:

Friends/relatives
Climate/weather
Commercial ties
Social/cultural ties
Destination marketing programs
Distribution channels
Destination attractiveness
Special events
Complementary destinations
Habit

Resistance factors comprise those variables that constrain travel between an origin and a destination:

Prices
Competitors' actions
Supply capacities
Distance
Travel time
Origin exchange controls
Border control, customs and other frontier formalities
War/terrorism/crime/civil unrest
Natural and man-made disasters
Physical barriers

A lot of factors are believed to have an effect on the number of tourists travelling abroad. These include the tourists' income, the price of goods and services, exchange rates, tourists' tastes, and habits. The last two factors,

however, are quite slow in changing and may not have changed much in relative terms in the past two decades (Bang-ornrat Rojwannasin, 1982: 53).

Classical economic theory suggests that the major determinants of the demand for travel are the income of tourists and the price of goods and services relative to the price of substitutes. The theory also indicates that marketing and promotional efforts by tourism authorities and the private sector, political situation, cost of living at the destination, the exchange rate, and special events may influence the international demand (Loeb, 1982; Stronge and Redman, 1982; Uysal and crompton, 1984 cited in Vanegas and Croes, 2000: 950).

Demand theory also implies that the demand for tourism is affected by other special factors such as political unrest, economic recession and mega events. A review of previous studies indicates that income and prices are the most important determinants of tourism demand (Lee et al., 1996: 532).

Next, this study reviews relevant literature on each potential determinant through dependent variable and explanatory variable.

3.1.1.2.1 Dependent variable

Bang-ornrat Rojwannasin (1982: 56) stated: demand for international tourism can be measured in term of tourist arrivals, tourist nights spent, and tourist expenditures. The last two measures represent the volume of demand, which measures total goods, and services consumed by tourist, but the number of tourist arrival measures the size of the market.

Lim (1997: 840) found that the dependent variable is broadly classified as tourist arrivals and/or departures, tourist expenditures and/or receipts, travel exports and/or imports, length of stay, nights spent at tourist accommodation, and other. Some studies have used more than one dependent

variable. Tourist arrivals and/or departures is the most frequently used dependent variable. Tourist expenditures and/or receipts are frequently used to measure demand for international tourism. It is expressed in nominal ore real terms, per head of origin population, and per visitor or per diem.

3.1.1.2.2 Explanatory variable

Lim (1997: 840-842) stated: the range of factors affecting the demand for international tourism is undoubtedly very large, the most prominent including the level of income which affects the ability to pay for overseas travel, relative prices of goods and services purchased by tourists in the destination compared with the origin and competing destinations, transportation cost, exchange rates between the currencies of origin and destination, dynamics, trend, and qualitative factors. The assumption of no money illusion is imposed, which means that a proportional increase in all prices and money incomes would leave demand for tourism unchanged. Demand for overseas travel in a particular destination is expected to be positively related to both transportation costs and relative tourism prices.

The per capita disposable income is theoretically a preferred measure of the ability of people to demand goods. However, such figures for other countries are usually incomplete and unavailable in Thailand (Bang-ornrat Rojwannasin, 1982: 58). Vanegas and Croes (2000: 951) stated that economic demand theory suggests that as real incomes increase, more people are likely to travel, and tourist expenditure is a positive function of income. These hypothesis have been supported by a large number of empirical studies (Kwack, 1972; Loeb, 1982; Stronge and Redman, 1982; Lee et al., 1996 cited in Vanegas and Croes, 2000: 951). These and other studies also found that the income variable is elastic, which indicates that arrivals or expenditures increase at a more rapid percentage rate than income. This high response confirms the view that foreign tourism is a luxury commodity (Martin and Witt, 1989; Lee et al., 1996 cited in Vanegas and Croes, 2000: 951). The findings of these studies suggest that the income of a tourist-originating country would be an

appropriate income variable. In her study, Lim (1997: 842) found that most researchers have relied on nominal or real (per capita) personal, disposable, or national income, and Gross Domestic Product [GDP] or Gross National Product [GNP] as measures (or proxies) for income in the origin.

Lim (1997: 842) stated that relative or tourism prices, which are the second most frequently used explanatory variables in the studies, are costs of goods and services that tourists are likely to pay while at the destination (such as accommodation, local transportation, food, and entertainment). Lee (1996: 533) found that demand theory hypothesizes that the demand for travel is an inverse function of relative prices. That is, the greater (lower) cost of living in the destination country relative to the origin country, the lower (greater) tourism demand, all else equal. While, Vanegas and Croes (2000: 950) stated that in the study of tourism, the issue of price is particularly difficult.

Lee et al. (1996: 533) stated that the international exchange rate variable, and whether it influences foreign travel demand, involves several interesting theoretical and empirical issues. The theory of purchasing power parity asserts that, ignoring transportation costs and trade barriers, long-run exchange rates should perfectly reflect the costs of living between countries (Gordon,1981 cited in Lee et al, 1996: 533). These relative living costs have already been discussed above and are included in the model. However, it is well known that short-run deviations between exchange rates and costs of living are often substantial (Peebles, 1988 cited in Lee et al., 1996: 533). Moreover, Gray (1966 cited in Lee et al., 1996: 533) argues that most travelers are seldom completely aware of prices in advance and, thus, the level of price recognized by them will highly rely on the rate of exchange. Therefore it is expected that a decline in a destination's exchange rate would lead to an increase in the demand for international tourism. In this study, the exchange rate variable is included to determine whether international tourists to Thailand are sensitive to exchange rates, independent of living costs between countries.

Lim (1997: 844) found that exchange rates are often introduced into tourism demand models in addition to, and separately from, the relative price variable. Such studies specifically examine the influence of nominal exchange rates on international tourism demand. Data on exchange rates are readily available because they are widely published and are reasonably accurate. While, Varnegas and Croes (2000: 951) found that some researchers have argued that tourists respond to exchange rate movements but not to changes in inflation rates when they make their decision to travel because they have limited knowledge. The inclusion of exchange rate as an explanatory variable is not clear-cut because of the interrelationship between relative inflation rates and exchange rates. There is some controversy in the research literature, however, over the appropriateness of the inclusion of both prices and exchange rates as separate explanatory variables in empirical tourism demand analysis. Several studies have found that it may lead to multicollinearity because the exchange rate is also a measure of relative prices.

Frechtling (1996: 136) stated that destination marketing programs, as measured by national tourism office expenditures, should be a useful explanatory variable. There is some evidence that the effectiveness of destination advertising appears to decrease as the distance away from the target market is increased. While, Lim (1997) stated that although marketing expenditures by private or national agencies are vital for promoting the country as a destination, especially where tourism makes significant contributions to the economy, it is somewhat strange that ver few studies have included this variable in the demand models. For policy purposes, it is valuable to investigate the significance of marketing promotional activity and the relative effectiveness in various origin markets.

Lim (1997) found that dynamics may also be included to account for lagged effects, such as the previous receipts earned by country of destination, the previous values of income, relative prices, exchange rates. It is expected that tourism demand will not only be influenced by current, but also by lagged income in the origin, since changes in income may take some time to affect tourism

demand. When both current and lagged income are used in a study, the latter would be classified as reflecting dynamics. However, if only lagged income is used, it will be regarded as a measure (or proxy) for income. The same reasoning applies to all other variables when current and/or lagged explanatory variables are used. This study includes three lagged variables, lagged income, lagged relative price, and lagged exchange rate, which are expected to have the same sign as the current variables.

Frechtling (1996: 140) stated: normally, a time series is viewed as being continuous and operating under the same conditions throughout the period. Every observation is affected by the explanatory variables in the same way during the period under study. However, there are situations when this constraint should be relaxed. Including a "dummy" explanatory variable can capture these different conditions on the dependent variable. Such a dummy variable is dichotomous; that is, unlike other explanatory variables, this one can only take one of two values: zero or one.

3.1.1.3 Estimation Method

Lim (1997: 838) stated that in empirical economics, computational convenience and the ease of interpretation of (functions of) parameters are typically paramount in the determination of a specific functional form for purposes of estimation and testing. The key features of the log-linear model include: Both the dependent variable and the set (or a subset) of explanatory variables are expressed in logarithms; It has variable marginal effects and constant elasticities; It yields a steady-state growth path; It permits straightforward testing of whether the dependent variable should be expressed in nominal or real values; It imposes no-negative restrictions upon variables; It permits the random errors in the equation to be normally distributed.

Lee et al. (1996: 534) found that almost all-previous studies have taken a double-logarithmic formation. The double-log specification has two underlying advantages: the estimated coefficients can be interpreted as the

demand elasticities; and the double-log form has relatively low residual variance, compared to other functional forms with the same data sets.

Lee et al. (1996: 535) also stated that ordinary least squares is a statistical method that estimates an equation that fits the data best by minimizing the sum of squared errors between each observation and the fitted line. When the assumptions of the classical linear regression model are upheld, the OLS procedure yields the best linear unbiased estimates or parameters. The best indicates minimum variance and unbiased indicates that the expected values of estimates are identical to their parameters. However, OLS estimation sometimes suffers from the presence of serial correlation and multicollinearity, which violates assumptions underlying the classical linear regression model.

3.1.2 Empirical Studies

Empirical Studies are categorizes into two separate parts, which are foreign studies and studies on Thailand.

3.1.2.1 Foreign studies

Gray (1966 cited in Archer, 1976) aimed to estimate the income and exchange rate elasticities of demand for international tourism by the residents of USA and Canada. The results of his analysis showed that both US and Canadian travel flows were quite elastic in respect of changes in both incomes and rates of exchange. In neither case, however, was the travel variable found to be statistically significant, probably because of its high negative correlation with incomes.

Williams and Zelinski (1970 cited in Archer, 1976) studied about some patterns of tourist movement among a selected group of countries which dominate the international tourist market.

No detailed econometric analysis was undertaken. Data on normal tourist year obtained from UN and IUOTO .The main part of the analysis was the operation of a flow assignment model, which allocated tourists to destinations according to a hypothesis of indifference-that the expected flow to a given destination from each origin country was a function of percentage of the overall tourist traffic received by that destination. Two indices were computed. The first indicated the difference between the actual and the expected flows between each pair of countries. The second was intended to represent the relative success of each country as a tourist recipient from each origin country.

The result of this research is that a stream of tourists has its own inertia and that future flows can therefore be predicted without the need to explain the causes of present or past patterns.

Artus (1972 cited in Archer, 1976) make a systematic analysis of the short run determinants of international travel. Models were constructed to give short term forecasts of the value of tourism expenditure and receipts in several countries.

His annual tourism model expressed each country's real per capita spending on international tourism (the dependent variable) as a function of (1) the real disposable income per capita of the population, (2) the local prices of goods and services compared with those in other countries (not corrected for changes in exchange rates), (3) the same price ratio but lagged by one year, (4) the relative prices of foreign exchange, (5) the same exchange ratio but lagged by one year and (6) a time trend representing the effects of long run factors.

Because of high degree of multicollinearity between trends and income variables, Artus removed the trends from the regression equations. The analysis shows that relative prices are a significant factor. Income elasticities were high for most countries.

Barry and O' Hagan (1972 cited in Archer, 1976) studied the determinants of the British demand for travel to Ireland. Tourist expenditures and tourist numbers were chosen to be the dependent variables. The tourist's income, as one of the explanatory variables was included by using both the UK's disposable income and UK foreign tourist expenditures. The price variable was represented by a weighted price ratio which was constructed by comparing consumer prices in Ireland with those in the UK and all other countries which received British tourists, (CPI Ireland / W_1*CPI_{UK}+W_2*CPI_{others}). All the relevant variables were expressed in per capita terms.

Data for the period of 1956 to 1969 were employed in the model which was based on a log linear equation and estimated through the use of multiple regression. The most statistically reliable equation produced an income elasticity of 1.66 and a price elasticity of 1.12. In all of the regressions a considerably better fit was obtained when the dependent variable was expressed in terms of tourists numbers rather than in terms of tourist expenditures, which may be because of the greater reliability of the former figures.

Kwack (1972 cited in Archer, 1976) aimed to examine the effects of incomes and prices on tourism expenditure (1) by US citizens abroad and (2) by foreign visitors in the USA. Kwack used seasonally adjusted quarterly data rather than annual data in an attempt to reveal more closely the variations and patterns of tourism expenditure.

Multi-variable regression equations were constructed to measure (1) US tourism spending abroad and (2) tourism expenditure by foreign residents in the USA deflated by the prices of goods and services in USA. Kwack used seasonally adjusted quarterly data rather than annual data in an attempt to reveal more closely the variations and patterns of tourism expenditure.

Tests carried out on the preliminary results suggested the presence of serial correlation in the residuals and a further analysis was carried out to

estimate the first order serial correlation coefficient. The estimates, then statistically acceptable, showed that both incomes and prices were significant explanatory variables in determining tourism expenditure.

Bond and Ladman (1972 cited in Archer, 1976) tried to test empirically a demand model for international tourism. Two studies using tourist expenditure as a proxy for demand were carried out. The first with two explanatory variables, disposable income and the size of the population, covered the period 1961-1969. The second, which covered the period 1951-1969, added a weighted average airfare as a proxy for the cost of travel. Separate regressions were run and the findings showed that much of the change in annual international tourist expenditure was associated with changes in disposable income and/or population sizes in the origin countries during the study period. The income elasticity was found to be 1.11. The cost of travel was also shown to be statistically significant in some cases.

Ostergaard (1974 cited in Archer, 1976) intended to investigate the determinants of demand for tourism to Canada by US. car travelers and to construct an empirical model to explain the actual travel flows . The approach used was a form of trip generation model disaggregated to explain flows from 39 US areas to 5 Canadian regions . Data on US' car traveler movements were obtained from cross-sectional travel surveys. In order to investigate the patterns of movement he then carried out 5 multi-variables linear regressions . In each regression , the dependent variable used was a form of interaction index . In four of the regression runs this index was represented by the ratio of each origin area's population . In the remaining regression analysis , the interaction index was obtained by dividing the number of car travelers from each US origin area to each destination region by the population of the origin region . Various permutations of explanatory variables were tried in the regressions, including 1) distance 2) bordering effect 3) physical and culture factors 4) car ownership 5) education 7) income 8) race 9) advertising impact.

The results indicated that distance was by far the most important explanatory variable. Race and Incomes were important secondary variables. While advertising, new car ownership and education each exerted a measurable influence. Physical and culture characteristics and the total level of car ownership were not, however, statistically significant.

Jud and Joseph (1974 cited in Archer, 1976) estimated the income, price and travel cost elasticities of the demand for tourism for selected Latin American countries. Both the consumer price and the exchange rate indices deflated tourist receipts, including the revenue earned by the airlines and shipping companies of the host country. GNP was used as the proxy of income levels in the origin countries. Another explanatory variable is relative price index and a composite weighted index of consumer prices in the competing destination countries.

The result found that international tourism in Latin America was sensitive to changes in incomes and relative prices. After using pooled cross-sectional and time series data to overcome the problem of a strong correlation of income and travel cost variable, it was found that the elasticity of US tourist expenditure with respect to travel cost in Latin America was -0.92. However, when the number of travelers was used as the dependent variable, travel cost elasticity of -2.02 was obtained. This indicated that airfare had a greater impact on tourist numbers than on tourist expenditures.

Lee et al. (1996) studied the estimates of demand function for international inbound tourist expenditures in South Korea. Econometric models for eight origin countries were constructed using selected variables. The empirical results show that income is most significant for all countries in explaining the international demand for South Korean tourism. The variables of relative prices and exchange rates were also found to be significant and elastic. However, the effects of the oil crises and the 1988 Olympic Games on the demand for Korean tourism appear to be insignificant. Alternative schemes were explored to deal with the problems of serial

correlation and multicollinearity, which are frequently encountered in econometric models using time series data.

Lim (1997) reviewed 100 published studies of empirical international tourism demand models. Detailed descriptive classifications according to the decade of publication, type of data, sample sizes, model specifications, the types of dependent and explanatory variables used, and the number of explanatory variables used, are provided and reviewed. Most of the studies undertaken have been published in the 80s, have used annual data, and have been based on estimation of log-linear single-equation models. Tourist arrivals/departures and expenditures/receipts have been the most frequently used dependent variables. The most popular explanatory variables used have been income, relative tourism prices, and transportation costs. It is obvious that the sample sizes of studies using annual data are typically very small (5-28); most frequently use is 15 observations. This is a serious concern because it is generally not easy to obtain meaningful regression estimates in such circumstances, and this could cast doubts on the reliability of the estimation results.

Vanegas and Croes, (2000) examines international tourism demand to Aruba from the United States. Their tourism demand estimates from either the linear and the double log linear models reveal that the effects of income dominate those of prices and exchange rates. In general, US tourists appeared to be highly sensitive to the income variable and inelastic with respect to price. The exchange rate variable was not significant.

3.1.2.2 Studies on Thailand

Bang-ornrat Rojwannasin (1982) studied the factors, which determined the number of international tourist flow to Thailand by dividing tourists into 7 groups. The result indicates that income variable is the most important factor affecting tourist flow. As income increases the number of tourist flow increases. Relative price, however, is not very significant. The exchange rate is only significant in some

cases. The transportation cost, which represents by crude oil prices, is significant in the case of the Middle East countries. Another important factor is the political stability.

3.2 Research Methodology

In this part of the chapter, this study explains the research methodology through estimation process, selection of countries, model specification, estimation method, testing method, and sources of data.

3.2.1 Estimation Process

The process of estimation used in this study are as followed:

1. Examination of data
2. Estimation of parameters
3. Testing of results
4. Interpretation of results

3.2.2 Selection of Countries

This study selected the significant five countries as origin countries based on market group and the highest international tourist receipts of Thailand from international tourists resided in each country.

1. Malaysia represents the ASEAN countries.
2. Japan represents the East Asian countries.
3. United Kingdom represents the European countries.
4. USA represents the Americas' countries.
5. Australia represents the Oceania's countries.

For other groups, South Asia, Middle East, and Africa, the number of international tourist receipts are very low indicates that there are not the main target groups. (See details in Table 2.3-2.9)

3.2.3 Model Specification

Most econometric analysis of tourism demand has used single-equation models. Relatively few studies have used a complete demand system to describe the allocation of travel expenditures among various categories of goods in a particular destination, or among various groups of destinations/holiday types by a particular tourism market (Lim, 1997: 838). This study, then, specifies variables use in the study by two categories which are: dependent variable and explanatory variables.

3.2.3.1 Dependent Variable

Although tourist arrivals is the most frequently used dependent variable, Moncur (1978: 1) stated that the growth in the number of visitors tells only a part of the story. While international tourist arrivals measure size of the market, international tourist receipts represents the volume of demand, which measures total goods, and services consumed by tourist. Receipts from international tourist is also a very important creator of revenue a country earn from tourism. If receipts from international tourist of a country increase, the revenue from tourism of that country would also increase as well. This would create more employment and income for the people in the country, and would strengthen the country's exchange rate. As a result, Thailand's international tourist receipts per capita at time t is used as a measure of tourism demand and is expressed in term of US$ per person per trip. The dependent variable is calculated as follow: international tourist receipts of Thailand received from international tourist (residence) of origin country (i) in term of US$ divides by tourist arrivals (Persons) from the origin country ($Receipts_{TH}$/Number of $arrivals_i$). The dependent variable is expected to response to the change in one or more explanatory variables.

3.2.3.2 Explanatory Variables

Explanatory variables used in this study are: real income per capita, relative price, real exchange rate, marketing expenditures by tourism office, lagged variable of real income per capita, and two dummy variables.

As suggested by demand theory, this study incorporates the income variable in the form of the real per capita GDP of origin country (i), GDP_i per capita / CPI_i. Computed by divides GDP at time t of origin country (express in term of the country's currency) by population of the country (persons) at time t, the results are divided by CPI (1995 as based year) of that country. The parameter of income variable is expected to be greater than zero, means demand for tourism receipts increase as income increase and vice versa.

Economic theory ensures that price must be included in any demand study. In this study, the variable of relative prices is measured by the ratio of the consumer price index between Thailand and the country of origin (1995 as based year), CPI_{TH} / CPI_i. This variable is expected to have negative effect on tourism demand, parameter less than zero. As prices of goods and services in Thailand increase relatively to origin country, demand for tourism will decrease and vice versa.

This study includes real exchange rate variable together with relative price variable and is expected to have positive effect (parameter greater than zero). Real exchange rates were calculated by deflating the relative consumer price indices (CPI) of Thailand and each origin country (1995 as based year), EX_{TH}/EX_i * CPI_i/CPI_{TH}.

The variable of marketing expenditures by tourism office is also included in this study. This variable is expected to have positive sign, which means when marketing expenditures rise, demand for tourism would increase. The variable is measure by Tourism Authority of Thailand's Budget per international tourist

arrival which is expressed in term of US$ per person. It is calculated by dividing TAT's bud get (Baht) by total international tourist arrivals (of every country) to Thailand, then divides by real exchange rate of Thai Baht and US$ (MEX_{TH}/total arrivals)/(Baht/US$*$CPI_{US}/CPI_{TH}$).

It is expected that tourism demand will not only be influenced by current, but also by lagged income in the origin, since changes in income may take some time to affect tourism demand. This study includes the lagged variable of real income per capita and expected to have the same effect as the current income variable.

Special factors may influence the demand for international tourism. Consequently, two dummy variables are included in the model to pick up the effects of special events on the demand of Thailand tourism from foreign tourists: the 1987 Visit Thailand Year as the first; and the 1992 Persian Gulf War as the second.

The first dummy variable takes value of 1 if 1987, 0 otherwise, and is expected to have positive effect on the grounds that one would expect those events to increase tourism demand. In contrast, the second dummy variable is expected to have negative effect, since the war might cause a decline in the international tourism demand to Thailand. The second dummy variable takes value of 1 if 1992, 0 otherwise.

All variables have been identified, so the general international tourism demand model is:

$$TREC_{i,t} = f\ (RYPC_{i,t},\ RPRC_{iTH,t},\ REXC_{iTH,t},\ NTOX_{TH,t},\ RYPC_{i,t-1},\ DM_1,\ DM_2)$$

Where:

$TREC_{i,t}$ = total per capita international tourist receipts from origin country i at time t

$RYPC_{i,t}$ = real per capita income in the origin country i at time t

$RPRC_{iTH,t}$ = relative prices between origin country i and Thailand at time t

$REXC_{iTH,t}$ = real exchange rate between origin country i and Thailand at time t

$NTOX_{TH,t}$ = national tourism office expenditures of Thailand at time t

$RYPC_{i,t-1}$ = lagged variable of real per capita income

DM_1 = dummy variable portraying the effect of 1987 promotion campaign

DM_2 = dummy variable reflecting the effect of the 1992 Persian Gulf war

3.2.3 Estimation Method

Due to the key features of the log-linear (or double-logarithmic) model, the tourism demand model of international tourist receipts is specified in log-linear form (with exception of the dummy variables). This study, then, estimates the following model by ordinary least squares (OLS) method using the Econometric Views program.

$$\ln TREC_{i,t} = \beta_0 + \beta_1 \ln RYPC_{i,t} + \beta_2 \ln RPRC_{iTH,t} + \beta_3 \ln REXC_{iTH,t} + \beta_4 \ln NTOX_{TH,t} + \beta_5 \ln RYPC_{i,t-1} + \gamma_2 DM_1 + \gamma_1 DM_2$$

$$\beta_1 > 0, \beta_2 < 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0, \beta_6 < 0, \beta_7 > 0, \gamma_1 > 0, \gamma_2 < 0$$

Where:

$TREC_{i,t}$ = total per capita international tourist receipts from origin country i at time t

$RYPC_{i,t}$ = real per capita income in the origin country i at time t

$RPRC_{iTH,t}$ = relative prices between origin country i and Thailand at time t

$REXC_{iTH,t}$ = real exchange rate between origin country i and Thailand at time t

$NTOX_{TH,t}$ = national tourism office expenditures of Thailand at time t

$RYPC_{i,t-1}$ = lagged variable of real per capita income

DM_1 = dummy variable portraying the effect of 1987 promotion campaign; 1 if 1987, 0 otherwise

DM_2 = dummy variable reflecting the effect of the 1992 Persian Gulf war; 1 if 1992, 0 otherwise

3.2.4 Testing Method

Then, the estimation results will be tested as follows:

1. Examines intercorrelations for multicollinearity.
2. Durbin-Watson d test for serial correlation and the Breusch-Godfrey serial correlation LM test.
3. Autoregressive conditional heteroscedasticity (ARCH) test.
4. Goodness of fit via coefficient of determinaiton, R^2.
5. F test and t test.
6. Test for Expected signs of coefficients.

3.2.5 Sources of Data

Annually data during the period of 1978 to 1999 were obtained as following :

1. International Tourist receipts, number of international tourist arrivals are collected from Tourism Authority of Thailand (TAT)'s Statistical Report 1979-1999.
2. GDP, number of population, CPI, and exchange rates are collected from International Monetary Fund (IMF)'s International Financial Statistics Yearbook 2000.
3. Budget of TAT is collected from TAT's Annual Report 1999.

CHAPTER IV

DATA EXAMINATION AND EMPIRICAL RESULT

The methodology of this study has been described in chapter three; next in the first part of this chapter, this study examines relevant data use in the estimation and presents empirical results of the estimation in the second part.

4.1 Data Examination

In the first part of this chapter, the study examines and presents relevant data of international tourism receipts, real income, relative price, real exchange rate, and marketing expenditures variables.

4.1.1 International tourism receipts

This part of the study examines international tourist receipts of Thailand's data for all five countries: Malaysia, Japan, United Kingdom, USA, and Australia. The data for those countries can be found in Appendix A, p. 87.

In 1979, International tourist receipts of Thailand from Malaysia in term of US$ per person per trip was 222.66. After a drop in 1980, the numbers stayed very close to 200 US$ per person per trip until 1983. In 1987, the year of Thailand's "Visit Thailand Year" promotion campaign the number illustrates no sign of success. However, in 1988 and 1989, the number expanded greatly, which may be implies that such marketing programs takes some time to be effective. In 1992, which is the year of the Persian Gulf War, the number was quite high. Actually, the second highest number seen, which illustrates great demand for Thailand's international tourist receipts. The

highest number of 563.04 US$ per person per trip was seen in 1996, then the number dropped sharply after the economic crisis.

Thailand had gained more from Japanese tourist than Malaysian tourist had in term of US$ per person per trip. From 1979 to 1986, the number stayed around 400. However, the success of visit Thailand year 1987 is obvious because the demand in 1987 and 1989 had rose substantially. In term of the highest demand, is consistent to Malaysia with 1122.62 in 1996. The decrease, again, can be seen after the Baht depreciation during the economic crisis, but in the case of Japan tourism demand bounced back to 765.68 US$ per person per trip in 1999.

For the international tourist receipts from the United Kingdom, generally, the numbers are higher than those of Malaysia and Japan are. Mostly, the numbers rose gradually over the years with a number of declines in some years. In 1987, under visit Thailand year program, the tourism demand rose consecutively before declined in 1990 and 1991. During the Persian Gulf War in 1992, the demand for international tourist receipts of Thailand increased unexpectedly and reached 1,000 US$ per person per trip. The highest demand, inconsistent to Malaysia and Japan, was seen in 1995 with 1939.13 US$ per person per trip. After drops in both 1996 and 1997, the demand rose again in 1998 and 1999.

For the case of the USA, the demand rose slowly during 1979 to 1982. After a small drop in 1983, there was a big increase in 1984, and then the demand fell consecutively from 1985 to 1987. After the visit Thailand year, the demand rose sharply to 914.98 US$ per person per trip in 1988 and still rose continually to 1992. After, the Persian Gulf War in 1992, the demand dropped greatly in 1993. The demand rose again in 1994 and stayed over 1000 US$ per person per trip throughout the 90s. The highest demand of 1405.41 US$ per person per trip was in 1996, consistent with Malaysia and Japan.

The demand for Thailand's tourist receipts rose from 258.59 in 1979 to 519.99 US$ per person per trip in 1980, and never again fell below 500 US$ per person per trip. In 1987, the visit Thailand year, the demand decreased from the year before. However, in 1988 and 1989, Thailand had seen a high rise in demand from Australian tourist. After the Persian Gulf War in 1992, the demand decreased both in 1992 and 1993. The highest demand of 1,387.24 US$ per person per trip was seen in 1996, again consistent with Malaysia, Japan, and US. After the economic crisis, the number of demand declined and stayed close to 900 US$ per person per trip through out the 90s.

4.1.2 Real Income per Capita

In this part, this study examines the real income per capita data of the five origin countries. The data can be found in Appendix A, p. 88.

Real income per capita of Malaysia rose continually from 1978 to 1984 then dropped in 1985 and 1986. The number rose again, at a rapid rate, from 1987 to the highest of 122.54 millions of ringgit in 1997. According to demand theory, this should cause a rise in demand for Thailand's tourist receipts. The real income per capita dropped in 1998 and a little in 1999, after the economic crisis.

For the case of Japan, real income per capita rose continually from 1978 to 1992, which should cause the demand for Thailand's tourist receipts to rise in the same manner during the period. After 1992, the real income per capita of Japan seemed to be saturated and stayed a little above 380 million Yen per person. The highest number was in 1996 with 397.43 millions of Yen. Consequently, the demand for Thailand's tourist receipts would not change much after 1992, where the greatest demand should be in 1996.

Real income per capita for the UK rose continuously from 1981 to 1989. The number declined in early 1990s, then increased continuously through the 90s. The highest income was in 1999 at 1.36 million Pound. The demand theory suggests that the demand for Thailand's tourist receipts should increased accordingly.

Real income per capita of the USA declined and were substantially low during the early 1980s when compares to other period. However, from 1984 onward real income per capita seemed to increase continually at a rapid rate throughout the 90s. Declines were only in 1990 and 1991. The highest income of 3.03 million US$ per person was in 1998. Thailand should expected increases in demand during such period.

From 1978 to 1983, real incomes per capita of Australia were around 2.30 million AU$. The number then shift to the level of 2.4 million AU$ per person during 1984 to 1986. After that, the number of income rose continually with only a decline in 1991. The highest income of 3.06 million AU$ was in 1999. Therefore, the demand for tourism in Thailand should be expected to move in the same pattern.

4.1.3 Relative Price

The relative price data between Thailand and origin countries are examined in this part of the study. The data can be found in Appendix A, p. 89.

The difference between inflation rates of Thailand and Malaysia did not change much during the early 80s. After 1984, inflation rate of Thailand seemed to increase at a higher rate than inflation rate of Malaysia. The demand theory suggests that Thailand should have seen decreases in demand during such period.

The Price level of Thailand rose at a higher rate than that of Japan, which resulted in the larger differences through out the period. However, the

differences in the growth of Thailand's inflation compared to Japan's Inflation were not substantial during 1982 to 1987. Thailand should expected that demand would decline during 1978 to 1982 and substantial decreases during the 90s.

The differences in the price level between Thailand and the UK declined from 1981 to 1990, which should be resulted in increases of the demand for Thailand's tourist receipts. However, the demand would decrease from 1991 to 1998 because of higher growth of Thailand's inflation rate compared to the UK.

For the case of USA, the inflation rate of Thailand grew at a lower rate than the inflation rate of USA from 1981 to 1988. Thailand should expected higher demand during such period, however, the differences in growth rate were not much. From 1989 to 1998, the differences in the growth of Thailand's inflation rate when compared to the USA rose rapidly, which should result in decreases of demand for Thailand's tourist receipts according to demand theory.

For Australia, the pattern of relative price movement seems to be the same as UK. Demand for Thailand's tourist receipts should expected to be increased sharply from 1981 to 1990 because of the lower growth rate of inflation of Thailand compared to Australia. However, demand should be decreased after 1990 because the differences in the growth of inflation between Thailand and Australia increased. Consistent with the rest of the figures from Malaysia, Japan, UK, and US the demand should increased in 1999 when the difference in growth of Thailand's inflation decreased compared to those origin countries.

4.1.4 Real Exchange Rate

In this part, the study examines the data on real exchange rate between Thailand and five origin countries. The data can be found in Appendix A, p. 90.

Real exchange rate between Thailand and Malaysia were almost 12 Baht per Ringgit in 1978 and 1979. The number dropped and stayed around 11 Baht per Ringgit from 1980 to 1983. Then the number increased in 1984 and to the highest of 12.38 Baht/Ringgit in 1985. Increases in demand for Thailand's tourist receipts should be expected in the period. The number dropped continuously from 1986 to the lowest of 9.36 Baht/Ringgit in 1991, which would decreased the demand for Thailand's tourist receipts. During the rest of the 90s, the exchange rate stayed close to 10 Baht/Ringgit with the exception of 1997 when the Baht depreciated.

The Value of the Baht increased against the Yen from 1978 to 1972 and decreased from 1983 to 1985, but those changes were not substantial. In 1986, the value of the Baht decreased against the Yen to 0.2062 Baht per Yen and stayed above 0.20 Baht per Yen throughout the period. However, the value of exchange rate between the Baht and the Yen seemed to go up and down all through the period. The lowest number was in 1990 with 0.2086 Baht per Yen; the demand should be decreased as a result. The number dropped again in 1996; however, it bounced back to the highest of o.2826 Baht per Yen in 1999. As a result, the demand for Thailand's touris; receipts should be increased in 1999.

After the value of Thai Baht had decreased against the Pound Sterling in the late 80s, it had increased from 1981 to 1984. The Thai Baht decreased in its value again since 1985 and stayed close to 48 Baht per Pound during 1990 to 1992. During 1993 to 1996, the Thai Baht had increased in its value against the Pound and stayed around 39 Baht per Pound. The result of decreased in demand for Thailand's tourist receipts should be expected within the period. In 1997 and 1998, the value of Thai Baht decreased against the Pound as a result of the floating of Thai Baht during the economic crisis. The lowest value was in 1998 at 61.99 Baht per Pound. According to economic theory, the demand would increase during the period, however, the increase of demand may be offset by the depreciation of the Baht. In 1999, the value of the Baht increased to 56.59 Baht per Pound.

During 1978 to 1984, the value of Thai Baht against the US$ stayed between 21.51 and 25.27 Baht per US$. After a sharp rise in its value in 1985, the Baht continually decreased against the US$ from 1986 to 1996. The result of decreased in demand should be expected. After the economic crisis, the value of the Baht rose greatly to 29.54 Baht per US$ in 1997 and the highest of 36.63 Baht per US$ in 1998, which should caused an increase in demand for Thailand's tourist receipts. The Baht had increased in its value again in 1999, to the number of 34.43 Baht per US$.

The real exchange rate between the Baht and AU$ was 20.06 Baht per AU$ in 1978. The Baht had mostly increased in its value from 1979 to the lowest of 17.43 Baht per AU$ in 1986. Therefore, decreases in demand should be expected. During the end of 1980s, the value of Thai Baht decreased rapidly to the highest of 22.50 Baht per AU$ in 1989. The highest demand for Thailand's tourist receipts should be expected in 1989. After increased during early 1990s, the value of The Baht decreased again from 1993 to 1998, which should caused the demand to increase.

4.1.5 Marketing Expenditures of Thailand

Marketing expenditures of Thailand per tourist arrival is examined in this part of the study. The numbers were the same for all five origin countries. The data can be found in Appendix A, p. 91.

Marketing expenditures of Thailand in term of US$ per tourist arrival ranged between 1.95 US$ per person and 4.45 US$ per person during 1978 to 1989. However, the number rose from 5.66 US$ per person in 1990 to as high as 14.08 US$ per person in 1996, which should caused the demand for Thailand's tourist receipts to rise as well. After the economic crisis, the marketing expenditures of Thailand declined to 8.96 US$ per person in 1999, which should be resulted from the

depreciation of Thai Baht during the crisis. Therefore, the demand should be expected to fall after the economic crisis.

4.2 Empirical Results

In order to yield accurate and efficient results, this study examines some major problems encountered in tourism demand model.

Multicollinearity occurs where there are correlation among explanatory variables. Frechtling (1996: 142) stated that if two explanatory variables are highly correlated then the least squares regression procedure has difficulty in assigning coefficients to each. The result is that the two slope coefficients will show high standard errors and thus are highly unstable. Moreover, to the extent that one coefficient is estimated as being too high, the other will be underestimated. Two standards have been suggested to identify highly correlated explanatory variables. One is to examine the correlation matrix among all potential explanatory variables and identify those with correlations above a certain threshold, such as 0.8. However, this may cause incorrect identification of variables as being unfit for inclusion in the regression model when they have important explanatory powers in reality. An alternative rule is to see if the simple correlation between the two variables is larger than the correlation of wither or both with the dependent variable. If so, then you have a multicollinearity problem. If this does not hold, then you can assume you do not have this problem.

Frechtling (1996) also suggested that the simple solution to multicollinearity is to exclude one of the two correlated explanatory variables. This is clearly warranted if believe that the two variables are measuring the same activity. But if these variables are measuring different factors affecting tourism demand, then you are not warranted in excluding one. If there are reason to believe that both variables are important in explaining your dependent variable, then, instead of eliminating one, you can transform you explanatory variables to remove the multicollinearity. The most

common transformation is to take the first differences of one of the variables and include this in the equation, along with the original values of the other variable.

In this study, the correlation matrix* are inspected and found Multicollinearity in all cases and is the biggest problem throughout the study, which lead to exclusion of some important explanatory variables. Although transformation of such variables is used, the result showed no obvious improvement. Consequently, this study tried to generate the best possible result under the presence of multicollinearity.

Frechtling (1996: 155) stated: one of the critical assumptions of least squares regression analysis is that the residuals, or errors of fit, are random, that is, independent of one another. This pattern indicates that the model is not taking account of all the important information on relationships to the dependent variable. In particular, this signals that at least one important explanatory variable has been left out of the equation, that is, the model is misspecified. In addition, this pattern, called "serial correlation" or "autocorrelation of the residuals", will bias the estimates of our equation's goodness of fit: R^2 and F-statistic.

This study tries to detect serial correlation by using the most commonly used test for serial correlation, which is the Durbin-Watson (DW) d test. Since all of the results fall in the range between d_l and d_u, which is the indecisive zone or region of ignorance. Therefore, this study applies the Breusch-Godfrey (BG) serial correlation LM test. Serial correlation is detected in two out of five cases, namely, Japan and the United Kingdom, when applies up to five lags at 95% level of confidence (the chi-square value at five lags included is 11.0705).** This might be the indication that, one or more of the explanatory variables, which is particularly important to such cases, is omitted. The Cochrane-Orcutt procedure is used as a remedial measure in those cases, which involves a process to yield a better estimate of a correlation coefficient, ρ, associated

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* See correlation matrix in Appendix B, p. 92-94

** See results in Appendix B, p. 95

with errors. Then, use the estimated correlation coefficient to adjust the original model; and use the OLS to estimate the ρ-adjusted model.

The ARCH LM test is applied to detect the ARCH effect, in this study, the results found no cases contain such problem in up to five numbers of lags included. All at 95 percent level of confidence, via chi-square value where degree of freedom is equal to number of lags included.*

Next, this study presents the estimation results for the five origin countries. Table 4.1 summarizes those estimation results. The details of the results can be found in Appendix C, p. 97-101

* See results in Appendix B, p. 96

Table 4.1 Estimation Results

	Malaysia	Japan	UK	USA	Australia
Constant	3.4708*	-5.6129	6.1401*	3.2464*	3.9765*
	(2.8898)	(-1.2954)	(30.7966)	(2.7953)	(7.0624)
RYPC	1.5714*	1.9364*			
	(2.6762)	(2.4875)			
RPRC		-1.0212**		-0.9860	-0.8075**
		(-2.0936)		(-1.2686)	(-1.8936)
REXC				0.7947*	
				(2.2167)	
NTOX	0.3755*	0.3502**	0.2707**	0.4643*	
	(3.1113)	(1.8513)	(1.9671)	(6.3368)	
RYPC(-1)	-1.2070*		1.4225**		2.8861*
	(-2.3353)		(2.0753)		(4.8513)
DM1					
DM2	0.3374*				
	(2.3007)				
R-squared	0.8951	0.8138	0.7888	0.8108	0.6916
Adjusted R-squared	0.8689	0.7810	0.7653	0.7774	0.6574
F-statistic	34.1454	24.7698	33.6040	24.2860	20.1870
DW	1.4325	1.6295	1.5956	1.6536	1.6289
Estimation Method	OLS	CORN	CORN	OLS	OLS

* Indicates significance at 95% confidence interval, ** Indicates significance at 90% confidence interval.

OLS indicates the equations were estimated using ordinary least squares method.

CORN indicates estimation of the equations by the Cochrane-Orcutt procedure.

Values in parentheses indicate t-statistics associated with the corresponding estimated coefficients.

4.2.1 Malaysia

The variables of relative price, real exchange rate, and dummy for the visit Thailand year 1987 are found to be statistically insignificant and are excluded from the model. According to R-squared, The model accounted for 89.5% of the variation in the dependent variable (per capita tourist receipts). The overall significance or F-statistic is 34.15, which is very high. The variable of real income per capita, marketing expenditures, lagged-income, and dummy of the 1992 Persian Gulf War are all found to be statistically significance at 95% level of confidence. The income and marketing expenditures have the expected positive sign. However, the lagged-income variable and dummy variable of the Persian Gulf War have unexpected sign. For the lagged-income variable, the negative sign maybe resulted from the fact that Malaysia is Thailand's neighbor country so the increase in income would be use for tourism demand in Thailand within the year, which would decrease in demand for the next year. The positive sign of current income variable supports such reasoning. As for the dummy variable of The Persian Gulf war, the positive sign maybe because most population of Malaysia are Islam, therefore, the war would shift their demand for tourism from their usual Middle East to Thailand.

The income coefficient provides estimate of the income elasticity, since the variable was in double-log form. The income coefficients provide a measure of responsiveness of Thailand's tourist receipts, due to a percentage change in the income variable of Malaysia. The result show that a 1% increase in real income per capita of Malaysia would lead to an increase in Thailand's international tourist receipts by 1.57%, which means that Malaysia views Thailand's tourism as luxury. The coefficient of marketing expenditure variable is 0.38, means that 1% increase in marketing expenditures per arrival of Thailand would resulted in 0.37% increase in demand for Thailand's international tourist receipts. Both findings support the demand theory that income and marketing expenditures would increase demand for tourism, although an increase caused by marketing expenditures is not substantial. Demand for

Thailand's tourist receipts from Malaysia seems to be highly responses to income variable.

4.2.2 Japan

For Japan, the model accounted for 81% of the variation in demand for Thailand's international tourist receipts. The F-statistic also shows satisfying figure. The income variable is found to be statistically significant at 95% level of confidence with expected positive sign. The coefficient of income variable is 1.94, which confirm that income has a large effect on tourism demand. Consistent with the case of Malaysia, Thailand's tourism is viewed as luxury for the case of Japan because 1% increase in real income per capita of Japan would resulted in 1.94% increase in demand for Thailand's tourist receipts. The relative price variable is found to be statistically significant at 90% level of confidence and have the expected negative sign confirm the demand theory that demand is a negative function of price. This also shows that the demand for Thailand's tourism also responds highly to the relative price variable. The coefficient of -1.02 illustrates that 1% increase in the price level of Thailand relative to Japan would decrease the demand by 1.02%. The marketing expenditures variable also has expected sign and is statistically significant at 90% level of confidence. As for the coefficient of marketing expenditures variable, 1% increase in the budget per tourist of TAT would increase demand by 0.35%. Such number is very close to the finding in the case of Malaysia. Other variables are found to be statistically insignificant and are excluded from the model.

4.2.3 United Kingdom

The model accounted for 79% of the variation in the dependent variable for the case of UK. The F-statistic of 33.60 is also satisfactory. The lagged-income and marketing expenditures variable are both found to be statistically significant at 90% confidence intervals. The coefficients of both variables also support the demand

theory with expected positive sign. The coefficient of marketing expenditures illustrates that 1% increase in Thailand's marketing expenditures would increase demand by 0.27%. The number is a little lower than findings in the case of Malaysia and Japan. The coefficient of lagged-income variable suggests that 1% increase in income of the year before would increase the current demand by 1.42%, again, reflects luxury goods. Other variables are found to be statistically insignificant and are excluded from the model. Some of those variables should be significant if there are no multicollinearity.

4.2.4 USA

For the case of the USA, the model accounted for 81% of the variation in the demand for Thailand's tourist receipts. Although the relative price variable is not statistically significant, it is kept in the model because it has expected sign and it increase R-squared. The real exchange rate and marketing expenditures variable are both statistically significant at 95% confidence intervals and have the expected positive sign, which support the demand theory. For the marketing expenditures variable, 1% increase in the variable would resulted in 0.46% increase in demand for Thailand's tourist receipts. This elasticity is the highest among five origin countries. The elasticity of real exchange rate variable suggests that 1% increase in the number of real exchange rate variable (Thai Baht decrease in its value against US$) would cause the demand to increase by 0.79%. For other variables, they are found to be statistically insignificant and are excluded from the model.

4.2.5 Australia

The model accounted for only 69% variation in the dependent variable for the cast of Australia, the lowest among five cases, which may resulted from the omission of one or more important variables of particular importance to Australia. Consistent with the finding in the case of Malaysia and the UK, Australian seems to respond to the income change in the year before. The lagged-income variable is found

to be statistically significant at 95% level of confidence and have the expected positive sign. The high coefficient of 2.88 illustrates that 1% increase in lagged-income variable would increase demand as high as 2.88%. The demand for Thailand's tourism from Australian seems to be responsive to price as well. The relative price variable is statistically significant at 90% level of confidence and has the expected negative sign. The coefficient suggests that 1% increase in price of Thailand relative to price of Australia would decrease demand for Thailand's tourist receipts by 0.81%, the lowest response among all cases. This is the only case where the variable of marketing expenditures is statistically significant and is excluded from the model as well as other insignificant variables.

CHAPTER V

CONCLUSIONS

Tourism, as a major force in global trades, plays an important role in the economy and also related business, employment, national standard and government's policies. It is an important source of foreign exchange earnings, the biggest exports in many countries. Moreover, it creates employment and helps income distribution. Its significance are undeniable, therefore, this study is conducted in response to the importance of tourism industry. In this chapter, this study concludes its findings by summarizes the results, provides policy implication, describes limitations, and suggests interesting ideas for further study.

5.1 Summary

Due to the significance of tourism industry, especially international tourist receipts, this study aims to identify and examine some major determinants affecting the demand for Thailand's international tourist receipts and also examines the situation and statistics of Thailand tourism industry. Five countries were selected as origin countries generating demand for Thailand's tourist receipts. Econometric models were constructed and estimated on those countries to measure the effects on demand of income, price, exchange rates, marketing expenditures, past income, special marketing program, and world political crisis variable.

Generally, in 3 out of 5 cases, the models accounted for about 80% of the variation in the demand for Thailand's international tourist receipts. The model estimated on Malaysia accounted for 89%, the highest among five countries. The model estimated on Australia accounted for only 69%, the lowest, which maybe the result of omission of some important variables of particular importance to Australia. The F-statistics represent overall significance of the models, also shown satisfying results.

Serial correlation were found in two out of five cases, Japan and UK, and were treated by using the Cochrane-Orcutt procedure. Multicollinearity was found to be the biggest problem of this study, it was detected in all of the five cases. Resulted in the omission of some important determinants.

The coefficients of income variable are found statistically significant in the case of Malaysia and Japan, both at 95% confidence intervals. Both findings show expected sign with elasticity of 1.57 and 1.94 respectively, indicate that Thailand's tourism is viewed as luxury product. Elasticity measures the responsiveness of tourism demand (dependent variable resulting from a change in one determinant (independent variable). This confirms the demand theory, that rise in income would increase tourism demand. If there is not any presence of multicollinearity, the coefficients should be found statistically significant in all cases.

The coefficients of relative price variable are found statistically significant in the case of Japan and Australia indicates that those nations' demand for Thailand's tourism react to change in relative price. In both cases, the coefficients have the negative sign as expected, which support demand theory that an increase in price would reduce demand. The elasticity of this variable is -1.02 for Japan and -0.81 for Australia. For the case of USA, the coefficient has the expected sign, however, is not statistically significant. Again, without multicollinearity, the results maybe different.

The coefficients of exchange rate variable are found to be significant only in the case of USA, with the expected positive sign, at 95% level of confidence. The elasticity of 0.79 supports the demand theory that the decrease in value of Thai Baht against US$ would increase tourism demand for Thailand.

The coefficients of tourism office's marketing expenditures variable are statistically significant in 4 out of 5 cases, indicates that the variable is an important determinant of Thai tourist receipts. The coefficient is statistically insignificant for the case of Australia means that the investment on marketing expenditures to this market does not account for any changes in the demand for Thailand's tourist receipts, which may caused by the limitation of investment on Australian market. Although mostly

significant, the elasticity range from 0.27 to 0.46 may result from the difference in amount of promotion spending assign to each market. The highest elasticity is found in the case of USA, where the lowest is found in UK. The elasticity also indicates low effectiveness of promotional expenditures on tourist receipts; the variable may has more effect on number of tourist arrivals.

The coefficients of the lagged-income variable are statistically significant in 3 cases, namely, UK, Australia, and Malaysia. The unexpected negative sign for Malaysia may resulted from the fact that it is Thailand's neighbor country and the rise in income can be use instantly within the year. The coefficients in the case of UK and Australia have expected positive sign, which confirm the demand theory that income rise would increase demand for tourism. The highest elasticity of lagged income variable of 2.89% is found in Australia suggests that tourism demand from Australia rely substantially on past income.

The coefficients for the dummy variable portraying the effect of Thai promotional campaign (the Visit Thailand Year 1987 campaign) are found to be statistically insignificant in all cases. This variable may not have the effect on the demand for Thailand's tourist receipts; rather, it may have the effect on the demand for Tourist arrivals instead.

The coefficients of dummy variable portraying the effect of the 1992 Persian Gulf war are found statistically significant only in the case of Malaysia. Surprisingly, the result shows unexpected positive sign, which contradicts to the theory that recession caused by the war would decrease demand and would have negative sign. This may be explained by the fact that most population of Malaysia are Islam, which would shift their demand from the usual of the Middle East to Thailand due to such political crisis.

5.2 Policy Implications

As the results have illustrated, way should be found to increase the effectiveness of national tourism office expenditures to promote Thai tourism demand in term of receipts received. Better use and distribution of the budget should be implemented.

The findings also shown that each country have its own characteristics and respond differently to each determinant; authorities and organization, both public and private, should treat each country differently according to its behavior. So, better understanding of each country's nature of behavior and respond are essential.

World political situation although expected to have negative effects, can surprisingly provides positive effect in favor of our country as in the case of Malaysia. Better understanding of world political situation is essential in order to take advantage of the favorable situation.

For Malaysia, the elasticity shown good response of marketing expenditures and would benefits from the increase in expenditures spend to this market, Still, the overall effectiveness should be increased as much as possible. Demand for Thailand's tourist receipts from Malaysia seems to substantially rely on income. Way should be found to take advantage of the increase in income and also to reduce the negative effect of the decrease in income of Malaysian, as they seem to react instantly to the change in income. This study found that Malaysia is not only our competitor, more importantly, is our customer, so cooperation between the two countries would be an advantage.

Japanese market shows good reaction to marketing expenditures as well, so the amount of expenditures to this market should be increase as well as the overall effectiveness. Demand from Japan also reacts highly to changes in price and income. Therefore, price competitiveness must be maintained. Plans need to be developed in order to reduce the effect of unfavorable movements in price. High

current income elasticity of 1.93 suggests that ways should be found to timely generate the highest demand possible when the Japanese income increases, and also tries to reduce negative impacts when it declines.

For the case of the United Kingdom, the marketing expenditures' effect is the lowest among others, which needs to be improved in order to generate higher demand for the resources spend. They also generate great demand for Thailand's tourist receipts from their past income rise, therefore, policy makers should try taking advantage of such fact.

The case of US shows highest elasticity to changes in marketing expenditures which should be taken seriously, because any budget spend in this market seems to be worth it. Another suggestion is that the real exchange rate between Thai Baht and US$ should be competitively maintained. The decrease in the value of Thai Baht would increase the demand for Thailand's tourist receipts from the USA, vice versa. Because of the multicollinearity, better study of this country should be implemented. The relative price variable may found to be statistically significant with the absence of multicollinearity.

For Australia, policy makers should try to find ways of maintaining price competitiveness and also ways to take advantage of the past rise in income, as the relative price and lagged-income variables suggest. This market reacts heavily to the change in past income, therefore, serious attention and careful management are essential in order to attract positive and reduce negative effects.

5.3 Limitations of the Study and Suggestions for further Study

One of the limitations of this study is the small number of observations due to the lack of data; further study to be undertaken in the future when the data are more adequate would provide a better result.

Another limitation is that the detail statistics on international tourism receipts are not sufficient. Most of the statistics seem to be in favor of tourist arrivals, when income from tourism industry is also generated in term of money as well. Authorities should provide more useful and insightful statistics in term of tourist receipts and length of stay.

As we can see that each country has its own specific characteristics, the study of other potential countries would provide some benefits. Better understanding of countries, the behavior and nature of their population is needed.

This study cannot concludes the impact of promotional campaign, better study should be done in the future to find clear-cut relationship between the campaign and tourist receipts.

Multicollinearity is also a problem throughout the entire study; further study should use ridge regression to attack such problem, which would give better result and solution. The method of cointegration and Error Correction Model are also interesting and should be includes in further study.

Adding other explanatory variables such as consumer spending and/or leave entitlement would be appropriate and interesting in further study. Further research may include qualitative data such as sex, age, and purposes of visits to find their links with tourist receipts.

Finally, once we have known the determinants, we may want to know the economic impact of tourism industry, such as impact on the national income, employment, prices, etc. It is interesting to conduct further research to measure the impact of tourism.

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APPENDICES

APPENDIX A

Number of International Tourist Arrivals, Average Length of Stay and Tourism Receipts of Thailand 1970-1999

Year	Number of Arrivals	Average Length of Stay	Tourism Receipts (Million)	
			Baht	US$
1970	628671	4.80	2,175	105
1971	638738	4.80	2,214	106
1972	820758	4.90	2,718	131
1973	1037737	4.70	3,457	169
1974	1107392	4.80	3,852	193
1975	1180075	5.00	4,538	227
1976	1098442	5.00	3,990	200
1977	1220672	4.51	4,607	230
1978	1453839	4.84	8,894	435
1979	1591455	5.09	11,232	549
1980	1858801	4.90	17,765	867
1981	2015615	4.96	21,455	983
1982	2218429	4.79	23,879	1,038
1983	2191003	4.91	25,050	1,089
1984	2346709	5.47	27,317	1,156
1985	2438270	5.58	31,768	1,171
1986	2818092	5.93	37,321	1,421
1987	3482958	6.06	50,024	1,946
1988	4230737	7.36	78,859	3,121
1989	4809508	7.63	96,386	3,753
1990	5298860	7.06	110,572	4,326
1991	5086899	7.09	100,004	3,923
1992	5136443	7.06	123,135	4,829
1993	5760533	6.94	127,802	5,013
1994	6166496	6.98	145,211	5,762
1995	6951566	7.43	190,765	7,664

Number of International Tourist Arrivals, Average Length of Stay and Tourism Receipts of Thailand 1970-1999 (Continued)

Year	Number of Arrivals	Average Length of Stay	Tourism Receipts (Million)	
			Baht	US$
1996	7192145	8.23	219,364	8,664
1997	7221345	8.33	220,754	7,048
1998	7764930	8.40	242,177	5,934
1999	8580332	7.96	253,018	6,695
Source: Tourism Authority of Thailand				
Note: Tourist Arrivals exclude Overseas Thai				

International Tourism Receipts of Thailand by Expenditure Items 1999

Expenditure Items	1999
Shopping	87,833.48
Accommodation	61,959.97
Food & Beverage	39,121.85
Entertainment	26,920.34
Local Transport	16,489.43
Sightseeing	10,709.95
Miscellaneous	9,978.27
Total	253,018.29
Source: Tourism Authority of Thailand	
Unit: Million Baht	

International Receipts of Thailand's (Dependent Variable)

Unit: US$ per person per trip

YEAR	MALAYSIA	JAPAN	UK	USA	AUSTRALIA
1979	222.659	348.470	364.541	320.258	258.587
1980	194.155	393.066	531.598	455.925	519.993
1981	194.959	421.054	637.359	475.166	517.092
1982	198.799	393.515	605.230	561.703	625.267
1983	205.363	443.336	662.924	543.357	564.054
1984	251.535	455.373	574.605	792.410	650.586
1985	239.604	402.884	490.476	759.195	584.756
1986	215.443	404.169	547.799	740.606	822.808
1987	241.597	532.644	648.647	684.276	671.689
1988	323.836	926.049	763.663	914.378	850.046
1989	406.809	661.330	999.366	973.701	1106.298
1990	375.415	684.686	893.648	936.703	827.527
1991	350.019	826.129	889.337	998.748	898.942
1992	556.376	829.636	1062.638	1084.560	834.462
1993	409.348	1029.823	958.317	738.085	697.803
1994	488.140	1004.127	1052.791	1092.514	835.930
1995	543.767	1022.786	1939.125	1070.806	1083.174
1996	563.043	1122.618	1244.802	1405.405	1387.243
1997	502.778	728.145	974.992	1046.255	928.647
1998	385.907	504.743	1182.670	1041.401	896.044
1999	336.468	765.684	1224.347	1040.061	908.888

Real Income per Capita of Origin Countries

Unit: millions of origin countries' currencies per person

YEAR	MALAYSIA (Ringgit)	JAPAN (Yen)	UK (Pound)	USA (US$)	AUSTRALIA (AU$)
1978	55.0586	260.8465	0.8933	2.4099	2.1745
1979	62.4159	270.0608	0.9258	2.3956	2.2731
1980	66.0627	269.4791	0.9097	2.2688	2.3050
1981	63.1087	274.0555	0.8917	2.2811	2.3563
1982	63.0529	277.8514	0.8989	2.2177	2.3226
1983	66.1575	281.8183	0.9387	2.3069	2.2537
1984	70.6860	292.0486	0.9561	2.4396	2.4382
1985	66.8324	303.3864	0.9857	2.5022	2.4923
1986	59.6520	313.7716	1.0206	2.5732	2.4428
1987	65.6670	325.1727	1.0741	2.6179	2.5073
1988	71.0922	343.9513	1.1383	2.6862	2.6091
1989	75.6125	358.3425	1.1545	2.7264	2.6638
1990	81.3234	372.8768	1.1387	2.7092	2.6103
1991	86.3064	383.1246	1.1254	2.6504	2.5375
1992	89.5240	385.5478	1.1256	2.6867	2.5832
1993	96.1062	383.1214	1.1611	2.7149	2.6433
1994	102.3110	382.4742	1.1973	2.7821	2.7199
1995	107.6304	388.2221	1.2157	2.8135	2.7205
1996	115.8015	397.4318	1.2532	2.8603	2.7771
1997	122.5449	397.1076	1.2888	2.9413	2.8823
1998	114.7200	384.7326	1.3170	3.0259	2.9817
1999	114.6606	383.1407	1.3648	3.1005	3.0571

Relative Price between Thailand and Origin Countries

YEAR	MALAYSIA	JAPAN	UK	US	AUSTRALIA
1978	0.7336	0.5733	1.1672	0.9136	1.1602
1979	0.7776	0.6073	1.1316	0.9034	1.1685
1980	0.8744	0.6750	1.1496	0.9519	1.2716
1981	0.8964	0.7250	1.1554	0.9715	1.3063
1982	0.8918	0.7421	1.1193	0.9637	1.2348
1983	0.8915	0.7554	1.1105	0.9679	1.1636
1984	0.8657	0.7445	1.0669	0.9355	1.1292
1985	0.8838	0.7483	1.0315	0.9263	1.0828
1986	0.8940	0.7568	1.0152	0.9263	1.0122
1987	0.9143	0.7753	1.0000	0.9156	0.9566
1988	0.9244	0.7993	0.9888	0.9137	0.9256
1989	0.9467	0.8225	0.9651	0.9165	0.9053
1990	0.9778	0.8469	0.9350	0.9230	0.8948
1991	0.9905	0.8663	0.9330	0.9351	0.9167
1992	0.9853	0.8870	0.9376	0.9457	0.9457
1993	0.9825	0.9054	0.9534	0.9494	0.9595
1994	0.9947	0.9441	0.9772	0.9712	0.9885
1995	1.0000	1.0000	1.0000	1.0000	1.0000
1996	1.0222	1.0569	1.0332	1.0282	1.0312
1997	1.0527	1.0982	1.0577	1.0617	1.0865
1998	1.0805	1.1785	1.1052	1.1290	1.1649
1999	1.0540	1.1849	1.0910	1.1080	1.1500

Real Exchange Rate between Thailand and Origin Countries

Unit: Baht per currencies of origin countries

YEAR	MALAYSIA (Baht/Ringgit)	JAPAN (Baht/Yen)	UK (Baht/Pound)	USA (Baht/US$)	AUSTRALIA (Baht/AU$)
1978	11.9695	0.1686	33.4443	22.2604	20.0637
1979	11.9995	0.1534	38.2836	22.6034	19.5352
1980	10.7576	0.1338	41.4364	21.5097	18.3488
1981	10.5640	0.1365	38.2981	22.4596	19.1974
1982	11.0432	0.1244	35.9713	23.8672	18.9503
1983	11.1135	0.1282	31.4184	23.7630	17.8370
1984	11.6518	0.1337	29.6083	25.2693	18.4137
1985	12.3763	0.1522	34.1296	29.3184	17.5779
1986	11.3964	0.2062	38.0013	28.3919	17.4321
1987	11.1658	0.2294	42.1574	28.0957	18.8476
1988	10.4488	0.2469	45.5672	27.6843	21.4302
1989	10.0225	0.2265	43.6689	28.0448	22.4986
1990	9.6740	0.2086	48.8365	27.7198	22.3398
1991	9.3674	0.2187	48.3902	27.2873	21.6876
1992	10.1198	0.2261	47.8299	26.8581	19.7488
1993	10.0113	0.2515	39.8899	26.6704	17.9472
1994	9.6342	0.2606	39.4165	25.8952	18.6165
1995	9.9485	0.2649	39.3283	24.9150	18.4745
1996	9.8542	0.2204	38.3063	24.6483	19.2409
1997	10.5904	0.2360	48.5623	29.5405	21.4801
1998	9.7538	0.2681	61.9853	36.6342	22.3465
1999	9.5255	0.2826	56.5856	34.4327	21.4062

Marketing Expenditures per Capita of Thailand

Unit: US$ per person

YEAR	MARKETING EXPENDITURES
1978	1.965207
1979	1.952895
1980	2.100428
1981	2.429655
1982	2.350432
1983	3.146075
1984	4.119081
1985	3.633846
1986	4.165433
1987	4.454499
1988	4.326153
1989	3.934113
1990	5.657283
1991	7.234822
1992	9.148341
1993	9.523697
1994	13.543370
1995	13.308563
1996	14.077437
1997	11.854836
1998	8.876929
1999	8.966854

APPENDIX B

Correlation Matrix (Malaysia)

	TREC	RYPC	RPRC	REXC	NTOX	RYPC(-1)	DM1	DM2
TREC	1	0.8557	0.7772	-0.6858	0.9052	0.7863	-0.1696	0.3318
RYPC	0.8557	1	0.8983	-0.7098	0.9133	0.9703	-0.2005	0.0882
RPRC	0.7772	0.8983	1	-0.8119	0.8667	0.9218	-0.0928	0.1192
REXC	-0.6858	-0.7098	-0.8119	1	-0.6741	-0.6743	0.1785	-0.1038
NTOX	0.9052	0.9133	0.8667	-0.6741	1	0.8888	-0.0716	0.1826
RYPC(-1)	0.7863	0.9703	0.9218	-0.6743	0.8888	1	-0.2564	0.0863
DM1	-0.1696	-0.2005	-0.0928	0.1785	-0.0716	-0.2564	1	-0.0500
DM2	0.3318	0.0882	0.1192	-0.1038	0.1826	0.0863	-0.0500	1

Correlation Matrix (Japan)

	TREC	RYPC	RPRC	REXC	NTOX	RYPC(-1)	DM1	DM2
TREC	1	0.8678	0.6706	0.7722	0.8489	0.8435	-0.0854	0.1749
RYPC	0.8678	1	0.8618	0.9021	0.9307	0.9914	-0.0592	0.2044
RPRC	0.6706	0.8618	1	0.7670	0.8793	0.8977	-0.1150	0.0550
REXC	0.7722	0.9021	0.7670	1	0.8086	0.8909	0.1198	0.1081
NTOX	0.8489	0.9307	0.8793	0.8086	1	0.9419	-0.0716	0.1826
RYPC(-1)	0.8435	0.9914	0.8977	0.8909	0.9419	1	-0.0821	0.2125
DM1	-0.0854	-0.0592	-0.1150	0.1198	-0.0716	-0.0821	1	-0.0500
DM2	0.1749	0.2044	0.0550	0.1081	0.1826	0.2125	-0.0500	1

Correlation Matrix (UK)

	TREC	RYPC	RPRC	REXC	NTOX	RYPC(-1)	DM1	DM2
TREC	1	0.8313	-0.4283	0.5000	0.8592	0.8622	-0.1269	0.1603
RYPC	0.8313	1	-0.4551	0.7039	0.8794	0.9861	-0.0249	0.0552
RPRC	-0.4283	-0.4551	1	-0.2163	-0.5270	-0.4650	-0.1063	-0.3139
REXC	0.5000	0.7039	-0.2163	1	0.4200	0.7449	0.0166	0.1773
NTOX	0.8592	0.8794	-0.5270	0.4200	1	0.8784	-0.0716	0.1826
RYPC(-1)	0.8622	0.9861	-0.4650	0.7449	0.8784	1	-0.0801	0.0921
DM1	-0.1269	-0.0249	-0.1063	0.0166	-0.0716	-0.0801	1	-0.0500
DM2	0.1603	0.0552	-0.3139	0.1773	0.1826	0.0921	-0.0500	1

Correlation Matrix (USA)

	TREC	RYPC	RPRC	REXC	NTOX	RYPC(-1)	DM1	DM2
TREC	1	0.8192	0.4201	0.5878	0.8678	0.7741	-0.0938	0.1949
RYPC	0.8192	1	0.5866	0.7698	0.8517	0.9672	-0.0037	0.0583
RPRC	0.4201	0.5866	1	0.5173	0.5374	0.5717	-0.1987	-0.0806
REXC	0.5878	0.7698	0.5173	1	0.4751	0.7043	0.0887	0.0097
NTOX	0.8678	0.8517	0.5374	0.4751	1	0.8189	-0.0716	0.1826
RYPC(-1)	0.7741	0.9672	0.5717	0.7043	0.8189	1	-0.0173	0.0585
DM1	-0.0938	-0.0037	-0.1987	0.0887	-0.0716	-0.0173	1	-0.0500
DM2	0.1949	0.0583	-0.0806	0.0097	0.1826	0.0585	-0.0500	1

Correlation Matrix (Australia)

	TREC	RYPC	RPRC	REXC	NTOX	RYPC(-1)	DM1	DM2
TREC	1	0.7291	-0.5371	0.3665	0.7570	0.7939	-0.0662	0.0748
RYPC	0.7291	1	-0.3297	0.5443	0.8268	0.9507	-0.0661	0.0129
RPRC	-0.5371	-0.3297	1	-0.3009	-0.4792	-0.3889	-0.1903	-0.2126
REXC	0.3665	0.5443	-0.3009	1	0.2230	0.5394	-0.1062	0.0183
NTOX	0.7570	0.8268	-0.4792	0.2230	1	0.8285	-0.0716	0.1826
RYPC(-1)	0.7939	0.9507	-0.3889	0.5394	0.8285	1	-0.0946	0.0088
DM1	-0.0662	-0.0661	-0.1903	-0.1062	-0.0716	-0.0946	1	-0.0500
DM2	0.0748	0.0129	-0.2126	0.0183	0.1826	0.0088	-0.0500	1

Results of the Breusch-Godfrey (BG) Serial Correlation LM Test

Malaysia

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.610151	Probability	0.695966
Obs*R-squared	5.797422	Probability	0.326432

Japan

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	6.832063	Probability	0.009143
Obs*R-squared	17.01521	Probability	0.004471

United Kingdom

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.26141	Probability	0.067081
Obs*R-squared	14.08843	Probability	0.015057

USA

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.361458	Probability	0.331839
Obs*R-squared	9.654236	Probability	0.085647

Australia

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.823739	Probability	0.566024
Obs*R-squared	7.13712	Probability	0.210641

Results of ARCH LM Test

Malaysia

ARCH Test:			
F-statistic	0.330665	Probability	0.883189
Obs*R-squared	2.270013	Probability	0.810661

Japan

ARCH Test:			
F-statistic	0.551633	Probability	0.734593
Obs*R-squared	3.459014	Probability	0.629598

United Kingdom

ARCH Test:			
F-statistic	0.515079	Probability	0.759658
Obs*R-squared	3.276742	Probability	0.657404

USA

ARCH Test:			
F-statistic	0.471547	Probability	0.789576
Obs*R-squared	3.052645	Probability	0.69187

Australia

ARCH Test:			
F-statistic	1.211675	Probability	0.370965
Obs*R-squared	6.036352	Probability	0.302698

APPENDIX C

Estimation Results

Malaysia

LS // Dependent Variable is TREC				
Sample: 1979 1999				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.470814	1.201065	2.889781	0.0107
RYPC	1.571433	0.587194	2.676175	0.0166
NTOX	0.375496	0.120689	3.111269	0.0067
RYPC(-1)	-1.207029	0.516861	-2.335306	0.0329
DM2	0.337446	0.146669	2.300723	0.0352
R-squared	0.895138	Mean dependent var		5.76943
Adjusted R-squared	0.868922	S.D. dependent var		0.381153
S.E. of regression	0.137995	Akaike info criterion		-3.75682
Sum squared resid	0.304682	Schwarz criterion		-3.508124
Log likelihood	14.6489	F-statistic		34.14537
Durbin-Watson stat	1.432532	Prob(F-statistic)		0

Japan

LS // Dependent Variable is TREC				
Sample: 1979 1999				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.612893	4.332923	-1.295406	0.2125
RYPC	1.936417	0.778446	2.48754	0.0235
RPRC	-1.021243	0.487787	-2.093625	0.0516
NTOX	0.35024	0.189184	1.85132	0.0816
R-squared	0.81382	Mean dependent var		6.423291
Adjusted R-squared	0.780964	S.D. dependent var		0.390051
S.E. of regression	0.182549	Akaike info criterion		-3.23184
Sum squared resid	0.566508	Schwarz criterion		-3.03288
Log likelihood	8.136558	F-statistic		24.76977
Durbin-Watson stat	1.629504	Prob(F-statistic)		0.000002

United Kingdom

LS // Dependent Variable is TREC				
Sample: 1979 1999				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.140134	0.199377	30.7966	0
NTOX	0.270652	0.137587	1.967134	0.0648
RYPC(-1)	1.422461	0.685419	2.075316	0.0526
R-squared	0.788753	Mean dependent var		6.692988
Adjusted R-squared	0.765281	S.D. dependent var		0.393737
S.E. of regression	0.190757	Akaike info criterion		-3.181948
Sum squared resid	0.654987	Schwarz criterion		-3.03273
Log likelihood	6.612745	F-statistic		33.60409
Durbin-Watson stat	1.595609	Prob(F-statistic)		0.000001

USA

LS // Dependent Variable is TREC				
Sample: 1979 1999				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.24638	1.161383	2.795271	0.0124
RPRC	-0.985982	0.777249	-1.268553	0.2217
REXC	0.794699	0.3585	2.216733	0.0406
NTOX	0.464298	0.07327	6.336792	0
R-squared	0.810812	Mean dependent var		6.677954
Adjusted R-squared	0.777426	S.D. dependent var		0.365538
S.E. of regression	0.172452	Akaike info criterion		-3.345624
Sum squared resid	0.505578	Schwarz criterion		-3.146667
Log likelihood	9.33134	F-statistic		24.28598
Durbin-Watson stat	1.65362	Prob(F-statistic)		0.000002

Australia

LS // Dependent Variable is TREC				
Sample: 1979 1999				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.976521	0.563058	7.062364	0
RYPC(-1)	2.886142	0.594922	4.851295	0.0001
RPRC	-0.807501	0.426439	-1.893589	0.0745
R-squared	0.691644	Mean dependent var		6.611707
Adjusted R-squared	0.657382	S.D. dependent var		0.352646
S.E. of regression	0.206416	Akaike info criterion		-3.024157
Sum squared resid	0.766939	Schwarz criterion		-2.874939
Log likelihood	4.955937	F-statistic		20.18706
Durbin-Watson stat	1.628924	Prob(F-statistic)		0.000025

BIOGRAPHY

Maeta Chumni was born in Bangkok on September 25th, 1974. He received his bachelor's degree in business administration (international program) from Thammasat University in 1998. Then, he began further study in Master of Arts program in international economics and finance at Chulalongkorn University.