INTERNATIONAL TOURISM DEMAND AND ECONOMIC GROWTH IN MALAYSIA

NORSIAH KADIR

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INTERNATIONAL TOURISM DEMAND AND ECONOMIC GROWTH IN MALAYSIA

By

NORSIAH KADIR

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Tajuk Tesis *(Title of the Thesis)*	:	**International Tourism Demand and Economic Growth in Malaysia**
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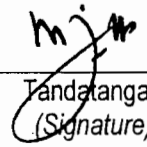

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ABSTRAK

Sebagai salah satu sektor ekonomi yang lebih terbuka yang diberi perhatian menyeluruh oleh media antarabangsa, pelancongan telah muncul sebagai satu industri yang penting di Malaysia. Pada masa ini pelancongan merupakan penyumbang ketiga terbesar kepada hasil pertukaran asing negara. Sumbangan sektor pelancongan kepada ekonomi negara bergantung kepada tahap permintaan ke atas aktiviti dan perkhidmatan pelancongan di dalam dan di luar negara. Sepertimana yang diketahui umum kedatangan pelancong asing ke sesebuah negara secara dinamiknya adalah tidak stabil. Ini disebabkan ianya sensitif kepada beberapa faktor seperti sosioekonomi, sosio-politik, sosio-budaya dan geografi.

Tesis ini telah mengenalpasti faktor sosioekonomi yang signifikan yang mempengaruhi kedatangan pelancong dari negara ASEAN dan bukan ASEAN ke Malaysia. Di samping itu ianya juga mengkaji sama ada terdapat hubungan jangkamasa pendek dan jangkamasa panjang antara permintaan pelancongan dan faktor yang mempengaruhi permintaan tersebut dan seterusnya mengenalpasti hubungan kausal (*causal relationship*) antara pendapatan daripada pelancongan antarabangsa (*international tourism receipts*) dan pertumbuhan ekonomi benar (*real economic growth*) Malaysia.

Bagi mencapai objektif tersebut, kaedah ekonometrik data panel *fixed-/random-effects model* digunakan untuk mengenalpasti faktor yang mempengaruhi permintaan pelancongan di Malaysia oleh pelancong dari negara ASEAN dan bukan ASEAN, berdasarkan sampel dari tahun 1994 hingga 2004. Di samping itu, kaedah ujian kointegrasi (*cointegration*) dan model pembetulan ralat (*error-correction model*) juga digunakan di dalam kajian ini untuk mengenalpasti sama ada terdapat hubungan jangkamasa pendek dan jangkamasa panjang antara permintaan pelancongan dan faktor yang mempengaruhi permintaan tersebut. Seterusnya ujian kausaliti secara sirimasa dan panel (*time-series and panel causality test*) digunakan untuk mengenalpasti sama ada terdapat hubungan kausal antara permintaan pelancongan dan pertumbuhan ekonomi benar Malaysia.

Hasil kajian menunjukkan pendapatan di negara asal pelancong; harga relatif pelancongan di Malaysia; harga lepas; harga pelancongan di destinasi pelengkap (Singapura dan Indonesia); harga pelancongan di destinasi pengganti (Thailand dan Filipina); "the *word-of-mouth effect*"; kempen promosi "*Malaysia...Truly Asia*"; dan penularan wabak SARS di Asia adalah signifikan dalam mempengaruhi permintaan pelancongan di Malaysia. Di samping itu ujian kointegrasi dan model pembetulan ralat juga menunjukkan terdapatnya hubungan jangkamasa pendek dan jangkamasa panjang antara permintaan pelancongan dan penentunya. Seterusnya, keputusan ujian kausaliti menunjukkan terdapat hubungan yang kuat antara pendapatan daripada pelancongan antarabangsa dan pertumbuhan ekonomi benar. Ini menyokong hipotesis bahawa pelancongan menyumbang kepada pertumbuhan ekonomi Malaysia.

Keputusan kajian ini memberi petunjuk kepada beberapa implikasi polisi. Pertama, dalam usaha menarik lebih ramai pelancong asing ke Malaysia, harga pelancongan di Malaysia hendaklah kompetitif. Kedua, bagi mempromosi dan memperkenalkan Malaysia sebagai destinasi pelancongan utama di rantau ini, Malaysia hendaklah terus menjalinkan kerjasama strategik dan perkongsian pintar antara kerajaan, organisasi pelancongan dan industri di peringkat antarabangsa dan serantau, terutama sekali dengan Singapura dan Indonesia yang menjadi destinasi pelengkap kepada Malaysia. Di samping itu, sektor swasta hendaklah digalakkan menghasilkan produk dan

perkhidmatan pelancongan yang berinovasi bagi memenuhi permintaan pelbagai peringkat pasaran di samping berusaha menembusi pasaran baru yang berpotensi. Ketiga, imej Malaysia sebagai destinasi pelancongan yang menarik hendaklah terus ditonjolkan di peringkat antarabangsa melalui kempen pemasaran dan promosi. Keempat, bagi menjamin keselamatan para pelancong, Malaysia hendaklah mempertingkatkan lagi kawalan keselamatan, terutama sekali di kawasan pedalaman yang menjadi tumpuan pelancong. Akhir sekali, sektor awam hendaklah berkerjasama dengan sektor swasta dalam mempertingkat dan memelihara kemudahan sedia ada yang menyokong sektor pelancongan.

ABSTRACT

Being one of the more open economic sectors scrutinised by world media, the tourism industry has emerged as an important industry in Malaysia. At present, the industry is the country's third largest foreign exchange earner. The contribution of tourism industry to the economy depends on the level of demand for tourism related activities or tourism services by foreign and domestic tourists. However, the flow of foreign tourists to a particular country is believed to be dynamically unstable due to its sensitivity to various socioeconomic, socio-political, socio-cultural, and geographical factors.

This thesis has identified several socioeconomic factors that may significantly affect tourist arrival from ASEAN and non-ASEAN countries to Malaysia. In addition, this study also investigated the presence of short-run and long-run relationships between tourism demand and factors influencing tourism demand. Additionally, the causal relationship between international tourism receipts and real economic growth in Malaysia was also explored. In order to address these objectives, the study used the panel data econometric fixed-/random-effects model in determining the major factors influencing tourist arrival from ASEAN and non-ASEAN countries in Malaysia based on a sample period from 1994 to 2004. Cointegration test and error-correction model were employed in investigating the presence of short-run and long-run relationships between tourism demand and its determinants. In addition, both time-series and panel causality tests were used in determining the causal relationship between international tourism receipts and real economic growth.

Results indicated that income of tourist country of origin; the relative price of tourism in Malaysia; lagged prices; the prices of tourism in complementary destinations (for Singapore and Indonesia); the prices of tourism in substitute destinations (for Thailand and the Philippines); the *word-of-mouth* effect; the *Malaysia...Truly Asia* global campaign; and the spread of the SARS in Asia are significant in determining the demand for tourism in Malaysia. In addition, the results of cointegration test and error-correction model revealed the presence of short-run and long-run relationships between tourism demand and its determinants. Moreover, the causality test results indicated that there is a strong relationship between international tourism receipts and real economic growth, which supports the hypothesis that the tourism industry is a significant contributor to the economic growth of Malaysia.

The results of the study had revealed several policy implications. Firstly, Malaysia needs to maintain its price competitiveness in order to attract more tourist arrivals. Secondly, in order to continue promoting Malaysia as a preferred tourist destination in this region, Malaysia should continue to facilitate global and regional strategic alliances and smart partnerships among governments, tourist organisations and the industries, especially with Singapore and Indonesia, which were found to be complementary destinations for Malaysia. Besides, the private sector should also be encouraged to develop innovative tourism products and services to meet the demand of different market segments as well as develop potential niche markets. Thirdly, Malaysia's image as an attractive tourist destination should be further internationalised through marketing and promotion activities. Fourthly, Malaysia should step up security patrols, particularly in remote tourist resorts, to ensure the safety of tourists. Lastly, the public sector should supplement private sector efforts and concentrate on the upgrading and maintenance of existing facilities that supports the tourism sector.

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Norsiah Kadir
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LIST OF ABBREVIATIONS

OLS	- Ordinary Least Square
GLS	- General Least Square
FE	- Fixed-effects
RE	- Random-effects
FD	- First differences
GDP	- Gross Domestic Product
ALOS	- Average Length of Stay
VFR	- Visit Friends and Relatives
UNWTO	- United Nations World Tourism Organisation
WTO	- World Tourism Organisation
WTC	- World Tourism Conference
WTTC	- World Travel and Tourism Council
TSA	- Tourism Satellite Account
LLC test	- Levin, Lin, and Chu test
IPS test	- Im, Pesaran, and Shin test
MWF test	- Maddala and Wu Fisher test
DF	- Dickey-Fuller test
ADF test	- Augmented Dickey-Fuller test
PP test	- Phillips-Perron test
JJ test	- Johansen and Juselius test
LR	- Likelihood ratio
VAR	- Vector Autoregression
VECM	- Vector Error-Correction Model

DEFINITION OF TERMS

Average Length of Stay (ALOS):

Computed by dividing the total duration of stay of all tourists by the total number of arrivals.

Average Per-Capita Expenditure:

Refers to expenditure per person, computed by dividing the total expenditure by the total number of tourists.

Average Per-Diem Expenditure:

Refers to expenditure per person per day. This is computed by dividing the average per capita expenditure by the average length of stay.

Foreign Tourist:

Foreigners travelling to Malaysia for reasons other than following an activity remunerated from within Malaysia and staying at least a night but not exceeding a year.

Excursionist:

Foreigners travelling to Malaysia for reasons other than following an activity remunerated from within Malaysia and staying less than 24 hours without an overnight stay.

Visitor:

Foreigners travelling to Malaysia for reasons other than following an activity remunerated from within Malaysia and staying not exceeding a year.

Global Tourism:

Refers to domestic and international tourism.

CHAPTER 1

INTRODUCTION

1.1 Concepts of Tourism Industry

Tourism is a concept defined in a narrow and broad sense. Sharpley (2002) for example, viewed tourism in the narrow concept. According to the author, tourism is "a social phenomenon which involves the movement of people to various destinations and their (temporary) stay there". However, according to *Chamber's English Dictionary*, tourism involves activity of tourists and those who cater for them. Hence, tourism is an activity viewed from two perspectives: as a social activity and as an industry, which facilitates social activity relating to tourist travel (Graburn, 1983; Jafari, 1986; Smith, 1989).

Similarly, *Webster's Dictionary* viewed tourism in the broad concept. It involves not only the practice of travelling but also the related activities such as tourist's guidance management, promotion or encouragement of touring, and the accommodation of tourists (which also includes catering business). Nonetheless, the United Nations World Tourism Organisation (UNWTO) defined tourism in a more general way. According to this world organisation, tourism refers to any activity that occurs when the tourist travels, thus, the concept of tourism encompasses everything from planning of the trip, travelling to the place, the stay itself, returning home and reminiscing.

Based on the discussion about the concepts of tourism above, it is clear that tourism is not just a social activity and industry. It also involves everything related the socio-economics as well as socio-politics of a country such as: (i) culture, ethnicity, and entertainment; (ii) hotel and catering; (iii) transportation; (iv) security-related activities like police, immigration and custom; and (iv) government policy (Lundberg *et al.*, 1995;

Martin & Witt, 1989; Nash, 1981; Oppermann, 1995; Oppermann & Chon, 1997; Sauran, 1978; Tisdell, 2000; Weaver & Oppermann, 2000). Hence, based on these activities involving tourism that had been discussed, we can conclude that the tourism industry is closely related to economic development and the welfare of our country (Hall *et al.*, 2003; Sausmarez, 2003).

As an introductory chapter, this chapter introduces the thesis by providing an outline discussion of the thesis. It consists of seven sections beginning with Section 1.1, which explains the concepts of tourism industry; followed by Section 1.2 which presents the global trends in the tourism industry; Section 1.3 discusses the prospects and challenges of the tourism industry in Malaysia; Section 1.4 contains the problem statement; Section 1.5 outlines the study objectives; and Section 1.6 presents the justification of the study. Finally, section 1.7 outlines the structure of the thesis.

1.2 Global Trends in the Tourism Industry

Tourism is one of the world's largest and fastest growing industries (Sharpley, 2002; Archer & Fletcher, 2003). Many nations rely on this dynamic industry as a primary source for generating revenues, employment, infrastructure development, and economic growth (Jenkins, 1991). Based on the UNWTO report (UNWTO, 2007), international tourist arrivals for the year 2005 was 806 million, bringing in total receipts of US$680 billion. The report further indicated that, in terms of regions, Europe had the largest tourist arrivals with 442 million or 55 percent of the world tourist arrivals; followed by Asia Pacific, which received 155 million tourists or one fifth of the international tourist arrivals. Whereas, in 2006, international tourism reached a new record of 842 million tourist arrivals, where all parts of the world made gains from the growth; the poorest region, Africa, registered the strongest growth; Asia Pacific and

Latin America also produced excellent results; and the Middle East, in spite of political instability, continued to perform well.

The growth of tourism and its increasing importance to the economies can be seen from the growth of tourist arrivals over the years. The rising economic importance of the industry had been fueled by the large and growing number of international tourists. From 1950 to 2005, a period of 55 years, international tourist arrivals have grown from 25 million to 806 million, showing an annual growth rate of 6.5 percent. Likewise, income generated from these arrivals grew at a rate of 11 percent (WTC, 2007). Thus, tourism has a great potential of becoming an important economic driver in international economies, and the main sources of income for many countries including the developing ones (Davis, 1968).

However, strong growth in the tourism industry was somewhat marred in 2001 through 2003, because of several issues and crises that hit the world. Such issues and crises were the September 11, 2001 incident in the U.S.; the Bali bomb blast on October 12, 2002; the Severe Acute Respiratory Syndrome (SARS) that started in Guangdong, China in mid-November, 2003; and the Iraq War in 2003. Nevertheless, after the period of all these difficulties and crises, the tourism industry has reverted to its historic high growth rates.

However, in 2006, the tourism industry faced another round of crisis with the hottest average temperature in the history of the world's climate recorded, escalating oil prices, the appreciation of euro against the dollar, and the dramatic reversed course of the U.S housing market (WTC, 2007). Such shocks cannot be without consequences for the tourism industry.

1.3 Prospects and Challenges of Tourism Industry in Malaysia

As one of the fastest growing industries in the world, the impact of prosperous tourism is not limited to just economic aspect. Tourism is indeed, leading to the enhancement of all aspects of our society, such as attractions, facilities, transportation, and hospitality (Okposin *et al.*, 2005). In Malaysia, tourism has emerged as one of the important sources of foreign exchange earnings as well as generating new businesses and employment opportunities.

Malaysia has the potential to become a well-known tourism hub in the Asia Pacific region. Firstly, Malaysia consists of two geographical areas, West Malaysia (Peninsular Malaysia) and East Malaysia (which includes the states of Sarawak and Sabah, formerly North Borneo) that are separated from each other by the South China Sea. Therefore, with these two separate vast geographical areas, Malaysia is well-endowed with natural resources such as long-beaches, more than a thousand islands, one of the oldest tropical rainforests with a wide variety of flora and fauna, pristine highlands, wildlife sanctuaries, and picturesque lakes. All these can provide tourists wide-ranging adventures, special interest tours, and expeditions, which are related to a myriad of nature activities.

Secondly, Malaysia is a country that comprises multi-ethnic groups. The major ethnic groups of Malaysia include Malay, Chinese, Indian, and non-Malay indigenous groups[1]. Other Malaysians also include those of Eurasian, European, Middle Eastern, Cambodian, Thai, and Vietnamese descent. Europeans and Eurasians include British who colonised and settled in Malaysia, as well as some Portuguese. Most of the Middle Easterners are of Arabic descent. A small number of Cambodians and Vietnamese settled in Malaysia as Vietnam War refugees. Therefore, in terms of multi-cultural and

[1] Non-Malay indigenous groups are collectively known as *Orang Asli*. This population is divided into dozens of ethnic groups.

historical values, Malaysia has the advantage over the other countries in the region. Both multi-culturally and the historical relationship between Malaysia and these countries create nostalgic memory that attracts tourists to visit Malaysia.

Furthermore, Malaysia is historically linked with the previous colonial powers (Portuguese, Dutch, British, and Japanese) for more than 400 years. This factor contributed to the tourism industry in terms of heritage and historical tourism. The heritage trails such as the *Baba and Nyonya* heritage, the Portuguese and Dutch era in Melaka, war relics in Kota Bahru as well as *Bunga Mas* in Kedah and Kelantan, are important sources for the tourism industry because all these may meet the special interests of potential tourists. In addition, the listing of both George Town and Malacca as world heritage sites by UNESCO in July 2008 is expected to result in a "tourist spin-off" for Malaysia ("UNESCO Boost", 2008).

Thirdly, in terms of the political environment, Malaysia is relatively more stable than compared to other countries in the same region, such as Thailand, Indonesia, and the Philippines. As it is generally known, this factor is crucial for the success of the tourism industry worldwide. Tourist's behaviour and consequently destinations are deeply affected by perception of security, especially political stability. Hence, this advantage will reinforce the image of Malaysia as a safe and pleasant place to visit, as well as encourage repeat visits of tourists.

The Malaysian government has recognised all these potentials and is determined to make tourism as one of the most important pillars in the overall economic development of the country. Therefore, vigorous efforts have been taken in positioning and promoting Malaysia as a premier tourist destination.

However, in developing and positioning the tourism industry, there are several challenges and uncertainties faced by the Malaysian tourism industry, such as escalating

oil prices, increasing competition from other developing countries, the threat of international terrorism, health scares, natural disasters, and political conflicts in some parts of the world. Hence, Malaysia must always be fully aware of these uncertainties, bearing in mind that the tourism industry is constantly exposed to the turbulent external environment, which continually tests the ability to respond quickly and adapt to these challenges. Therefore, the right policy to handle all these challenges is crucial. To overcome these challenges, Malaysia must always be resilient and quick to respond in all endeavours. Malaysia must look for new ideas and ways on how to conduct the business by thinking out-of-the-box for creative solutions. Hence, it is important to keep up with the times and updated in terms of new trends and methodologies in overcoming all challenges.

1.4 Problem Statement

As noted in the previous section, tourism is one of the largest and fastest growing industries in the global economy and currently the third most important industry for Malaysia in terms of foreign exchange earning (MIER, 2008). This industry performed favourably as reflected in the growth of tourist arrivals and tourist receipts. In a period of 33 years (from 1974 to 2007), international tourist arrivals had grown from 1.2 million to 20.9 million; whereas, income generated from these arrivals grew from RM0.35 billion to RM46.07 billion for the same period (Tourism Malaysia, Planning and Research Division).

In recent years the Malaysian tourism industry has been facing several issues and challenges: firstly, a decline in tourist arrivals from the short-haul and regional markets such as South Korea, Japan, Thailand, and Indonesia as their respective

currencies of *won, yen, baht*, and *rupiah* suffered from the 1997/98 Asian financial crisis (NERP, 1988).

Secondly, the devaluation of the regional currencies, on the other hand, had different major implications for the tourism industry in the Asia Pacific region with regarding the tourist type. Inbound travel from the long-haul markets would increase as visitors were attracted by the higher purchasing power in countries where currencies have been devalued. For example, tourist arrivals from the U.K. to Malaysia increased by 74.3 percent from 136,398 in 1999 to 237,757 in 2000 (Tourism Malaysia, 2000). In addition, a survey of 71 cities world-wide by Swiss banking giant UBS found that Malaysia's capital Kuala Lumpur has the most competitive prices when it comes to food, electronic goods, clothes, public transport, hotel rates, and entertainment ("KL the Least", 2006). However, the Malaysian tourism industry has yet to benefit from the depreciation of the *ringgit* as the *top value for money destination.*

Thirdly, even though tourist arrivals may be increasing, real tourism receipts may be diminishing due to higher inflation rates, arrivals of tourists with a lower spending propensity, lower average length of stay in the destination, or tourist registration to more than one accommodation establishment.

Fourthly, the Malaysian tourism industry also faced increasing competition from other developing countries within the region such as China, India, Cambodia, and Vietnam in gaining market share in the tourism industry. At the same time, well-known industry players such as Thailand, Hong Kong, Indonesia, and Singapore have been launching aggressive promotions in attracting tourists, particularly from the long-haul markets (U.S. and Europe).

Fifthly, the issues of personal safety and security are important for foreign tourists when travelling to a destination (Bagul & Marzuki, 2006). A series of mishaps

such as avian influenza in 1997, the September 11 incident in the United States in 2001, the Bali bomb blast on October 12 in 2002, the Iraq War in 2003, the JW Marriot Hotel bombing in Jakarta in 2003, the SARS in 2002, and the Tsunami aftermath in 2004 have adversely affected the tourism industry, especially in the Asian region. The number of tourist arrivals declined substantially during the aftermath of these incidents.

Even though the global tourism industry had appeared to have been recovering in the recent year, the recovery was not as strong as expected. International tourism remains in a precarious situation. Tourists or potential tourists still have preconceived ideas of the risk associated with travel to certain areas where uncertainty is high. Perceived danger therefore has a negative effect on the tourism industry.

Given the aforementioned scenario of the tourism industry in Malaysia and the various efforts that have been and are being taken by the Malaysian government to develop Malaysia into a major tourist destination in the Asia Pacific region, among the relevant crucial issues (which might have some policy implication) that one might ask are as follows:

(i) Since contribution of the tourism industry to the national economy is to some extent being affected by externalities through time, what are the significant determinants of international tourism demand in Malaysia?

(ii) Since the tourism industry appears to contribute significantly to the welfare of the Malaysian economy, is there any statistical significance relationship between international tourism receipts and real economic growth in Malaysia?

In addition, the review of the related literature has suggested that income of the tourist's country of origins, the relative price of tourism, transportation cost, exchange rate, and the price of tourism in competing destinations are influential in explaining tourism flow into a particular destination.

1.5 Objective of the Study

As highlighted in the previous sections, the tourism industry is an important foreign exchange earner for Malaysia. Indeed, this sector has contributed significantly to the Malaysian economy, not only in terms of foreign exchange earning but also in generating new businesses and of course, employment opportunities. The progress of this sector is reflected in the growth of tourist arrivals and tourist receipts. Therefore, the challenges faced by the Malaysian tourism industry are to increase and sustain the growth in tourist arrivals, given the fact that Malaysia is the second most visited country in Asia after China (Tang *et al.*, 2007; "Malaysia Second", 2005). In order to increase and sustain the growth of tourist arrivals, it is important to understand the various factors that influence tourism demand.

Hence, the general objective of this study was to identify the factors that affect tourism demand in Malaysia from different market sources (ASEAN and non-ASEAN countries), as well as to address the question whether the hypothesis of tourism-led economic growth holds in the Malaysian economy. The specific objectives of this study are as follows:

(i) to identify the socioeconomic variables that might significantly affect tourism demand in Malaysia;

(ii) to investigate the presence of short-run and long-run relationships between tourism demand and factors that influence tourism demand in Malaysia; and

(iii) to determine the causal relationship between international tourism receipts and real economic growth.

1.5.1 Scope of the Study

This study has attempted to identify and quantify the socioeconomic variables that might significantly affect tourism demand in Malaysia by using a panel data econometrics fixed-/random-effects model. In addition, this study also investigated the presence of short-run and long-run relationships between tourism demand and its determinants by employing the Pedroni panel cointegration analysis based on error-correction models. Furthermore, by using individual and panel causality tests, this study examined the causal relationship between international tourism receipts and real economic growth in Malaysia.

The dependent variable in this study is tourism demand, which in this case, was proxied by international tourist arrivals from ASEAN-4 and selected non-ASEAN countries. The ASEAN-4 countries referred to Singapore, Thailand, Indonesia, and the Philippines, whereas the selected non-ASEAN countries referred to U.S., U.K, Germany, Japan, and Australia. The selections of countries in both categories were based on the top ten tourist generation market, as well as representing five of the world's major regions. For the European region, U.K. and Germany were chosen as the representative destinations; the north American region was represented by U.S.; Oceania was represented by Australia; the eastern Asian region was represented by Japan; and the ASEAN region was represented by Singapore, Thailand, Indonesia, and the Philippines.

Several limitations were placed on the selection of countries, and this resulted in Brunei being excluded from the list of ASEAN countries, despite the fact that Brunei

was ranked fourth (see Appendix 4) in terms of foreign tourist arrivals into Malaysia in 2005. This was due to the unavailability of data from 1994. Additionally, even though domestic tourism is also important to the Malaysian economy, this study only analysed the role of international tourism due to complexities in identifying and quantifying the data of domestic tourism.

The independent variables in this study were real gross domestic product of the tourists' country of origin, relative prices of tourism in Malaysia, the price of tourism in competing destinations (Singapore, Thailand, Indonesia, and the Philippines) and the *word-of-mouth* effects (refers to the lagged dependent variable). Also, a set of dummy variable such as the *Malaysia...Truly Asia* global campaign, the 1997/98 Asian Financial crisis, the spread of the SARS in Asia, and the 2001 September 11 incident in the US were also included in this study. However, the supply variables (for example tourist attraction, natural resources, lodging service, etc.) were not included in this study due to lack of data (for developing countries like Malaysia), as well as difficulties related to indentification and quantification because tourists consume a variety of goods.

In addressing, the first and the second objectives, the study utilised the yearly panel data set of ASEAN-4 and selected non-ASEAN countries spanning from 1994 to 2004. Furthermore, in addressing the third objective, the study employed two types of data: firstly, the quarterly time-series data set spanning from 1995:1 to 2005:2; and secondly, the yearly panel data set ranging from 1994 to 2004.

1.6 Justification of the Study

Given the objectives of the study as highlighted previously, the significance of this study could be conceived as follows:

(i) For tourism stakeholders

If the results of study can provide evidence on the major socioeconomic factors that influence tourism demand in Malaysia, as well as determine the presence of a causal relationship between international tourism receipts and real economic growth, this would give an insight to the policy makers and tourism industry stakeholders, so that they can equip themselves with strategies and policies toward overcoming the effect of negative socioeconomic factors. Hence, this would help stimulate the growth of the tourism industry, not only in Malaysia, but also in other developing countries.

(ii) Contribution to the body of knowledge

To the best of author's knowledge, published works on tourism demand and economic growth in Malaysia is very limited, especially using the econometric approach. Indeed, currently there is no study examining causal relationships between tourism and economic growth in Malaysia by using panel time-series econometric techniques[2]. Therefore, this study is expected to provide a meaningful contribution to the development of literature by employing one of the latest econometric techniques.

1.7 Organisation of the Thesis

The present study is organised into six chapters. Chapter 1, in addition to introducing the thesis, provides a brief description of the thesis. However, since the interest of this study is about international tourism demand and economic growth in Malaysia, the entire Chapter 2 provides an overview of the Malaysian tourism industry. Chapter 3 reviews the related literature. This chapter discusses the background of previous researches undertaken concerning this issue specifically focusing on studies related to tourism demand and economic growth, which provide insights into the present

[2] Panel time-series econometric techniques refers to panel unit root tests (Levin, Lin, & Chu, 2002; Breitung, 2000; Im, Pesaran, & Shin, 2003; Maddala-Wu Fisher, 1999), panel cointegration tests (Pedroni, 1999, 2004) and panel causality test (Engle & Granger, 1987).

study. The methodology used in this study is discussed in Chapter 4, which provides the detailed explanation about the econometric technique utilised as well as the sample used. Chapter 5 presents and discusses the findings of the study. These findings will support or refute the related hypotheses or theories. Finally, the conclusion and recommendations, which will complete this thesis, are presented in Chapter 6.

CHAPTER 2

OVERVIEW OF THE MALAYSIAN TOURISM INDUSTRY

2.1 Introduction

Malaysia's 51 years of nationhood marks another milestone in its economic development, with the tourism industry emerging as one of the important sources of foreign exchange earnings as well as generating new businesses and employment opportunities. Indeed, this industry has increasingly contributed to the Malaysian economy since 1970s with the establishment of the Tourist Development Corporation (TDC)[3]. In 1974, Malaysia attracted only 1.2 million international tourist arrivals, whereas by 2007 this figure had increased to 20.9 million. In terms of income generated from foreign arrivals, during the same period the figure increased from RM0.35 billion to RM46.07 billion (Economic Report, 2007/2008).

The share of tourism revenue in total earnings of the services account of the balance of payments increased from 32.7 percent in 2000 to 43.0 percent in 2005. Taking into account the inflow of foreign tourists and outflow of local residents travelling abroad, the net contribution by tourism improved from RM11.2 to RM18.1 billion for the same period (Malaysia, 2006). The development in tourism also contributed positively to the expansion of activities in other sub-sectors, particularly the hotel, travel and tour, retail, and restaurant industries, as well as transportation.

The strong growth in international arrivals and domestic tourism contributed to a higher average hotel occupancy rate, which increased from 59.2 percent in 2000 to 63.5 percent in 2005. The growth potential of the tourism industry continued to attract a substantial amount of private sector investment. The number of hotels expanded by

[3] The Tourist Development Corporation (TDC) was established on August 10, 1972 to further expand and intensify tourism through marketing programmes.

51.2 percent (from 1,492 in 2000 to 2,256 in 2005) and the supply of hotel rooms rose by 37.3 percent for the same period (Economic Report, 2006/2007). The rise in tourist arrivals also boosted distributive trade as tourist shopping expenditure increased at an average rate of 13.3 percent per annum from RM4.0 billion in 2000 to RM7.4 billion in 2005 (Malaysia, 2006).

2.2 Pattern of the Tourism Industry in Malaysia

According to the World Tourism Organisation, international tourist arrivals worldwide are expected to reach 1.0 billion by 2010. Of this, the East Asia and Pacific regions are expected to receive 200 million travellers, and Malaysia's tourism sector is expected to benefit considerably from the growth of international travel. Moreover, tourist arrivals in Malaysia are poised to grow at an average rate of 8.4 percent per annum and are estimated to reach 24.6 million by 2010; while, tourist receipts are set to rise at an average annual rate of 13.9 percent to RM59.4 billion in 2010 (Malaysia, 2006).

During the 2000 through to 2005 period, tourist arrivals increased at an average rate of 10.0 percent per annum, surpassing the target of 6.9 percent. Positive growth was sustained throughout that period, with the exception of 2003 when the number of tourist arrivals was adversely affected, particularly by the outbreak of Severe Acute Respiratory Syndrome (SARS) and geopolitical uncertainties worldwide. As travel confidence worldwide resumed, tourist arrivals rebounded in the second half of the period to reach 16.4 million in 2005, which was mainly attributed to intra-regional tourism flows, as shown in Table 2.1.

Table 2.1. Malaysia: Selected tourism indicators for the period 2000-2010

Indicator	2000	2005	2010
Number of Tourist Arrivals (million)	10.2	16.4	24.6
By Country of Origin (%)			
ASEAN	70.4	76.8	65.0
China	4.2	3.8	6.1
Japan	4.5	1.9	2.2
Australia	2.3	1.5	2.7
United Kingdom	2.3	1.5	2.8
Taiwan	2.1	1.3	2.7
India	1.3	1.2	1.8
West Asia	0.5	1.0	2.7
Others	12.4	11.0	14.0
Total Tourist Receipts[1] (RM billion)	17.3	31.0	59.4
Per Capita Expenditure (RM)	1,696	1,890	2,417
Average Length of Stay (nights)	5.8	7.2	8.7
Number of Hotels	1,492	2,256	3,218
Number of Hotel Rooms	124,413	170,873	247,008
Average Occupancy Rate of Hotel (%)	59.2	63.5	66.4
Employment	390,600	451,000	520,700

Source: Ninth Malaysia Plan, 2006-2010 (Malaysia, 2006)
Note: [1] Tourist receipts exclude excursionist receipts

Tourists from the Association of South-East Asian Nations (ASEAN) continued to account for more than 70 percent of total arrivals. In tandem with the increase in tourist arrivals, foreign exchange earnings from tourism increased at an average annual growth rate of 12.4 percent, from RM17.3 billion in 2000 to RM31.0 billion in 2005. ASEAN countries remained the main contributors with a share of 68.7 percent of total tourist receipts, followed by China at 5.1 percent, with United Kingdom and Australia at 2.5 and 2.3 percent, respectively (Malaysia, 2006).

Evidently, the tourism industry continues to maintain its position as the third largest foreign exchange earner in the country, the result of aggressive promotions made in new and non-traditional markets, particularly in West Asia, as well as increasing the number of international conferences and exhibitions held in the country (Malaysia, 2005).

2.3 Malaysia's Tourism Trend (Pre-Crisis)

Malaysia's foreign tourist arrival figures during the most part of the 1980s fell within the range of 2.3 million to 4.8 million (Table 2.2). The decade started well with 2.3 million tourist arrivals in 1980 and the trend continued to increase until 1990. In 1990, total tourist arrivals reached the peak because of the first *Visit Malaysia Year* campaign (Lean & Smyth, 2007; 2008). Tourism industry has become the third largest foreign exchange earner.

However, there was a downturn in the worldwide travel in the following year, 1991, in the aftermath of the Gulf War. Meanwhile, there was another peak during the 1994 through to 1996 period, after the second *Visit Malaysia Year* campaign (VMY 1994) was launched. However, once again, total tourist arrivals fell to the lowest point in 1998 resulting from a combination of negative factors such as the 1997/98 Asian Financial crisis, outbreak of Coxackie B, and haze that shrouded countries around the region including Malaysia. The number of tourist arrivals in Malaysia decreased by 12.9 percent and total receipts dropped 6.32 percent to RM9.7 billion in 1997. This phenomenon continued in 1998, which resulted in a contraction of the number of tourist arrivals by 10.63 percent and total receipts dropping by 11.54 percent to RM8.6 billion (Table 2.2). Generally, the trend of tourist arrivals during 1980 through 1998 was range-bound and moving sideways.

Table 2.2. Malaysia: Tourist arrivals and receipts (1980-1998)

Year	Total Tourist Arrival	Receipt (Rm Billion)
1980	2,250,509	0.7
1981	2,533,104	1.0
1982	2,774,698	1.1
1983	2,926,550	1.3
1984	2,947,314	1.4
1985	3,109,106	1.5
1986	3,217,462	1.7
1987	3,358,983	1.8
1988	3,623,636	2.0
1989	4,846,320	2.8
1990	7,445,908	4.5
1991	5,847,213	4.3
1992	6,016,209	4.6
1993	6,503,860	5.1
1994	7,197,229	8.3
1995	7,468,749	9.2
1996	7,138,452	10.4
1997	6,210,921	9.7
1998	5,550,748	8.6

Source: Malaysia Tourism Promotion Board (Planning and Research Division)[4]

2.4 Malaysia's Tourism Trend (Post-Crisis)

Although the industry was affected by the 1997/98 Asian Financial crisis, its quick rebound had contributed to the strong economic recovery of the nation. This was attributed mainly to the concerted efforts by the public and private sectors, as well as the successful implementation of measures outlined in the National Economic Recovery Plan (NERP) to revitalise the tourism industry (Malaysia, 2001).

In early 2000, the Malaysian tourism industry experienced growth (Table 2.3) with major international conventions being held in Malaysia, such as the 50th PATA Annual Conference in 2001, OIC meeting in 2004, and NAM meeting in 2005. Additionally, events such as LIMA, Petronas F1 Grand Prix, Le Tour de Langkawi, Monsoon Cup, Colours of Malaysia, Food and Fruit Festival, highlighting Malaysia

[4]The Malaysia Tourism Promotion Board Act 1992 has repealed and replaced the Tourist Development Corporation of Malaysia Act 1972, after 20 years of operations. Following this change, the Malaysia Tourism Promotion Board (MTPB), more popularly known as "Tourism Malaysia", was formally established with the primary objective to stimulate and increase the number of tourism arrivals to Malaysia.

textiles including *batik* and *songket*, and the Mega Sales Shopping Carnivals also contributed toward increasing tourist arrivals in Malaysia.

However, Malaysia's reputation as a safe tourist destination was somewhat marred in 2003 and 2004 because of its association with the SARS in 2002, Bali bomb blast in 2002, and the Tsunami aftermath in 2004, which hit countries in the region. To circumvent the effect, Tourism Malaysia committed itself to aggressive promotional activities and this undoubtedly helped the industry to recover.

By the end of December 2005, tourist arrivals in Malaysia reached its target of 16.4 million, exceeding 15.7 million tourists in 2004. From the 16.4 million tourist arrivals in 2005, Malaysia received RM31.9 billion in foreign exchange earnings, representing an increase of 7.8 percent from 2004. In 2007, when Malaysia launched the *Visit Malaysia 2007* campaign (VMY 2007), it was well received, as was reflected in higher tourist arrivals. Total tourist arrivals in 2007 reached 20.9 million, surpassing the target of 20.1 million set for the VMY 2007 campaign, and contributed RM46.1 billion in foreign exchange earnings (Table 2.3).

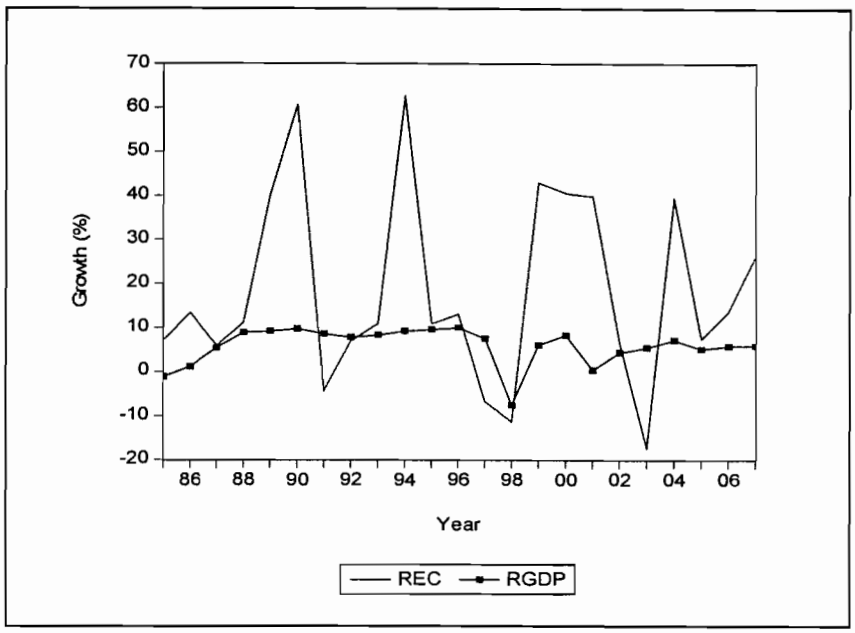
Table 2.3. Malaysia: Tourist arrivals and receipts (1998-2007)

Year	Tourist Arrival	Receipt (Rm Billion)
1998	5,550,748	8.6
1999	7,931,149	12.3
2000	10,221,582	17.3
2001	12,775,073	24.2
2002	13,292,010	25.8
2003	10,576,915	21.3
2004	15,703,406	29.7
2005	16,431,055	31.9
2006	17,546,863	38.2
2007	20,900,000	46.1

Source: Malaysia Tourism Promotion Board (Planning and Research Division)

The trend of growth in international tourism receipts as compared to the growth of real GDP (from 1985 to 2007) was range-bound and moving sideways (Figure 2.1).

Figure 2.1. Malaysia: Growth in Real GDP and International Tourism Receipts (1985-2007)



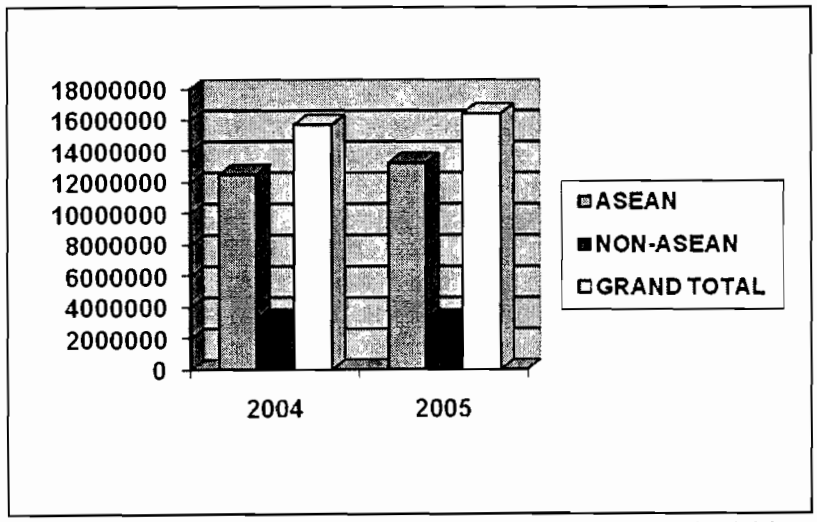
Source: Malaysia Tourism Promotion Board (Planning and Research Division), 1985-2007 and Monthly Statistical Bulletin, Bank Negara Malaysia (various issues).

On the one hand, the number of arrivals from ASEAN countries in 2005 recorded an increase of 6.0 percent from 12.5 million to 13.2 million and contributing to a total of RM22.9 billion in receipts, which was an increase of 9.9 percent from RM20.8 billion recorded in 2004. On the other hand, the Non-ASEAN markets generated RM9.03 billion in receipts in 2005, with a growth of 2.6 percent as compared to RM8.8 billion in 2004 (Table 2.4).

Singapore was the biggest contributor in 2005 with total receipts of RM17.7 billion. This was followed by Thailand as the second highest contributor with a total receipt of RM2.0 billion. The Indonesian market, which ranked fifth in 2004, moved up to third in 2005 with a receipt of RM1.4 billion. Other top ten tourist receipt markets

were Brunei (RM1.28 billion), which ranked fourth; followed by Australia (RM1.03 billion); the U.K. (RM914.6 million); China (RM787.0 million); Japan (RM651.8 million); India (RM557.5 million), and Saudi Arabia (RM420.9 million). From Figure 2.2 and Table 2.4, we can conclude that Malaysia's tourism industry has grown quite considerably during the period observed.

Figure 2.2. Malaysia: Tourist Arrivals from ASEAN and Non-ASEAN Countries (2004-2005)



Source: Malaysia Tourism Promotion Board (Planning and Research Division), 2005

Table 2.4. Malaysia: Tourist arrivals and receipts from selected markets (2004-2005)

Country Of Residence	Tourist Arrival 2004	Tourist Arrival 2005	Growth (%)	Tourist Receipt (Rm Mil) 2004	Tourist Receipt (Rm Mil) 2005	Growth (%)
Brunei	453,664	486,344	7.2	1,153.7	1,286.5	11.5
Indonesia	789,925	962,957	21.9	1,125.8	1,447.7	28.6
Philippines	143,799	178,961	24.5	282.6	348.8	23.4
Singapore	9,520,306	9,634,506	1.2	16,826.9	17,715.0	5.3
Thailand	1,518,452	1,900,839	25.2	1,362.7	2,005.6	47.2
Vietnam	42,088	52,543	24.8	62.1	79.3	27.7
Other ASEAN	22,796	22,748	-0.2	33.5	38.4	14.8
Total ASEAN	**12,491,030**	**13,238,898**	**6.0**	**20,846.3**	**22,921.3**	**9.9**
China	550,241	352,089	-36.0	1,329.2	787.0	-40.8
Taiwan	190,083	172,456	-9.3	458.0	343.6	-25.0
Hong Kong	80.326	77,528	-3.5	183.4	233.9	27.5
Japan	301,429	340,027	12.8	760.4	651.8	-14.3
South Korea	91,270	158,177	73.3	206.6	305.5	47.9
India	172,996	225,789	30.5	323.3	557.5	72.4
Saudi Arabia	39,432	53,682	36.1	222.3	420.9	89.4
U.A.E.	21,161	29,606	39..9	91.9	176.3	91.8
Canada	32,822	31,167	-5.0	70.7	69.8	-1.2
U.S.A.	145,094	151,354	4.3	400.2	418.2	4.5
Australia	204,053	265,346	30.0	554.2	1,032.8	86.4
New Zealand	23,855	33,846	41.9	72.0	93.8	30.3
Denmark	11,884	11,681	-1.7	25.9	27.2	4.8
Finland	11,308	13,172	16.5	26.3	34.4	30.7
Norway	9,437	9,823	4.1	19.3	23.4	21.1
Sweden	25,960	32,408	24.8	59.2	80.9	36.7
U.K.	204,406	240,031	17.4	618.7	914.6	47.8
Italy	20,036	21,561	7.6	42.9	58.7	36.8
Spain	19,229	17,064	-11.3	45.4	43.8	-3.6
Belgium	7,449	9,386	26.0	17.9	30.7	71.6
Netherlands	28,112	40,494	44.0	64.3	138.9	116.0
France	32,562	40,474	24.3	67.8	107.2	58.1
Germany	53,783	59,344	10.3	127.1	152.3	19.9
Switzerland	15,584	17,701	13.6	41.1	47.7	16.2
South Africa	16,511	16,381	-0.8	58.3	54.9	-5.8
Other Asia	145,573	167,457	15.0	451.9	487.7	7.9
Other Americas	939,85	92,394	-1.7	236.2	183.6	-22.3
Other Europe	94,426	98,376	4.2	276.8	277.2	0.1
Others	561,029	413,343	-26.3	1,918.1	1,278.6	-33.3
Total Non- ASEAN	**3,212,376**	**3,192,157**	**-0.6**	**8,804.1**	**9,032.8**	**2.6**
Grand Total	**15,703,406**	**16,431,055**	**4.6**	**29,651.4**	**31,954.1**	**7.8**

Source: Malaysia Profile of Tourists by Selected Markets, 2005

2.5 Tourist Expenditure Pattern

The growth of the tourism industry has contributed to the economic development through its close linkages with a wide spectrum of industries, reflected by the expenditure patterns of tourists. In terms of tourist expenditure pattern, accommodation remained as the biggest component, increasing from RM9.3 billion in

2004 to RM10.7 billion in 2005 (Table 2.5). Shopping expenditure remained the second largest expenditure component of tourists, increasing from RM6.64 billion to RM6.65 billion during the same period. This is in line with the efforts of the tourism industry to promote Malaysia as a shopping paradise. The other increased components in expenditure were food and beverages, and local transportation. However, entertainment, domestic airfares, and organised tours showed the negative growth.

Table 2.5. Malaysia: Components of tourist expenditure (2004-2005)

Items	2005 (Rm Mil)	2004 (Rm Mil)	Growth (%)
Accommodation	10,704.6	9,266.1	15.5
Shopping	6,646.5	6,636.0	0.2
Food & Beverages	6,358.9	5,153.4	23.4
Local Transportation	3,706.7	2,911.8	27.3
Entertainment	1,278.2	1,841.4	-30.6
Domestic Airfares	1,246.2	1,565.6	-20.4
Organised Tour	1,022.5	1,269.0	-19.4
Miscellaneous	990.5	1,008.1	-1.7
Total	31,954.1	29,651.4	7.8

Source: Malaysia Profile of Tourists by Selected Markets, 2005

2.6 Economic Impact of Tourism

2.6.1 Employment

The travel and tourism industry is one of the world's single largest sources of employment (Mihalič, 2002). It is extremely labour intensive, offering a wide variety of jobs everywhere, from highly-skilled positions requiring high levels of education (example travel agents, hotel managers, etc.) to very low-skilled entry-level jobs. During the 2000 through 2005 period, employment in the Malaysian tourism industry grew at an average annual rate of 2.9 percent from 390,600 in 2000 to 451,000 in 2005. Direct employment in the hotel industry had increased by 1.6 percent from 84,171 in 2000 to 91,156 in 2005, while employment by tour and travel agencies was estimated at 13,028 in 2005. In 2006, the tourism industry provided 492,000 direct employment

opportunities or 4.4 percent of the total work force. This was an increase of 26 percent compared to 390,600 jobs in 2000, accounting for 4.2 percent of the total workforce (Economic Report, 2007/2008). Employment creation by tourism is higher because of the strong linkages between tourism and other segments of the economy, such as transportation, retail, utility, food and beverage, as well as financial services. In addition, tourism also plays a crucial role in helping low-income groups to improve their livelihood through involvement in tourism-related activities, such as pottery-making, *batik-canting* (batik printing), and *songket* (textile) and basket weaving.

2.6.2 Investment

The Malaysian government has always recognised the need for adequate investment incentives for the tourism industry, particularly in the hotel sector. Hence, it has provided the necessary incentives in order to accelerate the growth of this industry. In addition, the development of the infrastructure to encourage communication and tourism travel has always been a priority. This is reflected by the growth of network of roads, rail and commuter lines including the LRT, and international airports like Kuala Lumpur International Airport (KLIA). Moreover, to improve tourist packages, a lot of emphasis has been given on the upgrading of existing attractions and developing new attractions like the Kuala Lumpur Tower, Kuala Lumpur City Centre (KLCC), Putrajaya, and Cyberjaya. Under the Ninth Malaysia Plan (Malaysia, 2006), the development allocation for the tourism industry amounted to RM1.8 billion (Table 2.6). The government will be focusing more on the provision of adequate infrastructure, which will be largely for the purpose of upgrading and maintenance of tourism-related facilities and amenities.

Table 2.6. Malaysia: Development expenditure and allocation for tourism (2001-2010)

Programme	8th MP[a] Expenditure (Rm Million)	9 MP[a] Allocation (Rm Million)
Environmental Protection and Beautification	243.1	652.1
Facilities, Infrastructure, and Maintenance	459.4	1,034.8
Accommodation	31.7	115.0
Others	49.4	46.0
Total	783.6	1,847.9

[a] Stands for Malaysia Plan

Source: Malaysia (2006), Malaysia (2001)

2.6.3 Poverty Reduction

Tourism also plays a significant role in reducing poverty with its intricate relationship with issues such as disease, illiteracy, infant mortality, and environmental degradation. For countries like China and South America, tourism is now becoming an important sector. According to one knowledgeable travel analyst, the brightest prospects for tourism are found in the developing world. Over the past decade, the annual growth rate of tourists travelling to developing countries was higher than the world average, with 326 million arrivals generating USD205 billion in revenues (WTC, 2007).

In addition, tourism potential for contributing to poverty reduction in developing countries was highlighted in the UNWTO report presented to the Third United Nations Conference on Least Developed Countries (LDCs) in September 2006. While LDCs accounted for only 1.2 percent of international tourist arrivals and 0.8 percent of total receipts in 2005, the growth rate in these countries had outpaced the world average since the turn of the century. Arrivals had increased to 48 percent compared with 17 percent for the world as a whole, whereas receipts grew by 76 percent against 40 percent.

The Malaysian government has recognised the potential of the tourism industry in contributing to poverty reduction. Therefore, in the formulation of tourism policies and strategies in the Ninth Malaysia Plan (Malaysia, 2006-2010), the government has provided the provision of incentives to encourage greater participation in tourism-related commercial and business activities. Small and Medium sized Enterprises (SMEs) are also encouraged to participate in the expansion of existing and new businesses, such as food catering, pro-poor tourism, homestays, recreational services, and handicraft product development. In addition, special investment packages have been developed to enhance participation in the expanding travel and tour activities dealing with inbound tourists.

2.6.4 Other Economic Impact

Tourism from an economic perspective may also contribute to or militate against development in terms of its impact on: the balance of payments; the multiplier effect; regional economic development; inflation and deflation, as well as environmental goods valuation (Mihalič, 2002). However, according to the author, these would impact more or less of importance, depending upon the tourism context. For example, in less developed countries, tourism is generally in favour for its potential as a generator of foreign currency whereas within Europe, tourism's role as a source of regional development has been increasing in importance. For the Malaysian economy, development in tourism has generated high multiplier effects across many sectors, provided a wider platform for greater inter-and intra-sectoral linkages, as well as strengthened the services account of the balance of payments (Malaysia, 2006).

2.7 Non-economic Impact of Tourism

According to Mihalič (2002), tourism development also has many non-economic developmental impacts, such as sociocultural consequences, educational benefits, peace promotion and so on. It was also further stated that tourism development could contribute in a positive as well as in a negative manner toward improving the well-being of the host population.

Hashimoto (2002) however, argued that tourism has always been regarded as a means of economic modernisation, but has not been seriously considered as a means of social and cultural modernisation. He also stressed that the concept of socioeconomic modernisation emphasises improvements in various indicators, including improvements in living conditions and the quality of life, and maintaining the well-being of populations. Often, these indicators include decreasing mortality rates, increased literacy rates, access to healthcare and clean water supplies, as well as broader socio-political aims such as improving freedom of choice, increasing political autonomy, promoting the opportunity for endogenous decision-making and the encouragement of self-reliance. To what extent tourism can contribute to the improvement of these indicators is difficult to say because there is a lack of clear understanding about the impact of tourism on a society due to the fact that tourism development is often only a smaller part of larger development schemes, such as national economic development or regional economic improvement plans (Hashimoto, 2002).

Malaysia however, in the planning and implementation of tourism development projects, would use sustainable tourism development as a key strategy in order to provide the necessary balance among economic, social, cultural, and environmental needs (Malaysia, 2006).

2.8 Tourism Products and Services

Malaysia is relatively a new entrant in international tourism as compared to other established destinations in the ASEAN region. The next decade will see the involvement of many developing countries in the tourism industry as part of their effort to diversify and expand opportunities for economic development. Within this highly competitive environment, Malaysia should undertake a concerted effort in improving the quality attractiveness and uniqueness of its tourism products and services, in order to be competitive and to sustain tourist interests. Malaysia is fortunate to have been endowed with so many touristic assets and attractions to suit the taste and preference of every visitor. In addition, the country has some of the finest hotels and resorts of five-star comfort at affordable prices. Currently, there are over 2,256 hotels of different classes throughout the country with more than 170,000 rooms (Malaysia, 2006).

Therefore, in enhancing the distinct appeal of Malaysian tourism products and services, the government continues to promote the country's traditional advantages. Among them are eco-tourism; agro-tourism and homestay programmes; heritage tourism; culture, entertainment, and the arts; film and media locations; meetings, incentives, conventions, and exhibitions (MICE); thematic events; sports and recreational tourism; education tourism; Malaysia my second home (MM2H) programme; health and wellness tourism (bird-watching, diving, mountaineering, etc.), as well as marine tourism (cruise, yachting, etc).

In order to further promote and develop *eco-tourism* as guided by the National Eco-tourism Plan, Malaysia had identified 48 priority sites (NEP, 1996). The listing of the Mulu Caves and Kinabalu Park on UNESCO's World Heritage Sites, as well as other natural sites such as the marine parks at Tioman and Redang islands, help promote Malaysia's rich and diverse natural resources as tourist attractions. Additionally,

Langkawi Island accorded as the first UNESCO's National Geopark in South-East Asia on June 1, 2007 also contributes to promote eco-tourism sector in Malaysia.

Agro-tourism and homestay programmes in Malaysia definitely have a lot of potential. For example, our climate welcomes tourists the whole year round. In addition, the Malaysian tourism industry as a whole is robust and healthy. During the 2000 through 2005 period, an additional 463 homestay operators were trained and licensed, bringing the total to 1,089 from 79 villages (Economic Report, 2006/2007).

For *heritage tourism*, as part of an effort to preserve and restore historical sites, buildings, and artifacts to meet the special interests of potential tourists, more than 60 monuments and 25 historical sites were upgraded as tourist attractions. Besides, the listing of both George Town and Malacca as world heritage sites by UNESCO also contributes to the heritage tourism.

In terms of *culture, entertainment and the arts*, promotional efforts had focused on a number of areas, such as commercial and non-commercial performing arts, museums, art galleries, handicraft, and entertainment centres as well as theme parks. Cultural attraction continues to be promoted to showcase Malaysia's diverse ethnic and cultural festivals. Malaysia is also promoted as a gourmet paradise in view of the wide variety of food available owing to its multi-ethnic population (Malaysia, 2006).

For *film and media location*, increased effort is undertaken to position Malaysia as a preferred location by foreign film production and media companies for the making of feature films, television commercials, and documentaries. This will provide an additional avenue for international publicity and exposure for many of Malaysia's holiday destinations and tourist attractions.

Also, the *Meetings, Incentives, Conventions and Exhibitions* (MICE) market is an important source of growth for the tourism sector, due to its capability to attract the

high spending business travellers (Gee & Fayos-Solá, 1997; Gee *et al.*, 1989). The significant contribution made by both international and local participants in the MICE segment, in terms of number of events and receipts, is shown in Table 2.7.

Table 2.7. Malaysia: Meetings, Incentives, Conventions, and Exhibitions (2001-2005)

Indicator	2001	2002	2003	2004	2005
Number of Events:					
International	925	2,956	2,294	2,875	3,230
National	2,775	8,868	6,882	8,625	9,321
Total	3,700	11,824	9,176	11,500	12,551
Number of Participants:					
Foreign	473,486	699,924	550,741	675,699	775,286
Local	3,189,360	3,288,000	3,390,000	3,494,000	3,602,000
Total	3,662,846	3,987,924	3,940,741	4,169,699	4,377,286
Revenue (Rm Billion):					
Foreign	1.23	2.03	1.73	2.14	2.95
Local	1.98	2.04	2.10	2.17	2.24
Total	3.21	4.07	3.83	4.31	5.19

Source: Ninth Malaysia Plan, 2006-2010 (Malaysia, 2006)

For *thematic events*, greater effort has been undertaken to promote and position Malaysia as a destination for continuous year-round events of festivities and celebrations as well as an international shopping destination. These events included Colours of Malaysia, *Merdeka* (Independence) Celebration, National Water Festival, Food and Fruit Festival, Annual KL Fashion Show, highlighting Malaysia textiles including *batik* and *songket*, the Mega Sales Shopping Carnivals, and Year End Sale.

To develop the potential of *Sports and Recreation Tourism*, Malaysia continues to host annual global events, such as Petronas F1 Grand Prix, the Raja Muda International Regatta, Le Tour de Langkawi, World Amateur Inter-Team Golf Championship, the Monsoon Cup Sailing Regatta, as well as Putrajaya Boat Championship. Moreover, in developing and promoting the sailing and cruising

industry, an additional 10 marinas were built at strategic locations including *Pulau Langkawi, Pulau Pangkor, Pulau Pinang* and *Pulau Tioman*. Meanwhile, international powerboat and jet-ski races will soon make their debuts in *Pulau Duyong*, the venue of the prestigious Monsoon Cup Sailing Regatta. Therefore, these world-class events would be a catalyst for local economic growth.

Recognising the potential of *education tourism* as a new market segment in increasing foreign exchange earnings, measures were undertaken in promoting Malaysia as a regional centre of education excellence. As a result, foreign exchange earnings from this emerging market increased from RM220 million in 2000 to RM450 million in 2005 (Economic Report, 2006/2007). As part of the effort to promote education tourism, five Malaysia Education Promotion Centres were set up in Beijing, Dubai, Ho Chi Minh City, Jakarta, and Jeddah to promote education opportunities available in Malaysia.

The *Malaysia My Second Home programme* (MM2H) was introduced to encourage foreigners, their spouses, and dependants to select Malaysia as their second home. During the 2000 to 2005 period, the MM2H programme attracted a total of 7,308 participants. It was popular among citizens from China, which comprised 24 percent of the total; followed by citizens from Bangladesh, Britain, and Singapore, at 15 percent, 8 percent, and 6 percent, respectively. Therefore, with aggressive campaigns in the targeted countries such as Japan, South Korea, Indonesia, Singapore, China, Northern Europe, and the UK, in conjunction with efforts to promote Malaysia as an ideal family destination, it is hoped that more "silverites" will be interested in enjoying a truly Malaysian lifestyle.

In terms of *health tourism*, intensive marketing and promotional activities continued to be undertaken to position Malaysia as a premier destination for quality

healthcare. Several incentives has been offered by the Malaysian government in order to attract foreign companies, especially from Switzerland, Russia, China, and U.S. to invest in alternative medicine clinics and wellness centres in the country. In 2005, the value of foreign exchange earnings derived from health tourism was estimated at RM925 million. Therefore, if Malaysia can offer quality healthcare at the competitive prices, it can be a premier destination for health tourism.

2.9 Concluding Remarks

The development of a more robust tourism industry, contributing to greater foreign exchange earnings as well as generating new businesses and employment opportunities, causes this industry to continue to be an important source of new growth and a key driver in the development of the service sector. In order to accelerate the momentum of the tourism industry in realising its full potential, Malaysia should continue enhancing its position as an international tourist destination and promote both the international and domestic travel and tour industry.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

Reviewing related literature involves examining or reviewing developments in theory as well as empirical work in the area related to the present study. Hence, this chapter provides insights into the present study by reviewing previous research concerning the issue of tourism demand and economic growth.

3.2 Tourism Demand

The concept of tourism demand refers to the entire bundle of services, which tourists purchase, such as transportation, accommodation, catering, entertainment, and related services. Tourism demand can be analysed by groups of countries, individual countries or states, regions, or local areas (Laurin, 2007; Narayan *et al.*, 2007; Papatheodorou, 1999; Qu & Lam, 1997). It can also be aggregated by categories such as types of visits (for example holiday and business tourism), and the types of tourists, covering nationality, age, gender, and socio-economic group (Buck, 1978; Sharpley & Tefler, 2002; Singh & Kaur, 2007).

Recently, there has been increased interest in estimating the tourism demand model (Narayan, 2003a; Salman, 2003; Song *et al.*, 2003; Garin-Munoz, 2007; Saayman & Saayman, 2008; Choyakh, 2008; Witt *et al.*, 1992b), but accuracy of tourism demand estimates has always been limited by the nature of the data and methodology (Hall, 2005; Salvatore, 2004; Sequeira & Campos, 2005; Skerrit & Huybers, 2005).

3.2.1 Consumer Behaviour Theory

The majority of tourism demand models were derived from consumer behaviour theory which assumes that the optimal consumption level depends on the consumer's income, the price of goods, the prices of related goods (substitutes and complements), and other factors (Zhou *et al.*, 2004). Nevertheless, according to Sinclair and Stabler (1997), people's preferences and their expenditure budgets are key determinants of the demand for tourism. Divisekera (2003) however, stressed that the choice of destination is a typical consumer problem, where a tourist faced with different alternatives, chooses a destination to maximise utility. She further stated that the tourist's utility function representing the preferences for travelling abroad and other goods and services is assumed to be weakly separable[5].

3.2.2 Determinants of Tourism Demand

Tourism demand is generally measured in terms of number of tourist arrivals from the country of origin to a destination country, or in terms of expenditure by tourists from the country of origin in the destination country. Also, the number of nights spent by tourist in the destination country could be an alternative measure. However, reviewing the published papers in tourism research showed that the most appropriate variable to be used as the dependent variable in tourism demand modelling is tourism receipts or tourism expenditure.

Crouch (1994a), in a review of 85 tourism studies, found that 63 percent of studies chose the number of tourist arrivals as the dependent variable, while 48 percent

[5] The assumption of weak separability implies that the tourists' overall utility maximising problem may be represented by a multi-stage budgeting process. In the first stage, income is allocated across various goods and services inclusive of tourism. In the second stage, tourists allocate their expenditure among various tourism goods and services. Most importantly, the quantities of purchased goods appearing in any one of the groups to the groups to which the sub-utility function belongs can be expressed as functions of total group expenditure and within group prices alone.

used expenditure and receipts. Due to the unavailability and perceived poor quality of expenditure data, most studies used total tourist arrivals as the dependent variable (Anastasopoulos, 1984).

There are many factors influencing tourism demand and it varies according to countries or region, period of study, types of data like time series or panel data, and nature of tourism, such as holiday, business trip, visiting family or friends, etc. (Burkhart & Medlik, 1981). Besides, the choice of explanatory variables is also subjected to problems such as loss in degree of freedom, reliability of data, collinearity problems, endogeneity inconsistency, and others (Crouch, 1994a).

In a survey of 80 empirical studies on international tourism demand, Crouch (1994a) found that income, relative prices, transportation cost, and exchange rates are the most commonly used explanatory variables. Meanwhile, according to Sinclair and Stabler (1997), income, relative prices, exchange rates and transport costs are also important variables in determining the level and pattern of holiday expenditure.

3.2.2.1 Income

Reviewing the published work on tourism showed that income is the single most important determinant of tourism demand. It frequently provides the greatest explanatory power of demand (Archer, 1980). Based on previous empirical studies, typical income measures include the gross domestic product (GDP), gross national product (GNP), national disposable income (NDI), personal income (PI), and consumption expenditure (CE), measured in either real, nominal, aggregate, or per capita form, depending on data availability and nature of tourism demand modelled. Generally, PI and CE are used to model leisure and holiday travels, while GDP, GNP,

and NDI are used in modelling business travel. Nevertheless, both nominal and real incomes are acceptable if prices are specified accordingly (Zhou *et al.*, 2004).

Most of the previous empirical studies found that estimated income elasticity of demand for international tourism was above unity (highly elastic), confirming the view that foreign travel is a luxury product (Crouch, 1994b). While in some cases, the estimated income elasticity was well above 2.0, the conventional opinion seemed to be that the normal range is between 1.0 and 2.0 (Rosensweig, 1988). Divisekera (2003) however, in examining international tourism demand in Australia, stated that the destination is considered as a *luxury* (or up-market destination) if the estimated elasticity exceed unity, while it is considered as a *normal necessity* (low-market destination) if the estimated elasticity is less than unity ($0<Ey<1$).

3.2.2.2 Price

Based on consumer theory, price is generally regarded as a major determinant of demand. Therefore, in the tourism demand study, there are two elements of price: firstly, the cost of travel to a destination and secondly, the cost of living for the tourist at the destination.

It may be easier to compile a suitable index of the cost of travel to a destination, but to estimate tourist cost of living at the destination country is more complex. Many previous studies used the consumer/retail price index in the host country, the exchange rate, and tourist cost of living index in the host country as proxies for this variable (Martin & Wit, 1987). Nevertheless, a number of studies have used other proxy measures, including special service price indices, special travel price indices, the U.S. foreign service personnel *per diem* allowances, U.N. personnel cost of living

allowances, board and lodging cost, and the implicit price deflator for durable consumer goods (Crouch, 1994b).

In some studies where econometric forecasting models had been developed for international tourism demand, a specific tourist's destination cost of living variable is incorporated into the models. Usually, the consumer price index in a country is taken to be a proxy for the cost of tourism in that country. This measure was adopted due to the lack of more suitable data. Typically, the CPI defined the basket of goods purchased by tourists rather than the usual typical consumer basket (Kliman, 1981). However, Katafona and Gounder (2004) argued that tourists are very sensitive to prices, either in the form of transportation costs (airfares) or cost of living (accommodation, meals, etc.) at the destination country. Ideally, an index measuring relative prices of hotels and restaurants would be the most appropriate variable to use. Nevertheless, in the absence of such an index, the real effective exchange rate can be used as a proxy.

Whichever destination price variable is used, it needs to be adjusted by the exchange rate in order to transform it into the origin country currency (Artus, 1970; Barry & O'Hagan, 1972; Fletcher, 1986; Greenidge, 2001; Kwack, 1972; Jud & Joseph, 1974; Stronge & Redman, 1982; Witt, 1980a; Witt, 1980b; Uysal & Crompton, 1984; Witt & Witt, 1995).

Theoretically, tourism demand modelling incorporates absolute price levels of a vast range of goods and services consumed by tourists. In addition, cross-price effects could also be investigated by including prices in substitute destinations as well as in the tourist's own country plus prices of other goods and services, particularly of a luxury nature, that compete for a share of consumption expenditure. However, the resulting model would be intractable; data limitations would prevent a solution. In order to achieve a realistic solution without unduly violating theoretical considerations,

therefore, composite price variables, usually expressed in relative rather than absolute terms, have typically been specified.

Nevertheless, a wide range of price definitions have so far been employed. Commonly, price has been expressed as a ratio of prices in the destination to prices in the origin country. Alternatively, prices in substitute destinations are compared to destination prices in the form of ratio. Sometimes, a single alternative destination has been used to represent competing prices. On other occasions, the weighted average prices are used in the literature instead of modelling travel between country pairs, where some studies examined total inbound or outbound travel (Daniel & Ramos, 2002; Halicioglu, 2008; Lee, *et al.*, 1996).

Economic theory suggested that the price of the substitute destinations may be important determinants of tourism demand. For example, an increase in holiday prices to Spain may increase demand for holidays to Portugal. In most international tourism demand studies, those substitution possibilities are restricted to tourists' destination living costs.

The substitute prices enter the demand function in order to specify the tourists' cost of living variable in the form of the destination value relative to the origin value, thus permitting substitution between tourist visits to the foreign destination under consideration and domestic tourism. The usual justification for this form of relative price index is that domestic tourism is the most important substitute for foreign tourism (Witt & Witt, 1995).

3.2.2.3 Exchange Rate

The Exchange rate enters the demand function as one of the explanatory variables. It is used to represent tourist living cost. According to Martin and Witt

(1987), the inclusion of exchange rate as an explanatory variable is not clear-cut because of the interrelationship between exchange rates and relative inflation rates. Another argument about the inclusion of exchange rate is that the impact of exchange rates has already been incorporated to some extent in the other price variables, and only the remaining aspect of its cost is on spending money (or expenditure).

However, since the exchange rate can fluctuate more rapidly than relative rate of inflation, many studies have specifically examined the influence of exchange rate on the demand for international tourism (Gerakis, 1965; Artus, 1970; EIU, 1972; Gibbons & Fish, 1985; Rosensweig, 1985; Chadee & Mieczkowski, 1987).

In addition, even though the exchange rate may become more favourable, there is no reason why the cost of goods in the destination country should be relatively cheaper in the long-run because exchange rates reflect to some extent relative rates of inflation; in the short-run, however, exchange rate movements can offer considerable bargains for tourists (Martin & Witt, 1987).

Economic theory assumes rationality and perfect knowledge. In practice, however, people are more aware of exchange rates than relative costs. Furthermore, exchange rates fluctuate much more rapidly than relative rates of inflation, enabling people to benefit from more favourable exchange rates in the short term. Among others, Gerakis (1965), Gray (1966), Little (1980), Loeb (1982), and Uysal and Crompton (1984) have all included a separate exchange rate variable in their models.

Common sense says that people travel more when costs go down. According to Singh *et al.* (1989), recent devaluation of the regional currencies had major implications for tourism in the Asia Pacific region. Inbound travel increases as tourists are being attracted by the higher purchasing power in countries where currencies have been devalued. More specifically, visitor expenditures would increase because of a longer

length of stay and attractive prices. However, in the short-run, devaluation may have some negative impact on outbound travel and operating costs. However, in the long-run, benefits would outweigh the cost.

3.2.2.4 Transportation Cost

Transportation cost is also considered as one of the important factors in determining tourism demand, especially for international travel. Several authors have suggested that a transportation cost variable should be included, but most researchers did not incorporate this variable in their models due to lack of adequate data. However, Jud and Joseph (1974), Little (1980), Stronge and Redman (1982), and Witt (1980a; 1980b) included a cost of transportation variable using either representative fares in real terms or data on expenditure on fares. On the other hand, Bond and Ladman (1972) used a weighted average one-directional airfare cost as a proxy for how the cost of a whole trip might vary through time.

In addition, Divisekera (2003) stated that tourism services were bought at the point of supply (destination). Consequently, transportation cost forms a large proportion of the expenditure associated with this consumption; destination choice and the quantity of what was demanded (consumed), are influenced by the cost of transportation as well as the cost of such services.

According to WTO (1998), generally a 10 percent rise in the relative cost travel worldwide from an origin has the effect of reducing total worldwide volume of travel by 15 percent. Responses are generally sharper for short-haul travel than for long-haul; typical elasticity for European origin countries is about –1.9 for short-haul and –0.6 for long-haul. Tourists from European and Far Eastern countries tend to be more sensitive

to cost changes than that from other parts of the world; possibly this is because higher proportions of the total cost tend to be for holidays.

3.2.2.5 Other Explanatory Variables

(i) Special Events and/or Government Policy

Special events and/or government policy is one of the elements, which is important in influencing tourism demand and might have biased the estimated parameters if they were ignored. These factors were included as dummy variables in the international tourism demand functions to allow for the impact of *one-off* events (Witt & Witt, 1995).

Crouch (1994a), in reviewing the tourism studies, found that more than half of the studies had included dummy variables to account for various disturbances. Such disturbances included political factors and social conflict, terrorism, travel restrictions, exchange restrictions, changes in duty-free allowances, economic recessions, special events, oil crises, and other disturbances that are difficult to quantify. Garin-Muňoz and Amaral (2000) in examining the international tourism flows to Spain used the 1991 Gulf War as a dummy variable. The results of the study indicated that the 1991 Gulf War had a significant negative effect on international tourism flows to Spain.

Meanwhile, Salman (2003) in estimating the long-run relationship between monthly tourist flows to Sweden from the American, European and Scandinavian countries used the Chernobyl nuclear accident and the 1991 Gulf War as dummy variables. The results however did not indicate any statistically significant effect of the Chernobyl nuclear accident or the 1991 Gulf War on international tourism flows to Sweden.

In addition, Katafona and Gounder (2004) used coups and major cyclones in Fiji as dummy variables in modelling tourism demand for Fiji. The results of the study showed that coups are a major deterrent for tourism demand in Fiji, while major cyclones were not significant in influencing tourism demand for Fiji. Besides, Choyakh (2008) in examining European tourism demand to Tunisia included the 1991 Gulf war and the terrorist attack in Djerba of 2002 as dummy variables. The results indicated that the 1991 Gulf war and the terrorist attack in Djerba were highly significant in determining tourism demand in Tunisia by French and German tourists.

Moreover, Karim and Kadir (2006) in investigating international tourism flows to Malaysia from 17 developed countries, used the *Malaysia...Truly Asia* promotional campaign, the effect of the 2001 September 11 incident in the United States, and the spread of the SARS in Asia as dummy variables. The results of the study indicated that the *Malaysia...Truly Asia* promotional campaign was significant in influencing international tourism flows to Malaysia. In addition, the spread of SARS in Asia did have a significant negative impact on international tourism flows to Malaysia. However, the effect of the 2001 September 11 incident in the United States had not affected international tourism flows to Malaysia.

(ii) Lag and Lead Effects

Depending on the time increments used in the time-series studies, it is reasonable to expect that the effects of changes in explanatory variables are unlikely to be confined to the same time increment. Indeed, both lag and lead (anticipatory) effects are possible (Crouch, 1994b). According to Gray (1982), such dynamic influences could be a function of proximity between origin and destination countries. Tourists from origin countries that are closer to the destination concerned are likely to be more

aware of destination prices and plan holidays within a shorter time period. Lag effects are therefore, likely to be more significant for more distant origins (Gray, 1996).

A number of studies have included lagged relevant explanatory variables by one or more time increments. This method is somewhat crude in that it assumes that the full impact is confined to a single time increment, albeit different, from the time increment associated with the change in the independent variable. Nevertheless, Witt (1980a) concluded that including a lagged relevant explanatory variable by one or two increments is the last technique, which is likely to produce the most accurate results for forecasts. Therefore, the Australian Tourism Research Institute (1988) also achieved a better fit of the model to the data by including the lagged variable.

However, the issue of lag and lead effects highlights the need to distinguish between short-term and long-term effects. Harrop (1973) suggested that, unlike the consumption of most goods, in tourism, marginal utility diminishes more slowly since each purchase seems to stimulate the appetite for more travel. If so, the long-term effects of certain explanatory variables could be quite considerable. If lag effects are important, markets will not adjust fully to changes in the space of a single time increment. Hence, the magnitude of estimated demand elasticities would depend on the duration of the time increments modelled, as well as the nature of any attempt to directly model the lag structure.

Crouch (1994b) stated that, as most of the tourism studies had not modelled lag effects, the estimated elasticity represents only short-term effects. Meanwhile, Edwards (1987) concluded that price takes about three years to work through markets and that about half of the effect occurs in the first year.

(iii) Lagged Dependent Variable

The lagged dependent variable (TAR_{t-1}) is included as an additional explanatory variable in the model to account for the *word-of-mouth* effect, which is the result of obtaining information about a particular destination from other visitors who have already vacationed (Salman, 2003). A lagged dependent variable can be justified on the grounds of habit persistence (Witt & Witt, 1995). Knowledge about the destination spreads as people talk about their holidays and show photographs, thereby reducing uncertainty for potential visitors to that country. In fact, this word-of-mouth recommendation may well play a more important role in destination selection than do commercial advertising.

Another reason for the inclusion of a lagged dependent variable in tourism demand functions comes from the supply side. Supply constraints may take the form of shortages of hotel accommodation, passenger transportation capacity, and trained staff, and these often cannot be increased rapidly. Moreover, time is also required to build up contacts among tour operators, hotels, airlines, and travel agencies. Similarly, once the tourist industry of a country has become highly developed, it is unlikely to dwindle rapidly. If a partial adjustment mechanism is postulated to allow for rigidities in supply, this results in the presence of a lagged dependent variable in the tourism demand function (Gujarati, 1988; Gujarati, 1992).

Among tourism demand studies that included the lagged dependent variables in the model are Fujii and Mak (1981), Garin-Muñoz (2006; 2007), and Martin and Wit (1987).

(iv) Nature of Competition

The majority of the tourism studies implicitly assumed that all countries are competitive destinations to a greater or lesser extent. Only a few studies have explicitly

considered the nature of competitive or complementary relationships between countries. Among others that effectively showed this as a naïve view, are Anastasopoulos (1984), White (1985), Stroombergen *et al.* (1991), Yannopoulos (1987), and Clarke (1978).

White (1985) stated that geographic proximity determines whether two destinations are complements or substitutes. Meanwhile, there were some suggestions that closer destinations are more likely to be complementary. This argument makes sense since tourists are more likely to package such destinations into a single trip (Crouch, 1994b). Therefore, Stroombergen *et al.* (1991) concluded that Australia and New Zealand are complementary destinations, while Clarke (1978) found evidence that suggested Barbados and Antigua benefit from a complementary relationship. Meanwhile, Anastasopoulos (1984) found that Portugal is Greece's main rival rather than Italy or Yugoslavia. He also inferred that Italy and Yugoslavia are mutually competitive. However, even though Italy seemed to be Greece's competitor, Greece seemed to complement Italy.

(v) Marketing Activity

This refers to the sales-promotion activities that attempt to persuade potential tourists to visit the country. This activity may take various forms including media advertising and public relations. Meanwhile, globalisation and the rapid growth of information technology are two factors that are currently changing the face of tourism. These two factors required all countries, regions, or destinations to learn to be more effective in competing with each other.

Around the world, we see the growing importance of special events in destination marketing. Destination sales and promotion strategies are increasingly dependent upon those events. For example, Hong Kong launched a few years ago, a two-year $30 million tourism campaign, that featured over 200 events, festivals, and

other attractions; Beijing and South Africa were betting big on the Olympics and the World Cup respectively, which Beijing won; Malaysia benefits from hosting a Formula One Grand Prix and Visit Malaysia Year Campaign; and, Cannes advertises itself as the city of festivals and events.

Nevertheless, the marketing variable has not featured often in tourism demand models. However, a critical review of studies found some forms of marketing variables that appeared in Martin and Witt (1987) and Crouch *et al.* (1992). Hence, in the future, promotional expenditure is expected to play an important role in determining the level of international tourism demand.

3.2.3 Modelling Tourism Demand

There exists a wide variety of published literature on tourism demand modelling. The published work however, can be classified according to: (i) those that use single-equation estimation techniques; (ii) more complete models; and (iii) panel data studies, all off which differ particularly with regard to the data requirements (Saayman & Saayman, 2008; Johnson & Ashworth, 1990).

The majority of tourism studies had employed single-equation techniques. According to Saayman and Saayman (2008), the most popular are log-linear and cointegration analyses (Kulendran, 1996; Kim & Song, 1998; Lathiras & Siriopoulos, 1998; Song & Witt, 2000; Vanegas & Croes, 2000; Kulendran & Witt, 2001; Lim & McAleer, 2002; Lim, 2004; Dritsakis, 2004; Algieri, 2006). The choice of the log-linear functional form is often preferred because it is easy to interpret as elasticity and yielded superior empirical results in terms of *correct* coefficient signs and model fit.

Narayan and Prasad (2004) however, expanded the regular single equation with lagged variables of the dependent and independent variables, which resulted in the so-

called autoregressive distributed lag (ARDL) framework. This technique is more dynamic in estimating tourism demand and has become popular lately (Algieri, 2006).

Besides, the Almost Ideal demand System (AIDS) model is often used as a more complete model for estimating tourism demand (Syriopoulos & Sinclair, 1993; Divisekera, 2003; de Mello & Fortuna, 2005; Han *et al.*, 2006). Moreover, Algieri (2006) pointed out that the AIDS model is useful in clarifying a country's outbound tourism demand to certain destinations.

However, in some recent studies, the panel data technique was utilised in evaluating a variety of tourism markets. Studies that used this technique included those by Van der Merwe *et al.* (2006), Naudé and Saayman (2005), Roget and Gonzalez (2006), Narayan *et al.* (2007), and Garin-Muňoz (2007). Panel data techniques are useful because it gives all the advantages of a larger number of observations, namely more informative data, more variability, less collinearity among the variables, more degrees of freedom, and more efficiency estimates (Baltagi, 2005). According to Hüble (2005), panel data technique also allows the researcher to distinguish between cohort, period and age effects, while unobserved heterogeneity can be controlled. On the other hand, time-series and cross-section study, which does not control this heterogeneity, run the risk of obtaining biased results (Moulton, 1986; Moulton, 1987).

Furthermore, Yaffee (2003) stated that when cross-sectional and time-series data are combined in panel data analysis, the quality and quantity of data are thus enhanced. Therefore, in tourism demand studies, panel data techniques allow the inclusion of the variables that are mostly static for one region (for example in terms of distance) but differ between regions, which are not possible in the time-series data.

3.2.4 Empirical Method Used in the Previous Studies

According to Narayan (2003b), tourism demand studies can be categorised by either using traditional econometric techniques (pre-1995 literature)[6] or modern econometric techniques (post-1995 literature)[7] in modelling tourism demand.

As economic time-series often display non-stationary characteristics, the determination of good models for prediction is an important element in most practical econometric research. The unit root test is a fundamental step in econometric modelling that was introduced by Nelson and Plosser (1982). They argued that most macroeconomic series have unit roots. A series that has unit roots is also known as a non-stationary times series. This problem according Granger and Newbold (1974) is known as *spurious* regressions.

Yule (1926) however, stated that regression based on non-stationary series is known as *nonsense* regression. Nevertheless, it was found that the pre-1995 and some post-1995 studies have ignored unit root tests and have failed to differentiate data and account for error correction terms when it is $I(1)$. Moreover, the results obtained from data series in the absence of the unit root test cannot be construed as long-run parameter estimates. This is because if only two variables are used, both need to be integrated of the same order (Charemza & Deadman, 1997). However, the order of integration is not a concern if the estimation of equation utilises the autoregressive distributed lag (ARDL) method of co-integration, recently developed by Pesaran and Shin (1995). The ARDL approach to co-integration does not require knowledge of whether the variables

[6] The pre-1995 studies (Gunadhi & Boey, 1986; Little, 1980; Kwack, 1972; Tremblay, 1989) on tourism demand modelling have ignored unit root and diagnostic tests as well as co-integration tests, hence, the parameter values are unreliable and vulnerable to the so-called *spurious* regression problem.

[7] The post-1995 literature (Kulendran, 1996; Seddighi & Shearing, 1997; Lathiras & Siriopoulos, 1998; Kulendran & Wilson, 2000; Lim & McAleer, 2001; Narayan & Prasad, 2004) reported all the key diagnostic tests, including heteroskedasticity; the improved econometric techniques applied in most of the post-1995 literature have produced a higher degree of reliability of parameters than those studies that have ignored.

under consideration are $I(1)$ or $I(0)$. The method avoids the requirements of pre-testing of the order of integration, which is necessary in other co-integration methods (Pesaran *et al.*, 1996).

Once the integration properties of the variables are established, then a test for cointegration is essential for only the presence of cointegration among variables allows the estimation of the long-run parameters. The notion of cointegration was first introduced by Granger (1981), and Granger and Weiss (1983). It was further extended and formalised by Engle and Granger (1987). Cointegration describes the existence of an equilibrium or stationary relationship among two or more time-series, each of which is individually non-stationary. The advantage of the cointegration approach is that it allows integration of the long-run and short-run relationships between variables within a unified framework. In addition, the presence of cointegration rules out the spurious regression problem (Kao, 1999; Phillips, 1986).

The research on cointegration essentially has taken two routes, single equation-based tests and systems of equation-based tests. The former follows the work of Engle and Granger (1987), Phillips and Ouliaris (1990), Hansen (1992), and Park (1990), whereas, the latter has roots in the work of Johansen (1988, 1991), Johansen and Juselius (1990), and Stock and Watson (1988), amongst others.

Given that cointegration gained popularity only in the late 1980s, it is not surprising to note that none of the tourism demand studies applied cointegration until the mid-1990s. As highlighted in Table 3.1, Seddighi and Shearing (1997) in examining the potential of tourism for economic development in Northumbria used the Johansen and Juselius cointegration test and multivariate cointegration analysis; finally, an error-correction model was proposed for the short-run forecasting. In addition, Narayan (2002), Salman (2003), and Katafona and Gounder (2004) employed cointegration and

error correction techniques in estimating the tourism demand function (see Table 3.1). Therefore, econometric techniques that were applied in most of the post-1995 studies had produced a higher degree of reliability than those studies that have ignored these techniques.

Oh (2005), in investigating the causal relationship between growth in the tourism sector and economic expansion in Korea, used the Engel and Granger two-stage approach and bivariate Vector Autoregression (VAR) model. Durbarry (2000), however, in estimating tourism price and expenditure elasticities of demand for France, used Deaton and Muellbauer's Almost Ideal Demand System (AIDS) as a framework. Moreover, the general framework developed by Pesaran and Shin (1999) was employed in order to identify, estimate and test hypothesis in cointegrated systems. Nevertheless, de Mello and Nell (2001), in determining the long-run relationship among tourism shares, tourism prices and UK tourism budget, used Sim's VAR methodology, as an alternative to Deaton and Muellbauer's AIDS approach.

Other quantitative forecasting techniques that have been used in tourism demand studies included spatial models, particularly gravity models (Clewer *et al.*, 1990; Mustafa, 2004). Empirical research on qualitative forecasting in tourism has centred on Delphi's studies and scenarios. In certain cases, probit and logit models were also employed. Such discrete choice models can have a variety of applications in tourism demand, for example, to explain the foreign destination/domestic destination decision. A recent application of logit analysis by Witt *et al.* (1992a) had examined the conference attendance/non-attendance decision of tourism demand.

Table 3.1. Methodologies used in selected tourism demand studies

Reference	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Algieri	2006																			√			
Anastasopoulos	1984,1989	√																					
Artus	1970,1972	√																					
Askari	1973	√									√												
ATRI	1988	√																					
Bakkalsalihoglu	1987										√												
Bond and Ladman	1972	√																					
B.T.C.E.	1988	√	√															√					
Choyakh	2008																			√			
de Mello and Nell	2001																				√		
Divisekara	2003				√																		
Dritsakis	2004																			√			
Edwards	1976,1979,1985	√																					
Edwards	1987	√														√							
Fujii and Mak	1981	√						√	√														
Garin-Muñoz and Amaral	2000																					√	
Gray	1966,1970	√																					
Gerakis	1965			√																			
Gunadhi and Boey	1986	√																					
Haitovsky,Salomon,Silman	1987													√	√								
Hollander	1982		√																				
Karim and Kadir	2006, 2007																			√		√	
Kulendran and Witt	2001																			√			
Katafona and Gounder	2004																			√			
Kwack	1972	√																					
Lin and Sun	1983	√					√																
Little	1980	√																					
Loeb	1982	√	√																				
Martin and Witt	1987,1988	√	√																				
Narayan	2003a,b																			√			

Table 3.1. Methodologies used in selected tourism demand studies (continued)

Reference	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
O'Hagan and Harrison	1984a,b																√						
Oh	2005																						√
Salman	2003																			√			
Seddighi and Shearing	1997																			√			
Smeral	1988	√					√																
Smeral and Witt	1992																		√				
Smith and Toms	1978	√																					
Straszheim	1969	√											√	√									
Summary	1987	√				√																	
Sunday	1978	√																					
Tremblay	1989	√																					
Truett and Truett	1982,1987	√																					
Uysal	1983	√	√																				
Uysal and Crompton	1984	√	√																				
Uysal and O'Leary	1986											√											
White	1985				√																		
White and Walker	1982									√													
Witt, Dartus and Sykes	1992a										√												

Source: The Economics of Tourism Volume I, 2000 and author's own research.

Where:

1) Ordinary least-squares multiple regression
2) Multiple regression using the Cochrane-Orcutt procedure
3) Quasi-experimental static group comparison (ex post factor design)
4) Almost Ideal Demand System (AIDS) of demand equations solved by maximum likehood estimation
5) Ordinary least-squares multiple regression using residuals
6) Two-stage least-squares estimation
7) Generalised least-squares estimation
8) Ridge regression
9) Regression with a first-order autocorrelation correction procedure, using SHAZAM computer program
10) Maximum likelihood estimation
11) Canonical correlation analysis
12) Constrained regression
13) Bayesian regression
14) Variance component modelling of pooled data
15) *Ad hoc* procedure involving fitting an S-curve to market share and relative price data by regression analysis
16) Version of AIDS system of demand equations solved using Zeliner's generalised least-squares method for seemingly unrelated regressions
17) Single equation estimation using seemingly unrelated regressions
18) Ordinary least-squares estimation using Gauss- Seidel method to solve the system of equations iteratively
19) Co-integration approach
20) SIM's VAR model
21) Fixed and Random effects model
22) Engel and Granger two-stage approach

Meanwhile, Garin-Muñoz and Amaral (2000) in examining the international tourism flows to Spain used Fixed and Random effects model. Likewise, Karim and Kadir (2006) also used the same approach in investigating international tourism flows to Malaysia from 17 developed countries.

The Sixth report on Italian Tourism (1996), Italy, used the macro economic impact analysis methodology for the measurement of income, employment, and balance of payment effects of tourism in a way which enables tourism to be compared with other sectors. The input-output model was based on inter-sectoral data. The basic analysis was expenditure-based and it distinguished between expenditure by domestic and foreign tourists. The results were used to calculate the induced effects in terms of value added and job creation, including the cross-sectional and cross-regional multiplier effects.

Archer (1987) however stated that a tourism multiplier is the measurement of rise (or fall) which takes place in economic activity within a country because of an increase (or decrease) in tourism receipts. The tourism multiplier can be designed to measure changes in business revenue (transactions or sales multipliers), income (income multipliers), employment (employment multipliers), and even imports (import multipliers). The same models can be used to measure the economic impact of tourism on the whole economy.

3.2.5 Findings of Previous Studies on Tourism Demand

Reviewing the previous literature showed that the level of income of the tourist's origin country, the relative price of tourism, transportation cost, exchange rate, and cost of tourism in the substitute destinations are influential in explaining tourism demand for a particular destination.

Song *et al.* (2003) for instance, in examining the demand for tourism in Hong Kong, found that the most important factors determining tourism demand are the cost of tourism in Hong Kong, income of the tourist's country of origin, the cost of tourism in the competing destinations and the word-of-mouth effects. Narayan (2003a) however, investigated the determinants of tourist expenditure in Fiji and found that the long-run real GDP of the tourist's country of origin positively affects tourist's expenditure in Fiji, whereas the price of tourism and transportation cost (airfares) have a negative effect on tourist's expenditure. In the short-run, the military coups negatively influences tourist's spending in Fiji.

Salman (2003), in estimating the long-run relationship between monthly tourism flows to Sweden from American, European, and Scandinavian countries found that real income of the tourist's country of origin, exchange rate, and relative price are significant in influencing international tourist flows to Sweden. Furthermore, Ishak (2006) investigated factors that influence inbound tourists from Japan and Korea to Malaysia and found that income level in tourist's country of origin, the cost of tourism in Malaysia, and exchange rate are the major factors that influence tourism demand in Malaysia.

By using a complete system of demand equations, White (1985) examined international travel demand between the U.S. and Western Europe. Findings of the study could be summarised as follows: (i) tourists from the U.S. view Norway, Sweden, Denmark, Spain, and Portugal as *luxury destinations* that might expect to receive an increased share of the traveller's budget as income increases; (ii) price elasticity of tourism demand tourism is relatively low for France, Belgium, the Netherlands, and Luxembourg; and (iii) high price substitution effects were detected for tourists from France, the U.K., and Germany.

Furthermore, Crouch and Shaw (1992) in investigating the effect of income and price on the demand for international tourism found that estimated income elasticity of demand varies according to certain substantive and methodological features, such as the nature of the demand coefficient estimation, the functional form of the model, the type of data used, whether a single or simultaneous equation approach was adopted, and the ways in which multicollinearity and serial correlation were managed. They also found that results on price elasticity yielded little information because price is a complex factor in international tourism.

In examining travel and transportation flows for 14 industrial countries by using aggregated travel expenditure model, Bond (1979) found that in most countries, travel has very high income elasticity and can be considered as luxurious goods. Moreover, travel expenditures are strongly influenced by changes in price and exchange rate with a time lag of up to two years. In addition, Little (1980) estimated a set of individual disaggregated demand equations for travel to 10 major countries by residents of the U.S. and found that travel to Japan and Spain had the highest income elasticity, while travel to Canada, Italy, and France had the lowest. The results of the study also indicated that U.S. travellers are as sensitive to changes in relative prices as to the relative exchange rates.

By using the input-output model, Heng and Low (1990) investigated the role Singapore performed as a gateway into the region. The results of the study indicated that Singapore's role as a gateway into the region was being eclipsed because of the development of tourism sectors in more land-abundant countries, as well as its own diversification into an international business and convention hub.

3.3 Tourism Supply

The demand for tourism in a particular country does not only depend on the socioeconomic factors but also on the supply factors. Hence, the characteristics of the countries especially tourist attractions and natural resources also have significant implications on the growth of demand for tourism (Croes & Vanegas, 2004). Furthermore, the contribution of tourism to the economy relies on natural as well as human-made resources. Nevertheless, it is difficult to define and quantify the supply of tourism because it involves a variety of products and services. Generally, the majority of the tourism forecasting model considers only demand variables, and supply variables are ignored (Gearing *et al.*, 1976).

3.3.1 Development Theory

Development theory and tourism have evolved along similar time lines since the Second World War, yet there has been little work connecting the two fields of study (Telfer, 2002). This is surprising considering tourism continues to be a growing focus of economic development policy in many regions and nations (Malecki, 1997).

However, the actual ability of tourism to support economic growth and to make an increasingly significant contribution to GDP remains the subject of intense debate, particularly since there is much evidence to support both sides of the argument. Frequently, this economic argument is derived from capital-output ratio analysis. The capital-output ratio is being based upon the amount of capital required to produce a single unit of output in the economy. It represents the ratio between the capital input and the output produced over a particular period of time and therefore, an increase in the rate at which capital produces a unit of output (lower capital-output ratio) would enhance the rate of economic growth.

Generally, in the context of tourism, capital-output analysis is based upon a comparison between the tourism sector capital-output rate and the equivalent rate calculated for the whole economy. According to Mihalič (2002), tourism development can be divided into three stages, depending on its contribution to the growth of local destination economy. In the first stage of development, which is equivalent to Butler's exploration stage (Butler, 1980), tourism development is spontaneous and unsupported by either a tourism development policy or by intensive capital investment. Tourists visit attractive places and generate some expenditure in the host region; in response, the local community, without the benefit of any purpose-built tourism infra- and super-structure, improvise in their attempts to satisfy the needs of tourists. At this stage, the average capital-output ratio in the tourism sector is low, and much lower than the average for the economy as a whole.

The destination enters the second development stage when the number of visitors and opportunities for tourism businesses increase. In this stage, the tourism development is promoted and politically supported with investment in tourism infra- and super-structure. Significant levels of capital investment are usually required and, since there exists a time lag between invested inputs and generated outputs in the form of tourism earnings, the average capital-output ratio for the tourism sector increases and becomes higher than the average ratio for the economy as a whole.

Thus, during the second stage, the capital-output ratio within the tourism sector also increases the overall economy's average capital-output ratio, thereby slowing down the average national economic growth rate. However, during this stage, other benefits of tourism development are promoted, such as improvements in the host population's quality of life in terms of new infrastructure or the opportunity for cultural exchanges

with visitors and the multiplier effect of tourism consumption, where the indirect effects of tourism consumption on non-tourism sectors are stressed.

The third stage of tourism development is reached when the average tourism capital-output ratio falls to or below the average ratio for the economy as a whole. This results both from the benefits of the past investment in tourism infra- and super-structure being realised, and also from current innovations and improvements in the quality and assortment of tourism products which, together, encourage higher levels of tourist consumption, hence contributing to the economic growth of the local economy. The marginal capital-output ratio is low and little additional tourism capital investment is required for an additional increase in tourism yields.

In many destinations, particularly in developed countries, the latter is mainly achieved through the enlargement of daily tourism consumption per visitor whilst the overall number of visitors remains unchanged. However, in many less developed economies, a rise in a tourism destination's yield is predominantly achieved through an increase in the number of visitors by promoting mass tourism and the related advantages of large-scale production.

Therefore, the potential for increasing per capita tourist spending based upon the quality and critical mass of facilities and attractions, is arguably greater in developed countries than in less developed countries. This suggests that policy of attracting lower numbers of higher spending tourists may be difficult to achieve in less developed countries, although different destinations must be assessed according to their tourist markets.

However, many destinations have attempted to overcome the lack of financial resources, to by-pass the economically unfavourable second development stage and to speed up the process of tourism infra- and super-structure development with the help of

international capital and expertise. Thus, they have tried to attract private foreign capital to fund tourism superstructure development, such as accommodation, restaurant, or entertainment facilities.

At the same time, the development of both general and tourism specific infrastructure, such as airports, roads, power supply, water supply, and sewage, is often seen as the responsibility of the government. With limited opportunities for local public sector funding, however, international organisations, such as the World Bank and other sources of international development finance, have for many years been the suppliers of capital for such investments (Pearce, 1989).

Certainly, there is no doubt that foreign capital investment gives rise to extra income and growth, as well as creates new jobs and encourages foreign currency earnings but, at the same time, it unfortunately generates more leakages than domestic capital investment from local private and governmental sources. This is because profits are remitted to the parent company, more foreign staff members are usually employed, and more imported goods may be used to support the tourism business, which collectively, serves to reduce the contribution of tourism to GDP.

At the same time, it is evident that the economically favourable third stage of tourism development may not be reached as easily as suggested in theory. The achieved decrease in the average capital-output ratio, based upon the ability of the economy to increase the daily tourism consumption per visitor without much new capital investment, depends upon many factors. As demonstrated by international tourism data, the more the destination economy is developed, the higher the tourism earnings per visitor and *vice versa.* Therefore, for countries with more developed and diverse economies, the economic benefits of tourism development accrue more effectively.

Hence, the level of development of the host economy is an important factor in achieving a decrease in the capital-output ratio. Furthermore, industrialised countries may develop other non-tourism sectors that make a greater contribution to the overall economic growth than is possible through tourism. It is important to note that although in these countries the value added in the tourism sector itself may be relatively low, the overall value added, created in response to consumption in both tourism and other sectors of the economy, may be higher as a result of the involvement of non-tourism sectors. Nevertheless, for some less developed countries or regions, tourism may remain the best development opportunity and the sum of the economic effects of tourism consumption in those countries may be positive.

Based on the above discussion about tourism development stages, it seems that tourism development in Malaysia falls between stage one and two. At this stage, significant levels of capital investment are usually required. This is evidenced in the case of Malaysia, whereby tourism development still needs to be supported by investment in infrastructure. Hence, in the Ninth Malaysia Plan, the government allocated RM1.8 billion under the development allocation of tourism industry for the provision of adequate infrastructure as well as upgrading and maintenance of tourism-related facilities and amenities (Malaysia, 2006).

3.3.2 Previous Studies on Tourism Supply

In most of the empirical tourism literature, the supply of tourism services is assumed to be perfectly elastic and it is expanded in response to an increase in demand (Uysal & Crompton, 1985). However, the infinite elasticity assumption is a convenient simplification rather than a tested hypothesis (Zhou *et al.*, 2004). Therefore, some authors argued that tourism supply is not rigid and can affect the demand. According to

Zhou (2003), lodging service (hotel accommodation) or the number of beds or rooms at the destination is the largest single product category in the overall tourist's expenditure and therefore, it can be used as a proxy for the supply of tourism services.

Choyakh (2008) however, suggested that tourism investment is a good proxy for tourism supply; it accounts for the possible quality improvement of the tourist product; moreover, tourism investment can provide information on both hotel capacity and hotel supply, and probably, the amount of marketing expenditure. However, due to the limited literature on hotel supply, some seek to estimate an inverted tourism supply curve, and this is most commonly found in hotel room tax literature (Bonham & Gangnes, 1996).

3.4 Tourism and Economic Growth

3.4.1 Related Theories

This section discussed theories, which are related to the tourism and economic growth study. It comprises international trade and growth theories.

3.4.1.1 International Trade Theory

The tourism industry is a part of international trade. It enters into international trade flows as an invisible export item. Tourism differs[8] from other products because a consumer or a tourist has to consume the product or service in the exporting country with fewer trading restrictions and no transportation cost for that particular product or service. Although its goods and services do not cross borders in the physical sense, it is

[8] From an economic point of view, tourism does not behave like other products or services. It features a heterogeneous product, strong mobility in demand, consumption *in situ*, intense interdependence with a variety of industrial sectors and vulnerability to exchange rates, crisis, and expansion, etc. All these make tourism a very complex activity, the effects of which are difficult to measure and a wide range of definitions and difficulties are encountered when recording its results (Cortes-Jimenez & Artis, 2005; Cortes-Jimenez & Pulina, 2007).

traded internationally (an export/import from receiving/generating country's point of view). Many developing countries, which have traditionally relied on earning from the export of primary products, receive net currency inflows as the result of diversifying into tourism, and others are attempting to gain additional receipts by increasing tourist flows from abroad. Tourism's image as a pot, if not of gold at least of foreign currency, raises the question of why some countries have specialised in tourism and whether gains have resulted from the new pattern of production and trade. However, it is arguable whether tourism follows the dictates of international trade theories or otherwise. Besides, most previous quantitative studies of international tourism demand were based on the conventional export/import formulation.

Classical economists, Adam Smith and David Ricardo emphasised the importance of international trade for a country's economic growth. They argued that a country could benefit considerably if it specialised in a certain commodity or product and then exported it to the foreign countries that lacked this commodity (Smith, 1776; Ricardo, 1817). Hence, if tourism is considered as any other exported goods, it is supposed to have a positive effect on economic growth.

One of the most well known international trade theory is the Ricardian theory of comparative advantage (Ricardo, 1817). The theory predicts that the pattern of trade is determined by differences in the relative efficiencies of production in different countries and that gains can result from specialisation in production. According to the theory, even if one country is more efficient in absolute terms in producing goods than another, short-run gains from trade can be obtained if it specialises in the production and export of the goods, which it produces relatively efficiently, in which it holds a comparative advantage. If each country were to specialise, total output would be greater, since a larger quantity of the goods could be produced for given inputs.

The Ricardian theory further stressed that given competitive conditions, each country's domestic (non-trade) price ratio is determined entirely by supply-side conditions, the relative efficiency of production stemming from technology. The post-trade price ratio is determined by both supply-side and demand conditions based on consumers' preferences for the traded products. Based on the static context of the theory, differences in the rates of growth of demand for the two products can result in a movement in the commodity in terms of trade. Thus, specialisation can possibly have disadvantageous effects over the long-run.

The Heckscher-Ohlin (hereafter HO) theorem however stated that a country's endowment of factor of production (labour, capital, and land/natural resources), rather than relative efficiencies of production, determine its comparative advantage. According to this theory, a nation will have a comparative advantage in producing goods and services, in which it is abundantly endowed. In terms of tourism, the countries that possess an abundance of underutilised labour and natural resources are likely to have a comparative advantage in exporting tourism services. However, Khan and Lin (2001) argued that this only applies to some countries such as Indonesia, Thailand, and Maldives, but not for a major industrial country like the U.S. and the U.K. Even though these countries do not have cheap labour and abundant natural resources, they are still popular as tourist destinations.

However, the HO theory is useful in so far as it points to the role which the supply-side can play in determining the pattern of international production and trade. Thus a country, which is relatively well endowed with labour, is said to have a comparative advantage in producing and exporting goods, which are produced labour-intensively, while a country which is capital-abundant has an advantage in producing and exporting capital-intensive goods. Samuelson (1948, 1949) took the theory a stage

further by arguing that in the factor price equalisation theory, trade would have the effect of equalising the returns to capital and labour across countries. This would occur as consumers demand products with relatively low prices stemming from low labour costs, thereby increasing the demand for labour and wage rate. A similar process would occur for products incorporating relatively low capital costs.

Diamond (1974) pointed out that tourism could involve large inputs of capital as well as skilled labour. Thus, the capital intensity of tourism varies between countries and can also vary over time, at different stages of tourism growth. Since tourism is not homogeneous, it is likely that tourism is relatively labour-intensive in countries with a large supply of labour and capital-intensive in countries which are capital-abundant.

3.4.1.2 Growth Theory

According to the neoclassical view (that dominated much of the literature until the early 1980s), growth depended upon the supply of labour and capital, with any residual growth being determined by exogenous technological change (Solow, 1956). The economic context was assumed to be one of perfect competition, with labour and capital being subject to decreasing returns. Harrod (1939) and Domar (1946, 1947) however argued that growth was given by the ratio of the saving rate to the capital-output ratio; that is the input of capital required to achieve a given level of output, the required capital input being a constant proportion of output with a fixed capital-output ratio. If actual growth rate exceeds business people's expected growth rate, they increase their investment and the actual growth rate increases further. The opposite would occur if the expected growth rate exceeds the actual outcome. This approach therefore stressed that expectations play a key role in determining growth.

The new theories of growth however argued that economic growth is determined endogenously within the economic system (Grossman & Helpman, 1994; Romer, 1994). Capital is defined not only as physical capital in the form of equipment and machines, but also as public infrastructure and human capital, for example in the form of skilled labour. Economic growth can rise from investment in the broad definition of capital, including investment in knowledge. New growth theories considered that growth can result from the accumulation of human capital, involving education and training of present and future workers (Lucas, 1988). *Learning-by-doing* is a second form of knowledge accumulation (Arrow, 1962; Romer, 1986; Young, 1991) and within the management literature there has been considerable debate about *empowering* workers to make an increased contribution to improving firms' performance. In the tourism industry, some hoteliers make arrangements for members of staff, including managers, to work in other hotels which are considered to be of a comparable or superior standard. In some cases, this involves sending staff to other countries, so that the ultimate objective is a cross-border transfer of knowledge and skills (Sinclair & Stabler, 1997).

A third determinant of growth is research and development (Grossman & Helpman, 1990a, 1990b, 1991; Aghion & Howitt, 1992). These factors can increase the variety and quality of products supplied and it may occur relatively quickly as a new tourism product are marketed, or more slowly if innovating firms attempt to appropriate the returns from the innovation, as in the case of computer reservation systems for holiday bookings.

Besides, the provision of public infrastructure can also facilitated growth in either material form, such as roads for local residents and tourists, or in non-material form, for example health care (Barro, 1990; Barro & Sala-i-Martin, 1992a; Barro & Sala-i-Martin, 1997). The view that public provision of infrastructure can further the

growth of the private sector contrasts with much of the thinking that was dominant during the monetarist era, when government spending was thought to crowd out private consumption and investment via increases in prices and interest rates. New growth theories acknowledge that public sector provision may be financed by distortionary taxes, which can be inequitable but show that the net effect on growth can be positive rather than negative. Within tourism, infrastructure is seen as facilitating the sector's growth and is referred to as the secondary tourism resource base. The role of initial factor endowments in the new growth theory depends upon the degree of international spill-over of knowledge. Thus, what is important is the extent and speed of intra- and inter-country knowledge generation and transmission, and firms' ability to take advantage of the knowledge which they obtain.

3.4.2 Tourism and Economic Growth: Hypothesis

This section provides an explanation of the hypotheses that relates tourism with economic growth.

(i) Hypothesis of Tourism-led Economic Growth

The tourism-led growth hypothesis that is directly derived from export-led growth hypothesis has been popularised by Balaguer and Cantavella-Jordà (2002). Since then, the issue has gained attention from researchers. Thus, recent studies in tourism and economic growth (Eugenio-Martin *et al.*, 2003; Gunduz & Hatemi-J, 2005; Kim *et al.*, 2006; Narayan *et al.*, 2007) suggested that economic development is positively affected by growth in the tourism sector.

As in the export-led growth hypothesis, tourism-led growth hypothesis postulated the existence of a channel where tourism would influence the overall long-run economic growth (Balaguer & Cantavella-Jordá, 2002; Dritsakis & Athanasiadis,

2005). In the more traditional sense, it should be argued that tourism brings in foreign exchange, which can be used to import capital goods in order to produce goods and services leading in turn to economic growth. (Mckinnon, 1964). However, if the earnings from tourism could be used to import capital goods for producing other goods in the economy, hence, it can be concluded that earning from tourism plays an important role in economic development.

Tourism growth provides a remarkable part of the necessary financing for the country to import more products than to export. On one hand, if those imports are capital goods or basic inputs for producing goods in any area of the economy, then it can be said that earnings from tourism play a fundamental role in economic development. On the other hand, international tourism can contribute to an income increase as the export-led growth hypothesis postulates, by enhancing efficiency through competition between local firms and other international tourist destinations, furthermore, facilitating the exploitation of scale economies at the local level (Helpman & Krugman, 1985).

In addition, Bryden (1973), de Kadt (1979), Blackman (1991), and Bull (1992) stated that tourism could positively affect economic growth and development for several reasons, such as increase imports, facilitate the use of resources that are in line with country's factor endowment, provide employment opportunities, promote infrastructure improvements, transfer new technology and managerial skill into the economy, and create positive linkages with other sectors in the economy. Therefore, growth in the tourism sector is expected to increase economic growth in the host country as stated by the tourism-led economic growth hypothesis.

(ii) Hypothesis of Economic Growth-led Tourism

The hypothesis of economic growth-led tourism focuses on the role of economic growth as the most significant factor in influencing the development of the tourism sector. Therefore, increase in economic growth of the host country (with high growth rates), would increase the development of tourism products or tourism services (improvement in the quality of tourism products). Furthermore, this would attract more tourists to demand for the tourism products or tourism services offered in the particular country. Hence, higher economic growth is expected to increase the development of tourism in the host country, which helps increase the number of tourist arrivals and thus justifying the economic growth-led tourism hypothesis.

It is possible that the strong link between tourism and economic growth could be a result of either the tourism-led economic growth or economic growth-driven tourism. Moreover, it is equally likely for the two variables to move together through feedback. Hence, as highlighted by Dritsakis and Athanasiadis (2005), a "strong Granger causal" relation between international tourism earning and economic growth was found in Greece.

3.4.3 Findings of Previous Studies on Tourism and Economic Growth

According to Bryden (1973), de Kadt (1979), Blackman (1991), and Bull (1992), the tourism industry could positively affect economic growth and development in several ways. Firstly, the tourism industry can increase import of consumer goods, capital goods, and intermediate goods. Secondly, the tourism sector facilitates the use of resources that are in line with the country's factor endowment. Thirdly, the tourism sector can provide employment opportunities in an economy. Fourthly, the tourism industry could indirectly promote improvements in the country's infrastructure that

benefits not only tourists but also society in the economy. Fifthly, the tourism industry is seen as serving as the conduit for transferring new technology and managerial skills into the economy. Finally, tourism can create positive linkages with other sectors of the economy, particularly agriculture, manufacturing, and other service industries (Din, 1995).

Although tourism is argued to contribute toward economic growth, empirically, the evidence of whether tourism-led economic growth or economic growth-led tourism is still lacking in the literature. Only a handful of studies tried to ascertain this relationship for example, Balaguer and Cantavella-Jordà (2002), Dritsakis (2004), Eugenio-Martin *et al.* (2003), Gunduz and Hatemi-J (2005), Oh (2005), Kim *et al.* (2006), and Narayan *et al.* (2007). However, most of these studies analysed the causal relationship between tourism and economic growth in a bivariate context and not all of them found evidence of the long-run causality from tourism to economic growth, except for Balaguer and Cantavella-Jordà (2002), and Dritsakis (2004). Furthermore, to the writer's knowledge, there is no study examining the causal relationship between tourism and economic growth in Malaysia by using panel data analysis[9]. Hence, this study attempted to fill the gap by examining the potential causal relationship between international tourism receipts and real economic growth in Malaysia (Lim, 1997a; Lim, 1997b; Wickremasinghe & Ihalanayake, 2006).

In determining the role of tourism in the long-run economic development of Spain, by using cointegration and causality tests, Balaguer and Cantavella-Jordà (2002) revealed that economic growth in Spain is sensitive to persistent expansion in international tourism. Increase in international tourism therefore has produced a multiplier effect over time. Moreover, the results of the study also revealed the positive

[9] Panel data analysis in this study refers to panel unit root tests (LLC test, Breitung test, IPS test, and MWF test), Pedroni's panel cointegration test, and panel Granger causality test.

effect of tourism on income and adequacy of supply. This would support the hypothesis that tourism is a significant contributor to the economic growth of Spain (Fischer & Gil-Alana, 2006).

Meanwhile, Dritsakis (2004) analysed tourism as a factor of Greece's long-run economic growth by using multivariate causality analysis. The results showed the presence of common trend or long-run relationships among international tourism earnings, real exchange rate, and economic growth. Furthermore, the results of the causality analysis denoted that international tourism earnings and real exchange rate cause economic growth with a *strong causal* relationship, while economic growth and real exchange rate cause international tourism earning with a *simply causal* relationship.

Eugenio-Martin *et al.* (2003) studied the relationship between tourism and economic growth in Latin American countries by using a panel data approach and the Arellano-Bond estimator for dynamic panels. The result of the study showed that the tourism sector is necessary for the economic growth of medium and low-income countries. However, it is not necessary for developed countries. In addition, the results provide evidence that low-income countries require adequate levels of infrastructure, education as well as development to attract tourists. Meanwhile, medium-income countries need high levels of social development like health services and high GDP per capita levels. The result of the study also indicated that developed countries have a comparative advantage over developing ones in terms of tourism infrastructure, education, and safety. However, Sinclair and Stabler (1997) argued that developing countries may have a comparative advantage over developed countries in terms of natural environment and socio-cultural features. Besides, the study also indicated that the price of the destination (in terms of exchange rate and purchasing power parity) is irrelevant for tourism growth.

Meanwhile, Narayan *et al.* (2007) analysed the relationship between tourism and economic growth in four Pacific Island countries, namely the Fiji Islands, the Solomon Islands, Papua New Guinea, and Tonga by using panel time-series econometric techniques. The results of the study showed that tourism industry is a significant contributor to GDP of all the four Pacific Island countries. These findings also justified the necessity of public intervention in providing tourism infrastructure and facilities.

Oh (2005) investigated the causal relationship between tourism development and economic growth for the Korean economy by using the Engel and Granger two-stage approach and the bivariate Vector Auto-regression (VAR) model. Two principle results had emerged from the study. Firstly, the result of the co-integration test indicated that there is no long-run relationship between the two series. Secondly, the outcomes of the Granger-causality test implied that there is a one-way causal effect between economic growth and tourism development in Korea. The hypothesis of tourism-led economic growth was not held true in Korea.

Modeste (1995) in a study on the impact of growth in the tourism sector on economic development in Caribbean countries found that economic development was positively affected by growth in the tourism sector. The author further stated that the growth of tourism sector in these countries is accompanied by contraction in the agricultural sector as the latter sector loses resources to the expanding sector.

3.5 Concluding Remarks

Reviewing the previous literature showed that the tourism demand modelling can be classified according to those that use single-equation estimation techniques, more complete models, and panel data analysis. There is no tourism study endeavour in Malaysia the uses panel data analysis, which refers to panel time-series econometric

techniques. The previous literature also revealed that the main determinants of tourism demand in most of countries are income level in tourist's country of origin, the relative prices of tourism, exchange rate, price of tourism in substitute destinations, transportation cost, and special events. Besides, in some countries, tourism has become the main determinant of long-run economic growth and in most of the developing countries, higher economic growth helps increase the development of the tourism sector. These have been supported by studies of Eugenio-Martin *et al.* (2003), Eugenio-Martin (2003), Dritsakis (2004), and Narayan (2007).

CHAPTER 4

METHODOLOGY

4.1 Introduction

Specifically, this chapter discusses methodologies, which relate to the present study. This involves traditional panel data, panel time-series econometric techniques, and individual time-series testing procedures that comprise the test for unit root, cointegration, and causality.

4.2 Conceptual Framework

4.2.1 Tourism Demand

Tourism decisions by economic agents can be considered as other consumption decisions, which are the result of utility maximisation subject to constraints (Morley, 1992). Hence, in order to explain theoretically tourist decision-making, a framework based on the consumer behaviour theory was utilised. The study looked at the consumer's utility-maximisation problem in a two-good model, q_1 and q_2; where q_1 is tourism product/service in destination 1 (Malaysia) and q_2 is tourism product/service in destination 2 (substitute destination). Both of which have continuous, positive marginal-utility functions, and the prices of goods are market-determined, hence exogenous. The consumer's preferences is represented by a utility function,

$$U(q) = U(q_1, q_2) \tag{4.1}$$

The consumer (tourist) chooses q_1 and q_2 to maximise any utility function, U(q), subject to a linear budget constraint determined by,

$$M = \sum(pq) \tag{4.2}$$

Ignoring other variables, the optimal quantities expressed in terms of the Marshallian demand functions for tourism in Malaysia is as follows

$$Q_1 = f_1(M, p_1, p_2) \tag{4.3}$$

where p_1 is the price of tourism in destination 1 (Malaysia) and p_2 is the price of tourism in destination 2 (substitute destination).

For the purpose of estimating the tourism demand model for Malaysia, this study also included other variables such as dummy variables (the *Malaysia...Truly Asia* promotion campaign, the 1997/98 Asian financial crisis, the spread of SARS in Asia, and the 2001 September 11 incident in the U.S.), which according to the literature are also influential in determining tourism demand[10].

Following Zhou *et al.* (2004), the Marshallian demand function for tourism can be derived as follows:

$$TAR_{ij} = f(Y_i, P_i, P_j, P_s, X) \tag{4.4}$$

where:

TAR_{ij}	=	demand for tourism in the destination j by consumer from the country of origin i;
Y_i	=	the level of income in the tourists' country of origin i;
P_i	=	the price of other goods and services in the tourists' country of origin i;
P_j	=	the price of tourism in the destination j;
P_s	=	the price of tourism in the substitute destination; and
X	=	the vector of other factors affecting tourism demand.

[10] According to Crouch (1994a), more than half of the tourism demand studies had included dummy variables to account for various disturbances. Such disturbances included political factors and social conflict, terrorism, travel restrictions, exchange restrictions, changes in duty-free allowances, economic recessions, special events, oil crises, etc. Ignoring these variables might bias the estimated parameters.

When homogeneity is assumed, the demand for tourism can be expressed as a function of income in constant destination prices and prices of substitutes in relative terms. Hence, the general equation of tourism demand to be estimated is as follows,

$$TAR_{ij} = f(Y_i / P_i, P_j / P_i, P_s / P_i, X) \tag{4.5}$$

4.2.2 Tourism and Economic Growth

In order to show theoretically that, there is a relationship between tourism and economic growth, a framework similar to that developed by Feder (1982) and Ram (1986) was utilised, which incorporates the tourism sector as an explanatory variable in the sources of growth equation. As the first step, it is assumed that the economy is divided into two sectors; first is the tourism sector (T) and second is the non-tourism sector (N). In the case of the tourism sector, output is dependent on inputs of labour and capital, while in the non-tourism sector, apart from the usual inputs of labour and capital, the output of the sector is also dependent upon activities in the tourism sector. The production functions for these two sectors are as follows:

$$T = G(K_T, L_T) \tag{4.6}$$

$$N = F(K_N, L_N, T) \tag{4.7}$$

where, T = tourism output, N = non-tourism output, K_N and K_T = the capital stock of the non-tourism and tourism sectors respectively, and L_N and L_T = the labour force for the non-tourism and tourism sectors respectively. In the second assumption, the total amount of inputs is assumed to be given as:

$$K_N + K_T = K \tag{4.8}$$

$$L_N + L_T = L \tag{4.9}$$

The third assumption underlying the analysis is that total output (Y) is the sum of the output from the tourism (T) and non-tourism (N) sectors;

$$Y = N + T \tag{4.10}$$

Given equation (4.10), the changes in output can be viewed as reflecting changes in tourism and non-tourism output.

In light of the externalities generated in the tourism sector, assumption four indicates that the relative factor productivities in the two sectors will exceed unity by an added factor, ξ;

$$(G_k / F_k) = (G_t / F_t) = 1 + \xi \tag{4.11}$$

where the subscripts denote partial derivatives of the function with respect to the particular input.

By differentiating the production functions and by using equations (4.9) through (4.11), along with some further manipulations, the following aggregate growth equation was derived:

$$\dot{Y} = \beta_0 \dot{L} + \beta_1 \dot{K} + \beta_2 \dot{T} \tag{4.12}$$

where the dot over the variable indicates the rate of growth for the particular variable. In determining the impact of tourism expansion on economic development, as measured by

per capita income, this study follows Salvatore and Hatcher (1990), which divides equation (4.12) by the labour force variable. As a result, the following model was derived for estimation:

$$\ddot{Y} = \beta_0 + \beta_1 \ddot{K} + \beta_2 \ddot{T} \tag{4.13}$$

where, $\ddot{Y}$ = the growth in real per capita income, $\ddot{K}$ = the growth in capital per head; and $\ddot{T}$ = the growth in tourism output per head.

The explanation of equation (4.13) is quite straightforward. It simply says that growth in per capita income is driven by the growth in capital per head and the growth in tourism per head. Therefore, this framework shows that there is a relationship between tourism and economic growth.

4.3 Samples and Data Description

In this study, the data of ASEAN-4 and selected non-ASEAN countries (see Table 4.1) were employed in determining the socioeconomic variables that might significantly affect tourism demand in Malaysia; investigating the presence of short-run and long-run relationships between tourism demand and its determinants; as well as identifying the causal relationship between international tourism receipts and real economic growth.

Two types of data were utilised in this study: firstly, the yearly balanced panel data set consisting of total tourist arrivals from ASEAN-4 and non-ASEAN countries, real GDP, the relative price of tourism, and the price of tourism in substitute destinations spanning from 1994 to 2004. These panel data were used to test for factors that might affect tourism demand in Malaysia, to investigate the presence of short-run and long-run relationships between tourism demand and its determinants, as well as to

determine the causal relationship between international tourism receipts and real economic growth through a panel cointegration test. Secondly, the quarterly time-series data, consisting of international tourism receipts, real GDP, real effective exchange rate, and consumer price index, which spanned from 1995:1 to 2005:2 were used in determining the causal relationship between international tourism receipts and real economic growth, through Bivariate and Multivariate causality test.

Moreover, in determining the factors that might significantly affect tourism demand in Malaysia (the first objective), the analysis was conducted using three sample groups in order to determine whether the factors influencing demand differs across countries. These groups were namely:

(i) tourists from ASEAN and non-ASEAN countries (or Whole sample),

(ii) tourists from ASEAN countries, and

(iii) tourists from selected non-ASEAN countries.

This segmentation of data was considered useful for the following reasons;

(i) more than 70 percent of total tourist arrivals were from ASEAN countries and it contributed to 68.7 percent of total tourist receipts (in 2005), and

(ii) in terms of average length of stay (ALOS), tourists from ASEAN spent only 6.1 nights or RM1,920 of average per capita expenditure as compared to non-ASEAN tourists, who spent about 10.9 nights or RM10,997 of average per capita expenditure[11].

Hence, Table 4.1 gives an overview of the variables used, their description and sources.

[11] Tourism Malaysia, Key Performance Indicator, 2005.

Table 4.1. Variable description and sources

Variable	Proxy	Description	Source
Tourist arrivals	ASEAN-4: • Singapore • Thailand • Indonesia • Philippines	i) Yearly data consisting of tourist arrivals from ASEAN and non-ASEAN, spans from 1994 to 2004.	*Tourism Malaysia, (Planning and Research division)*
	Non-ASEAN: • US • UK • Germany • Japan • Australia	ii)Quarterly individual time-series data consisting of tourist arrivals spans from 1995:1 to 2005:2	
Income	GDP	The real GDP of the tourists' country of origin in US$ terms.	*International Financial Statistics*
Relative price of tourism	CPI	The CPI of the tourists' country of origin relative to Malaysia's CPI adjusted by the relative exchange rate (2000=100)	*International Financial Statistics and Developed by author for this research*
Price of tourism in the substitute destinations	CPI	The CPI of the tourists' country of origin relative to the host country's CPI adjusted by the relative exchange rate	*Developed by author for this research*
The word-of-mouth effect	Lagged dependent variable, which refers to the previous year tourist arrivals from ASEAN and non-ASEAN countries	The yearly data of tourist arrivals from ASEAN-4 and non-ASEAN was transformed to the total tourist arrivals in the previous year using LIMDEP statistical package	*Developed by author using data provided by Tourism Malaysia for the purpose of this research*
Dummy variables	*i)* D_{MTA}	*i) The "Malaysia... Truly Asia" global campaign started in 1999*	*Economic Report*
	ii) D_{AFC}	*ii) The effect of the 1997/1998 Asian financial crisis*	
	iii)D_{SARS}	*iii) The spread of the SARS in Asia in 2002*	
	iv)D_{S11}	*iv) The September 11, 2001 incident in U.S.*	

4.4 Sources of data

The data used in this study were obtained from the Malaysia Tourism Promotion Board (Planning and Research Division); *Key Performance Indicator of Tourism in*

Malaysia (various issues); *Annual report of Bank Negara Malaysia* (the Malaysian Central Bank); *Economic Report 2005-2006*; the *Statistical Yearbook* (various issues) published by the Malaysian Department of Statistic; *OECD Economic Outlook*, and the *IMF International Financial Statistics Yearbook.*

4.5 Method of Estimation

To achieve the objectives of the study three well-developed methods were used in this study. Firstly, the study used the panel data econometrics fixed-/random-effects model to determine factors that affect tourism demand in Malaysia. Secondly, the panel cointegration analysis and error correction models were employed in investigating the presence of short-run and long-run relationships between tourism demand and the factors that influence tourism demand in Malaysia. Thirdly, individual time-series and panel causality tests were used to determine the causal relationship between international tourism receipts and real national economic growth. The methods highlighted above, are explained in the following sections.

4.5.1 Socioeconomic Variable Influencing Tourism Demand

In determining the socioeconomic variables that might significantly affect tourism demand in Malaysia, the study used panel data econometrics fixed-/random-effects model by utilising a balanced panel data set, spanning from 1994 to 2004 (Wooldridge, 2003; Wooldridge, 2006). The utilisation of this panel data has several advantages over time series data (Hamilton, 1994; Hsiao, 2003; Klevmarken, 1989). These include controlling for individual heterogeneity. Panel data suggests that individuals, firms, states or countries are heterogeneous. As a result, time-series and cross-section studies, which do not control for this heterogeneity, run the risk of

obtaining biased results (Moulton, 1986, 1987). Therefore, panel data are able to control for these state- and time-invariant variables whereas a time-series study or a cross-section study cannot.

In addition, panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom, and more efficiency. In fact, the variation in the data can be decomposed into variation between states of different sizes and characteristics, and variation within states. With additional informative data, one can produce more reliable parameter estimates. Besides, panel data are better able to study the dynamic of adjustment. Moreover, panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series data.

Furthermore, panel data models allow the construction and testing of more complicated behavioural models than purely cross-section or time series data. For example, technical efficiency is better studied and modelled with panel data (Baltagi & Griffin, 1988; Koop & Steel, 2001). In addition, fewer restrictions can be imposed in panels on a distributed lag model than in a purely time-series study (Hsiao, 2003).

Lastly, micro panel data gathered on individual, firms, and households may be more accurately measured than similar variables measured at the macro level. Biases resulting from aggregation over firms or individuals may be reduced or eliminated (Blundell, 1988; Klevmarken, 1989).

However, there are several limitations of panel data that include design and data collection problems, distortions of measurement errors, selectivity problems, short times-series dimension, and cross-section dependence (Baltagi, 2005). Nevertheless, the advantages provided by panel data have overwhelmed its cost. Moreover, economists now recognise that some questions are difficult, if not impossible, to answer

satisfactorily without panel data (Hsiao, 1985). Hence, this study involved estimating the following reduced-form function:

$$Y = \beta_0 + \beta_1 X + \beta_2 Z + \varepsilon \tag{4.14}$$

The dependent variable (Y) in the above model is the number of tourists who travel from country of origin, i (ASEAN and non-ASEAN countries) to country j (Malaysia). Although the number of tourist arrivals is a more imprecise measure than the expenditure generated by tourists, most studies on international tourism demand had used the number of tourist arrivals as a measure of demand (Barry & O'Hagan, 1972; Croes & Vanegas, 2004; Martin & Witt, 1988; Summary, 1987; Uysal & Cromptom, 1984). According to Crouch (1994a), of the 85 tourism studies reviewed, 63 percent choose the number of tourist arrivals as the measure of tourism demand, while 48 percent used expenditure and receipts. In this study, due to unavailability and perceived poor quality of expenditure data, the number of tourist arrivals was use as a dependent variable.

In addition, variable X in the model represents a set of explanatory variables that are argued to be important in determining tourism demand in Malaysia, as they are included in most of the previous studies. It consists of the level of real gross domestic product of country i during year t, the cost of tourism in relative prices for a tourist from country i to Malaysia in year t, cost of tourism in the substitute destinations k, i.e. Singapore, Thailand, Indonesia, and the Philippines.

However, this study does not consider transportation and accommodation cost, although these factors, according to the literature are also important in determining tourism demand. This is due to unavailability and perceived poor quality of data

especially for developing countries like Thailand, Indonesia, and the Philippines. In addition, tourists from these countries enter Malaysia using a variety of mode of entry (air, road, sea, and rail) and register at more than one accommodation establishment (Tourism Malaysia, Planning, and Research division). Moreover, transportation and accommodation cost are among items that are included in the basket of consumer price index, which is used in the calculation of relative prices of tourism. Hence, to avoid the multicollinearity problem, these variables were not included in this study.

Besides, Z in the model represents the dummy variables that were used to capture the effect of the *Malaysia...Truly Asia* tourist promotion campaign initiated by the Malaysian government, the 1997/98 Asian financial crisis, the spread of the Severe Acute Respiratory Syndrome Virus (SARS) in Asia, and the 2001 September 11 incident in the United States. Lastly, ε is the stochastic error terms, with a zero mean and constant variance.

The model variables, as listed in Table 4.1 are explained in the following sections. All series are of yearly and quarterly frequency, and expressed as natural logarithms, except for the dummy variables.

(i) Income

According to the economic theory, income of tourists in the country of origin is one of the major determinants of demand for tourism. Therefore, in this study, the real gross domestic product (GDP) was used as a proxy for income. Demand theory stated that as income rises, demand for that product would increase. Hence, more people would like to travel. In this study, we assumed that increase in the real income of the country of origin (ASEAN and non-ASEAN) would increase the number of tourist visiting Malaysia from these countries, *ceteris paribus*. Hence, the expected sign for the

estimated coefficient of real income is positive (assuming that tourism is a normal or luxury goods).

(ii) Relative Prices of Tourism in Malaysia

According to the previous literature, the price of tourism at the destination can be specified in a variety of ways. Prices may be represented in either absolute or relative terms. It is normally approximated by the consumer price index (*CPI*) in the destination country (Zhou *et al.*, 2004). The practice is sometimes criticised on the grounds that, the cost of living for local residents, especially in poor countries, does not always reflect the cost of living for foreign tourists to that destination (Song & Witt, 2000). Therefore, some studies used tourism-specific prices or indices. For instance, Gangnes and Bonham (1998) used the hotel room price as a proxy. However, Martin and Witt (1987) reported that tourism-specific indices do not perform any better than the consumer price index. Hence, a further explanation of how the relative price of tourism in Malaysia was developed for this study is as follows.

The relative prices of tourism in this model was defined as a ratio of the consumer price index of the host country (CPI_{jt}) to that of the country of origin (CPI_{it}) adjusted by the relative exchange rate (ER_{it}) to obtain a proxy for the real cost of living (see Kulendran, 1996; Salman, 2003). Therefore, the relative prices of tourism in Malaysia, defined in proxy terms by the relative *CPIs* is as follows:

$$PM_{jt} = \frac{CPI_{jt} / ER_{ijt}}{CPI_{it}} \tag{4.15}$$

where,

PM_{jt} = relative prices of tourism in country j (Malaysia);
CPI_{jt} = consumer price index for country j (Malaysia);
CPI_{it} = consumer price index for country i (tourist's country of origin); and
ER_{ijt} = exchange rate between currency country j (Malaysian Ringgit) and currency country i (tourist's country of origin).

(iii) The Price of Tourism in Competing Destinations (ASEAN-4 countries)

The inclusion of a variable that represents the price of tourism in competing destinations was due to the fact that tourists have different choices of destination. For substitution among different overseas destinations, a number of studies used a weighted real exchange rate to capture the general effect (Lathiras & Siriopoulos, 1998; Vogt & Wittayakorn, 1998; Kim & Song, 1998; Song, Romilly, & Liu, 2000).

However, the relative price of tourism in competing destinations is largely ignored by most researchers due to difficulty in the calculation and unavailability of data. Hence, this study has made a significant advance over past research by developing the price of tourism in competing destinations.

In this study, the price of tourism in competing destinations (k) refers to the relative price of tourism in Singapore, Thailand, Indonesia, and the Philippines. In this regard, there are two possibilities. Firstly, if increase in the price of tourism in Malaysia causes an increase in the demand for tourism in Singapore, Thailand, Indonesia, and the Philippines, then these countries could be considered as substitute destinations for Malaysia. Secondly, conversely, if increase in the price of tourism in Malaysia is subsequently followed by a decrease in the demand for tourism in these countries, then these countries could be viewed as complementary destinations for Malaysia.

The costs of tourism (relative price of tourism) in Singapore, Thailand, Indonesia, and Philippines were calculated using the following formula:

$$PS_{kt} = \frac{CPI_{kt} / ER_{kit}}{CPI_{it}} \tag{4.16}$$

where,

PS_{kt} = price of tourism in destination k (k refer to Singapore, Thailand, Indonesia and the Philippines);
CPI_{kt} = consumer price index for destination k;
CPI_{it} = consumer price index for country i (tourists' country of origin); and
ER_{kit} = exchange rate between destination k and country i (tourists' country of origin).

(iv) The *word-of-mouth* effect

The lagged dependent variable was included in the model as an additional explanatory variable to capture the *word-of-mouth* effect, which results from obtaining information about a particular destination from other visitors who have already vacationed. In this study, the lagged dependent variable was proxy by the previous year tourist arrivals from ASEAN and non-ASEAN countries. There are two reasons that justify the inclusion of lagged dependent variable (past tourism) as an explanatory variable. Firstly, there is less uncertainty associated with holidaying in a destination that the tourist is already familiar with, compared to travelling to a previously unvisited foreign destination. Secondly, the knowledge about the destination spreads as people talk about their holiday, thereby reducing the uncertainty for potential visitors to that destination.

Furthermore, if the impact of past tourism is ignored, the effect of the relevant variables considered will tend to be overestimated (Garin-Muñoz, 2007). Hence, for a dynamic model of international tourism demand, the lagged dependent variable must be included. Several authors point out that many empirical tourism demand studies suffer from this neglect of the dynamic structure (Morley, 1998).

(v) Qualitative factors

Even though most of past tourism demand studies had concentrated on the study of such economic variables[12], however, several more recent empirical work (Garin-Muñoz & Amaral, 2000; Narayan, 2003a; Saayman & Saayman, 2008) had claimed that the behaviour of tourists might also be affected by non-economic and other exogenous factors, such as special events, country-specific attributes, political factors, social conflicts, terrorism, and natural disasters.

[12] Economic variables, that are significant in determining tourism demand and are included in most of previous tourism demand studies, are the level of income in the tourist's country of origins, the relative price of tourism, and the price of tourism in substitute destinations.

Given such a scenario of development (in theory) and empirical investigation, the non-economic variable to be considered and estimated in modelling the tourism demand for Malaysia are the *Malaysia... Truly Asia* global campaign, the 1997/98 Asian financial crisis, the spread of SARS in Asia, and the 2001 September 11 incident in the U.S. It was hypothesised that all these non-economic variables are influential in determining tourism demand for Malaysia.

In order to achieve the objectives of the study, three well-developed methods have been used in analysing the model;

(i) Pooled Ordinary Least Squares (OLS),

(ii) One-way fixed-/random-effects, and

(iii) Two-way fixed-/random-effects.

4.5.1.1 Pooled OLS Regression Model

In examining the determinant of tourism demand without taking into account the country- and time-effects, a pooled OLS regression model was used. A pooled OLS regression model restricts the coefficients to being the same for each country of origin of tourists. This model thus assumed that all countries react in the same manner after a change in the values of the explanatory variables and that the non-observable individual characteristics, α, are the same for all tourism routes (Garin-Muñoz & Amaral, 2000). However, this assumption is very restrictive. The pooled OLS model to be estimated is as follows:

$$\begin{aligned} lnTAR_{it} = \quad & \alpha + \beta_1 lnY_{it} + \beta_2 lnPM_{it} + \beta_3 lnPS_{it} + \\ & \beta_4 lnPT_{it} + \beta_5 lnPI_{it} + \beta_6 lnPP_{it} + \beta_7 lnTAR_{it-1} + \\ & \beta_8 D_{mta} + \beta_9 D_{AFC} + \beta_{10} D_{SARS} + \beta_{11} D_{s11} + \varepsilon_{it} \end{aligned} \quad (4.17)$$

where,

$lnTAR_{it}$ = log of the number of tourist arrivals in Malaysia at time t from the country of origin i,

lnY_{it} = log for the real gross domestic product (GDP) of country i (in dollars) during year t,

$lnPM_{it}$ = log for the cost of living in relative prices for a tourist from country i to Malaysia at time t,

$lnPS_{it}$ = log for the price of tourism in the competing destination, k (Singapore) for tourists from the country of origin i in year t,

$lnPT_{it}$ = log for the price of tourism in the competing destination k (Thailand) for tourists from the country of origin i in year t,

$lnPI_{it}$ = log for the price of tourism in the competing destination k (Indonesia) for tourists from the country of origin i in year t,

$lnPP_{it}$ = log for the price of tourism in the competing destination k (the Philippines) for tourists from the country of origin i in year t,

$lnTAR_{it-1}$ = log for the lagged number of tourist arrivals to Malaysia,

D_{mta} = dummy variable to represent the *Malaysia...Truly Asia* global campaign, taking the value of 1 if observation in year 1999 through 2004 and 0 if otherwise,

D_{AFC} = dummy variable to capture the effect of the 1997/98 Asian financial crisis, taking the value of 1 if observation in 1998 through 2000 and 0 if otherwise,

D_{SARS} = dummy variable to capture the effect of the SARS in Asia; taking the value of 1 if observation in 2003 and 0 if otherwise,

D_{s11} = dummy variable to capture the effect of the September 11 incident in the United States; taking the value of 1 if observation in 2002 and 0 if otherwise,

ε_{it} = the white noise error term,

and α is the intercept and β_i is slope parameter.

4.5.1.2 The Fixed Effects Model

The fixed effects model is simply a linear regression model in which the intercept terms vary over the individual units i, i.e.

$$y_{it} = \alpha_i + x'_{it}\beta + \varepsilon_{it}, \quad \varepsilon_{it} \sim IID(0, \sigma_\varepsilon)^2 \tag{4.18}$$

It is usually assumed that all x_{it} are independent of all ε_{it}. Therefore, this can be written in the usual regression framework by including a dummy variable for each unit i in the model. That is,

$$y_{it} = \sum_{j=1}^{N} \alpha_j d_{ij} + x'_{it}\beta + \varepsilon_{it} \tag{4.19}$$

where $d_{ij} = 1$ if $i = j$ and 0 elsewhere. Hence, the model has a set of N dummy variables. The parameters $\alpha_1,...,\alpha_N$ and β in (4.19) can be estimated by ordinary least squares. The implied estimator for β is referred to as the least squares dummy variable (LSDV) estimator[13]. It may, however, be numerically unattractive to have a regression model with so many regressors. Fortunately, one can compute the estimator for β in a simpler way. It can be shown that exactly the same estimator for β is obtained if the regression is performed in deviations from individual means. Essentially, this implies that the individual effects α_i can be eliminate first by transforming the data. To see this, first note that,

$$\bar{y}_{it} = \alpha_i + \bar{x}'_{it}\beta + \bar{\varepsilon}_{it} \tag{4.20}$$

where, $\bar{y}_i = T^{-1}\sum_t y_{it}$ and similarly for the other variables. Consequently, it can be written as,

$$y_{it} - \bar{y}_i = (x_{it} - \bar{x}_i)'\beta + (\varepsilon_{it} - \varepsilon_i) \tag{4.21}$$

[13] Since we are using dummies to estimate the fixed-effects, in the literature, the model is also known as the Least-squares dummy variable (LSDV) model. Therefore, the terms LSDV and fixed-effects can be used inter-changeably (Gujarati, 2003).

This is a regression model in deviations from individual means and does not include the individual effects α_i. The transformation that produces observations in deviation from individual means, as in (4.21), is called the within transformation. The OLS estimator from β obtained from this transformed model is often called the within estimator or fixed effects estimator, and it is identical to the LSDV estimator described above. It is given by

$$\hat{\beta}_{FE} = \left(\sum_{i=1}^{N} \sum_{t=1}^{T} (x_{it} - \bar{x}_i)(x_{it} - \bar{x}_i)' \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} (x_{it} - \bar{x}_i)(y_{it} - \bar{y}_i) \tag{4.22}$$

If it is assumed that all x_{it} are independent of all ε_{it}, the fixed effects estimator can be shown to be unbiased for β. If, in addition, normality of ε_{it} is imposed, $\hat{\beta}_{FE}$ also has a normal distribution. For consistency, it is required that

$$\overline{E} = 0 \tag{4.23}$$

Sufficient for this is that x_{it} is uncorrelated with ε_{it} and that x_i has no correlation with the error term. These conditions are in turn implied by,

$$E\{x_{it}\varepsilon_{is}\} = 0 \text{ for all s,t,} \tag{4.24a}$$

in which case we call x_{it} strictly exogenous. A strictly exogenous variable is not allowed to depend upon current, future, and past values of the error term. In some applications, this may be restrictive. Clearly, it excludes the inclusion of lagged dependent variables in x_{it}, but any x_{it} variable which depends upon the history of y_{it}

would also violate the condition. With explanatory variables independent of all errors, the N intercepts are estimated free of bias as

$$\hat{\alpha}_i = \bar{y}_i - \bar{x}_i' \beta_{FE}, \mathrm{i} = 1,\ldots, N. \tag{4.24b}$$

Under assumption (4.23) these estimators are consistent for the fixed effects α_i provided T goes to infinity. The reason why α_i is inconsistent for fixed T is clear; when T is fixed the individual averages y_i and x_i do not convergence to anything if the number of individuals increases.

The covariance matrix for the fixed effects estimator β_{FE}, assuming that ε_{it} is i.i.d. across individuals and time with variance σ_ε^2, is given by

$$V\{\beta_{FE}\} = \sigma_\varepsilon^2 \left(\sum_{i=1}^{N} \sum_{t=1}^{T} (x_{it} - \bar{x}_i)(x_{it} - \bar{x}_i)' \right)^{-1} \tag{4.25}$$

Unless T is large, using standard OLS estimate for the covariance matrix based upon the within regression in (4.21) will underestimate the true variance. The reason is that in this transformed regression the error covariance matrix is singular (as the T transformed errors of each individual add up to zero) and the variance of $\varepsilon_{it} - \varepsilon_i$ is $(T-1)/T\,\sigma_\varepsilon^2$ rather than σ_ε^2. A consistent estimator for σ_ε^2 is obtained as the within residual sum of squares divided by $N(T-1)$. Thus,

$$\begin{aligned} \hat{\sigma}_\varepsilon^2 &= \frac{1}{N(T-1)} \sum_{i=1}^{N} \sum_{t=1}^{T} \left(y_{it} - \hat{\alpha}_i - x'_{it} \hat{\beta}_{FE} \right)^2 \\ &= \frac{1}{N(T-1)} \sum_{i=1}^{N} \sum_{t=1}^{T} \left(y_{it} - \bar{y}_i - (x_{it} - \bar{x}_i)' \hat{\beta}_{FE} \right)^2 \end{aligned} \tag{4.26}$$

It is possible to apply the usual degrees of freedom correction in which case K is subtracted from the denominator. Note that using the standard OLS covariance matrix in model (4.19) with N individual dummies is reliable, because the degrees of freedom correction involves N additional unknown parameters corresponding to the individual intercept terms. Under weak regularity conditions, the fixed effects estimator is asymptotically normal, so that the usual inference procedures can be used (like t and Wald tests).

Essentially, the fixed effects model concentrates on differences *within* individuals, that is, it explains to what extent y_{it} differs from y_i but does not explain why y_i is different from y_j. The parametric assumptions about β on the other hand, impose that a change in x has the same (*ceteris paribus*) effect, whether it is a change from one period to the other or a change from one individual to the other. When interpreting the results, however, from a fixed effects regression, it may be important to realise that the parameters are identified only through the within dimension of the data.

(i) One-way Fixed Effects Model

The fixed effects model is essentially a model that capture all effects which are specific to a particular individual country but do not vary over time. Therefore, in this study, with a panel of countries, the fixed effects would take full account of things such as geographical factors and any other factors that vary between countries but do not vary over time. Moreover, since this study focuses on certain countries (ASEAN and selected non-ASEAN countries), it would also be reasonable to assume that the model is constant for the group of countries, and thus the one-way fixed effects estimator is applicable. The one-way fixed effects model assumes that slopes are common, but intercept varies across countries. Hence, to incorporate country-effects, the one-way fixed effects model would take the following form:

$$lnTAR_{it} = \alpha_i + \beta_1 lnY_{it} + \beta_2 lnPM_{it} + \beta_3 lnPS_{it} + \beta_4 lnPT_{it} + \beta_5 lnPI_{it} + \beta_6 lnPP_{it} + \beta_7 lnTAR_{it-1} + \beta_8 D_{mtat} + \beta_{10} D_{AFCt} + \beta_{11} D_{SARSt} + \beta_{12} D_{s11t} + \varepsilon_{it} \quad (4.27)$$

where, for $lnTAR_{it}$, i denotes the cross-sectional unit which represents tourist arrivals to Malaysia from each selected country and t denotes the time period. The variable α_i is defined as unobserved heterogeneity, which is specified in this study as unobserved country effect or country heterogeneity that affects tourism demand ($lnTAR_{it}$). Unobserved country effect is referred to as a fixed effect since its value is fixed over time.

For the fixed-effects model, it is assumed that there is an arbitrary correlation between α_i and the explanatory variables, x_{it} in each time period or $\text{Cov}(x_{it}, \alpha_i) \neq 0$, for all i and t (where i = country, and t = 1994,...,2004). The error ε_{it} is called the idiosyncratic error or time-varying error; it represents unobserved factors that change over time and effect $lnTAR_{it}$. For each t, the expected value of the idiosyncratic error given the explanatory variables in all time periods and the unobserved effect is zero; $E(\varepsilon_{it} \mid x_i, \alpha_i) = 0$; $\text{Var}(\varepsilon_{it} \mid x_i, \alpha_i) = \text{Var}(\varepsilon_{it}) = \sigma^2_u$ for all $t = 1, ..., T$; and the idiosyncratic errors are uncorrelated; $\text{Cov}(\varepsilon_{it}, \varepsilon_{is} \mid x_i, \alpha_i) = 0$ for all $t \neq s$.

(ii) Two-way Fixed Effects Model

The analysis is further explored by using the two-way fixed effects model in examining the variables that effect tourism demand in Malaysia. In the two-way fixed effects model, both country- and time-effects are incorporated into the model. The two-way fixed effects model is written as follows:

$$lnTAR_{i\,t} = \alpha_0 + \alpha_i + \theta_t + \beta_1 lnY_{it} + \beta_2 lnPM_{it} + \beta_3 lnPS_{it} + \beta_4 lnPT_{it} + \beta_5 lnPI_{it} + \beta_6 lnPP_{it} + \beta_7 lnTAR_{it-1} + \beta_8 D_{mtat} + \beta_9 D_{AFCt} + \beta_{10} D_{SARSt} + \beta_{11} D_{s11t} + \varepsilon_{it} \quad (4.28)$$

where, α_0 is the intercept, α_i is country-effects (or recipient-effects), and θ_t is time-effects. If there exists country effects in the regression model, the pooled OLS or equation (4.17), does not effectively estimate the linkage between the independent and independent variables. Similarly, if there exists time effects, the one-way fixed-effects model or equation (4.27), does not effectively estimate the regression model. Thus, there is a need to analyse the significance of both country effects and time effects. The *F*-test could be used for this purpose (Greene, 1997; Greene, 2000; Greene, 2003).

4.5.1.3 The Random Effects Model

The random-effects model assumes that intercepts are drawn from a common distribution, and the error term consists of two components; an error term unique to each observation and constant over time (α_i) and an error term representing the extent to which the intercept of a given cross-sectional unit varies from the overall intercepts (ε_{it}).

It is commonly assumed in the regression analysis that all factors that affect the dependent variable but have not been included as regressors, can be appropriately summarised by a random error term. In our case, this leads to the assumption that the α_i are random factors, independently and identically distributed over individuals. Thus, the random effects model is written as,

$$y_{it} = \mu + \beta' x_{it} + \alpha_i + \varepsilon_{it}, \quad \varepsilon_{it} \sim IID(0, \sigma_\varepsilon^2); \quad \alpha_i \sim IID(0, \sigma_\varepsilon^2), \tag{4.29}$$

where $\alpha_i + \varepsilon_{it}$ is treated as an error term consisting of two components: an individual specific component, which does not vary over time, and the remainder component, which is assumed to be uncorrelated over time. That is, all correlation of the error terms over time is attributed to the individual effects α_i. It was assumed that α_i and ε_{it} are

mutually independent and independent of x_{js} (for all j and s). This implies that the OLS estimator for μ and β from (4.29) is unbiased and consistent. The error component structure implies that the composite error term ($\alpha_i + \varepsilon_{it}$) exhibits a particular form of autocorrelation (unless $\sigma_\varepsilon^2 = 0$). Consequently, routinely computed standard errors of the OLS estimator are incorrect and a more efficient (GLS) estimator can be obtained by exploiting the structure of the error covariance matrix.

In this study, since the sample is drawn from a population (not all countries are included in the sample due to data unavailability), it would be appropriate to assume that individual-specific intercepts are randomly distributed as a cross-sectional unit. Hence, the random-effects model could take the following form:

$$\begin{aligned} lnTAR_{it} = \mu + \beta_1 lnY_{it} + \beta_2 lnPM_{it} + \beta_3 lnPS_{it} + \beta_4 lnPT_{it} + \\ \beta_5 lnPI_{it} + \beta_6 lnPP_{it} + \beta_7 lnTAR_{it-1} + \beta_9 D_{mtat} + \\ \beta_{10} D_{AFCt} + \beta_{11} D_{SARSt} + \beta_{12} D_{s11t} + v_{it} \end{aligned} \quad (4.30)$$

where $v_{it} = \alpha_i + \varepsilon_{it}$, α_i is the group specific random element (or latent individual effect) and μ is the overall intercept. In the random effects model, v_{it} is defined as the composite error term and serially correlated across time. Hence, $Cov(v_{it}, v_{is}) = \sigma^2_a|(\sigma^2_a + \sigma^2_u)$, $t \neq s$, where $\sigma^2_a = Var(\alpha_i)$ and $\sigma^2_u = Var(u_i)$. The FGLS estimator of the random-effects model is consistent and efficient, provided there is no correlation between the error term and the regressors. Otherwise, the random-effects estimator is inconsistent if the group specific random element (α_i) and the regressors are correlated.

4.5.1.4 Fixed Effects versus Random Effects

Whether to treat the individual effects (α_i) as fixed or random is not an easy question to answer. In fact, the fixed versus random effects issue has generated a hot debate in the biometrics and statistics literature which has spilled over to the panel data

econometrics literature (Ramanathan, 1995; Romer 2001; Stewart, 2005). Mundlak (1961), and Wallace and Hussain (1969) were early proponents of the fixed effects model while Balestra and Nerlove (1966) were advocates of the random error component model.

In determining whether the fixed effects model is better suited for analysis than the random effects model, Hausman (1978) proposed a specification test for the null hypothesis that x_{it} and α_i are uncorrelated. The general idea of a Hausman test is that two estimators are compared: one, which is consistent under both the null and alternative hypothesis and the other one, which is consistent (and typically efficient), under the null hypothesis only. The hypotheses are stated as follows:

H_0 = the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator, and

H_a = the coefficients estimated by the efficient random effects estimator are not the same as the ones estimated by the consistent fixed effects estimator.

A significant difference between the two estimators indicated that the null hypothesis is unlikely to hold. Assume that $E\{\varepsilon_{it}x_{is}\} = 0$ for all s,t, so that the fixed effects estimator $\hat{\beta}_{FE}$ is consistent for β irrespective of the question whether x_{it} and μ_{it} are uncorrelated, while the random effects estimator $\hat{\beta}_{RE}$ is consistent and efficient only if x_{it} and μ_{it} are not correlated. Let consider the difference vector, $\hat{\beta}_{FE} - \hat{\beta}_{RE}$. To evaluate the significance of this difference, the covariance matrix is needed. Therefore, the covariance between $\hat{\beta}_{FE}$ and $\hat{\beta}_{RE}$ should be estimate, but because the latter estimator is efficient under the null hypothesis, it can be shown that (under the null),

$$V\{\hat{\beta}_{FE} - \hat{\beta}_{RE}\} = V\{\hat{\beta}_{FE}\} - V\{\hat{\beta}_{RE}\} \tag{4.31}$$

Consequently, we can compute the Hausman test statistics as:

$$\xi_H = (\hat{\beta}_{FE} - \hat{\beta}_{RE})'[\hat{V}\{\hat{\beta}_{FE}\} - \hat{V}\{\hat{\beta}_{RE}\}]^{-1}(\hat{\beta}_{FE} - \hat{\beta}_{RE}) \tag{4.32}$$

where the $\hat{V}$s denote estimates of the true covariance matrices. Under the null hypothesis, which implicitly says that $plim(\hat{\beta}_{FE} - \hat{\beta}_{RE}) = 0$, the statistics ξ_H has and asymptotic Chi-squared distributed with K degrees of freedom, where K is the number of elements in β (Verbeek, 2004).

The Hausman test, thus tests whether the fixed effects and random effects estimators are significantly different. An important reason why the two estimators would be different is the existence of correlation between x_{it} and μ_i, although other sorts of misspecification may also lead to rejection. A practical problem when computing (4.32) is that the covariance matrix in square brackets may not be positive definite in finite samples, such that its inverse cannot be computed. As an alternative, it is possible to test for a subset of the elements in β.

On the other hand, applied researchers have interpreted a rejection as an adoption of the fixed effects model and non-rejection as an adoption of the random effects model. Therefore, Hsiao and Sun (2000) argued that fixed versus random effects specification is better treated as an issue of model selection rather than hypothesis testing. They suggested a recursive predictive density ratio as well as the Akaike and Schwartz information criteria for model selection. Meanwhile, Monte Carlo's results indicated that all three criteria performed well in finite samples. However, the Schwartz criterion was found to be the most reliable of the three (Baltagi, 2005).

4.5.2 The Short-Run and Long-Run Relationships between Tourism Demand and Factors that Influence Tourism Demand

This part investigates the short-run and long-run relationships between tourism demand and factors that influence tourism demand in Malaysia. The panel cointegration test as suggested by Pedroni (1999, 2004) was used in analysing the tourism data for Malaysia and its partners. Panel cointegration tests can be motivated by the search for more powerful tests than those obtained by applying individual (or separate) time-series cointegration tests. The latter tests are known to have low power, especially for short T and short span of the data, which is often limited to post-war annual data. Therefore, adding cross-sectional variation to the data will increase the power of panel cointegration tests (Baltagi, 2005).

4.5.2.1 Panel Unit Root Tests

Recent literature suggested that panel-based unit root tests have higher power than unit root tests based on individual or separate time series (Phillips, 1987; Phillips, 1996; Kwiatkowski *et al.*, 1992). Hence, the objective of this section is to establish the panel unit root properties of all series used. To achieve this objective, four Panel Unit Root tests were used, namely the Levin, Lin and Chu (2002) test (LLC); the Breitung (2000) t-test; the Im, Pesaran and Shin (2003) test (IPS); and the Maddala and Wu Fisher (1999) test (MWF).

Levin *et al.* (2002) proposed to perform the augmented Dickey-Fuller tests based on the following regression model. For a sample of N groups observed over T time periods, the panel unit root regression of the ADF test is written as,

$$\Delta y_{ikt} = \alpha_i + \beta_i y_{ikt-1} + \sum_{j=1}^{pi} \delta_{ij} \Delta y_{ikt-j} + \varepsilon_{ikt}, \quad i = 1, \ldots, N, \quad t = 1, \ldots, T \qquad (4.33)$$

where α_i, β_i, and δ_{ij} are parameters and the error terms ε_{ikt} are uncorrelated across countries. The LLC tests for the H_0: $\beta_i = 0$ against H_a: $\beta_i < 0$. Under the null hypothesis, they show that the test statistics, t^* is asymptotically distributed as the standard normal distribution.

On the other hand, Im *et al.* (2003) extended the work of Levin *et al.* (2002) to allow for heterogeneity in the value of β_i in equation (4.33). Im *et al.* (2003) proposed a *t-bar statistic*, which is based on the mean value of individual ADF statistics. The null hypothesis of a unit root in the panel data is defined as,

$$\beta_i = 0, \text{ for all i}$$

Against the alternatives that all series are stationary processes:

$$\beta_i < 0, \ i = 1, 2, \ldots, N; \quad \beta_i = 0, \ i = N_1 + 1, N_2 + 2, \ldots, N.$$

This equation of the alternative hypothesis allows for $\beta i = \beta < 0$ for all i. To test hypothesis, Im *et al.* (2003) propose a standardised *t-bar* statistic given by

$$\psi_i = \frac{\sqrt{N}\left\{t_{NT} - (1/N)\sum_{i=1}^{N} E[t_{i,T}(P_i,0) \mid \beta_i = 0]\right\}}{\sqrt{(1/N)\sum_{i=1}^{N} Var[t_{i,T}(P_i,0) \mid \beta_i = 0]}} \tag{4.34}$$

where

$$\bar{t}_{NT} = \frac{1}{N}\sum_{i=1}^{N} t_{iT}(P_i, \beta_i) \tag{4.35}$$

and $t_{i,T}$ (P_i, β_i) is the individual t-statistic for testing β_i=0 for all i. Under the null hypothesis, the standardised t-bar statistic ψ_i is asymptotically distributed as a standard

normal distribution [$\psi_i \sim N(0,1)$]. The IPS panel unit root test is derived assuming that the series are independently generated, and they suggested subtracting cross-sectional means to remove common time specific effects. This assumes the error term in equation (4.35) consists of two random components, $\varepsilon_{it} = \delta_t + \nu_{it}$ where ν_{it} is the idiosyncratic random component, and δ_t is a stationary time specific effect that accounts for correlation in the error across economies.

Breitung (2000), in a study on the local power of LLC and IPS test statistics against a sequence of local alternatives, found that the LLC and IPS tests suffer from a dramatic loss of power if individual-specific trends are included. This is due to the bias correction that also removes the mean under the sequence of local alternatives. Breitung suggested a test statistic that does not employ a bias adjustment whose power is substantially higher than that of LLC or IPS tests using Monte Carlo experiments (Baltagi, 2005).

The Breitung method differs from LLC in two distinct ways. Firstly, only the autoregressive portion (and not the exogenous components) is removed when constructing the standardised proxies:

$$\Delta\tilde{y}_{it} = \left(\Delta y_{it} - \sum_{j=1}^{Pi} \hat{\beta}_{ij} \Delta y_{it-i} \right) / s_i$$

$$\Delta\tilde{y}_{it-1} = \left(\Delta y_{it-1} - \sum_{j=1}^{Pi} \dot{\beta}_{ij} \Delta y_{it-i} \right) / s_i \qquad (4.36)$$

where $\hat{\beta}$ and $\dot{\beta}$ are estimated coefficients from these two regressions. Secondly, the proxies are transformed and detrended,

$$\Delta y_{it}^{*} = \frac{\sqrt{(T-t)}}{T-t+1}\left(\Delta \tilde{y}_{it} - \frac{\Delta \tilde{y}_{it+1} + \ldots + \Delta \tilde{y}_{iT}}{T-t}\right) \tag{4.37}$$

$$y_{it}^{*} = \tilde{y}_{it} - \tilde{y}_{i1} - \frac{t-1}{T-1}(\tilde{y}_{iT} - \tilde{y}_{i1}) \tag{4.38}$$

The persistence parameter β is estimated from the pooled proxy equation:

$$\Delta y_{it}^{*} = \beta y_{it-1}^{*} + v_{it} \tag{4.39}$$

Breitung showed under the null, that the resulting estimator β^* is asymptotically distributed as a standard normal. The Breitung method requires only a specification of the number of lags used in each cross section ADF regression, ρ_i, and the exogenous regressors. The t-statistic for H_0: $\rho = 0$ has in the limit a standard $N(0,1)$ distribution. It is in contrast with LLC, where no kernel computation is required.

Another commonly used panel unit root tests is Maddala-Wu Fisher (hereafter MWF) test, the one that was based on Fisher (1932), which has been proposed by Maddala and Wu (1999). The test statistic is derived by combining the P-values of individual unit root tests *(βi)* of N independent ADF regressions from equation (4.33). The test statistic [the Fisher test $p(\lambda)$] is as follows:

$$P(\lambda) = -2\sum_{i=1}^{N} \log(\pi_i) \tag{4.40}$$

where π_i is the p-value of the test statistic for unit i. The MWF test statistic $p(\lambda)$ is distributed as a chi-squared distributed with $2N$ degree of freedom.

4.5.2.2 Panel Cointegration Test

After identifying the order of intergration, the panel cointegration test is used to determine whether there are long-run relationships (cointegrating) among the various series. Following Pedroni (1999, 2004) in testing for cointegration relationships among the series, the panel cointegration regression is as follows:

$$\ln Y_{it} = \alpha_i + \sum \beta_i \ln X_{it} + \varepsilon_{it} \tag{4.41}$$

where $\ln Y_{it}$ and X_{it} are the observable variables with the dimension (NT) x 1 and (NT) x m, respectively, for t=1,..., T; i=1,..., N; where T refers to the number of observations over time and N refers to the number of individual members in the panel. The slope coefficients β_i are allowed to vary by individual country. Thus, in general, the cointegration vectors may be heterogeneous across panel members (Pedroni, 2004).

Pedroni (1999) suggested two types of tests in testing for panel cointegration: firstly, the test that is based on the within-dimension approach and includes four statistics, which are panel v-statistic, panel ρ-statistic, panel PP-statistic, and panel ADF-statistic. These statistics pool the autoregressive coefficients across different members for the unit root tests on the estimated residuals. The second test is based on the between-dimension approach, which includes three statistics, namely the group ρ-statistic, group PP-statistic, and group ADF-statistic. These statistics are based on estimators that simply average the individual estimated coefficients of each member. All the seven tests are distributed as standard normal asymptotic tests and required standardisation based on the moments of the underlying Brownian motion function. The statistics diverge to a negative infinity, which means that large negative values

reject the null, except for the panel v-statistic, which is a one-sided test where large positive values reject the null of no cointegration.

To estimate equation (4.41), the steps are as follows. Firstly, after estimating, the residuals $\hat{\varepsilon}_{i,t}$ is stored. The original data series is differenced for each member, and compute the residuals for the differenced regression $\Delta lnY_{i,t} = \sigma_{1i}\, \Delta \ln X_{i,t} + \eta_{i,t}$. Then, $\hat{L}^2_{11i}$ is calculated as the long-run variance of $\eta_{i,t}$. Using the residual $\varepsilon_{i,t}$ of the original cointegrating equation, the appropriate autoregressive model is estimate. In the case of he non-parametric statistics, after estimate $\hat{\varepsilon}_{i,t} = \hat{\psi}\, \hat{\varepsilon}_{i,t-1} + \hat{\kappa}_{i,t}$ the residuals is used to compute the long-run variance of $\hat{\kappa}_{i,t}$, denoted $\sigma^2 i$. The term λ_i is compute as $\hat{\lambda}_i = \frac{1}{2}(\hat{\sigma}^2 i.- \hat{S}^2 i)$, where $\hat{S}^2$i is just the simple variance of $_{Ki,t}$. On the other hand, for the parametric statistics, the $\hat{\varepsilon}_{i,t} = \hat{\psi}\, \hat{\varepsilon}_{i,t-1} + \sum_{K=1}^{ki} \hat{\psi}_{i,k}\, \Delta \hat{\varepsilon}_{i,t-k} + \hat{\mu}^*_{i,t}$ is estimate, and the residuals is used to compute the variance of $\hat{\mu}^*_{i,t}$, denoted $\hat{S}_i^{*2}$ and apply the appropriate mean and variance adjustment terms as reported in Pedroni (1999).

Then, the seven test statistics are compute as proposed by Pedroni (1999, 2004), namely Panel v-statistic, Panel ρ-statistic, Panel PP t-statistic (non-parametric), Panel ADF t-statistic (parametric), Group *rho*-statistic, Group PP t-statistic (non-parametric), and Group ADF t-statistic. As mentioned earlier, these seven different tests can be categorised as *combining* tests or as *pooled* tests. The combining procedure calls for pooling along the within dimension of the panel, where each test is calculated individually by unit and then combined into an asymptotically converging statistics (Group Mean Statistics). This is analogous to the IPS and MWF tests. The following show the seven functions of each test.

a. Panel v-statistic

Panel v-statistic (variance ratio) is derived based on Phillip and Ouliaris (1990) long-run variance ratio statistics for time-series where,

$$Z_v = T^2 N^{3/2} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1} \tag{4.42}$$

b. Panel *rho*-statistic

Panel *rho*-statistic (ρ-statistic) is derived based on Phillips-Perron *rho*-statistic where,

$$Z_\rho = \overline{T} \sqrt{N} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i) \tag{4.43}$$

c. Panel PP *t*-statistic (non-parametric)

Panel PP *t*-statistic (non-parametric) is derived based on the Phillip-Perron *t*-statistic where,

$$Z_t = \left(\sigma_{N,T}^2 \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} (\hat{\varepsilon}_{i,t-1} \Delta \hat{\varepsilon}_{i,t} - \hat{\lambda}_i) \tag{4.44}$$

d. Panel ADF *t*-statistic (parametric)

Panel ADF *t*-statistic (non-parametric) is derived based on the ADF *t*-statistic where,

$$\bar{Z}_t = \left(\tilde{s}_{N,T}^{*2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^2 \right)^{-1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{\varepsilon}_{i,t-1}^{*} \Delta \hat{\varepsilon}_{i,t}^{*} \tag{4.45}$$

e. Group *rho*-statistic

Group *rho*-statistic (ρ-statistic) is derived by combining the Phillips-Perron *rho*-statistic where,

$$\widetilde{Z}_{\rho} = \overline{T}N^{-1/2}\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{\varepsilon}_{i,t-1}^{2}\right)^{-1}\sum_{t=1}^{T}(\hat{\varepsilon}_{i,t-1}\Delta\hat{\varepsilon}_{i,t} - \hat{\lambda}_{i}) \tag{4.46}$$

f. Group PP *t*-statistic (non-parametric)

Group PP *t*-statistic (non-parametric) is derived by combining the Phillips-Perron *t*- statistic where,

$$\widetilde{Z}_{t} = N^{-1/2}\sum_{i=1}^{N}\left(\hat{\sigma}_{i}^{2}\sum_{t=1}^{T}\hat{\varepsilon}_{i,t-1}^{2}\right)^{-1/2}\sum_{t=1}^{T}\left(\hat{\varepsilon}_{i,t-1}^{*}\Delta\hat{\varepsilon}_{i,t}^{*} - \hat{\lambda}_{i}\right) \tag{4.47}$$

g. Group ADF *t*-statistic (parametric)

Group ADF *t*-statistic (parametric) is derived by combining the ADF *t*-statistic where,

$$\tilde{\tilde{Z}}_{t} = N^{-1/2}\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{s}_{i}^{*2}\varepsilon_{i,t-1}^{*2}\right)^{-1/2}\sum_{t=1}^{T}\hat{\varepsilon}_{i,t-1}^{*}\Delta\hat{\varepsilon}_{i,t}^{*} \tag{4.48}$$

where $\hat{\sigma}^{2}$ is the pooled long-run variance for the non-parametric model given as 1/N $\sum_{i=1}^{N}\hat{L}^{-2}{}_{11i}\,\hat{\sigma}^{2}{}_{i}$; $\hat{\lambda}_{i}$ = ½ ($\hat{\sigma}^{2}{}_{i}$ - $\hat{s}^{2}{}_{i}$), where $\hat{L}_{i}$ is used to adjust for autocorrelation in panel parametric model, $\hat{\sigma}^{2}{}_{i}$ and $\hat{s}^{2}{}_{i}$ are the long-run and contemporaneous variances for Individual i and $\hat{S}^{2}$ obtained from the individual ADF-test of $\varepsilon_{it} = \eta_{i}\varepsilon_{it-1} + \mu_{it}$; S^{*2} is the individual contemporaneous variance from the parametric model; $\hat{\varepsilon}_{it}$ is the

estimated residual from the parametric cointegration, while $\hat{\varepsilon}^*_{it}$ is the estimated residual from thenon-parametric model and $\hat{L}_{11,i}$ is the estimated long-run variance matrix for $\Delta\hat{\varepsilon}_{it}$ and L_i the ith component of the lower-triangular Cholesky decomposition of matrix Ωi for $\Delta\hat{\varepsilon}_{it}$ with the appropriate lag length determined by the Newy-West method.

4.5.3 The Causal Relationships between International Tourism Receipts and Real Economic Growth

Having established the significant issue of international trade and its influence on economic growth (Barro & Sala-i-Martin, 1992b; Barro & Sala-i-Martin, 1995; Smith, 1994), the present study proceeded to analyse whether tourism has a significant impact on the economic growth in Malaysia. Hence, in this section, the causal relationship between international tourism receipts and real economic growth (real GDP) in Malaysia was examined. This section is divided into two parts. In the first part, the time-series data (aggregate data of international tourism receipts and real GDP) was used to determine the causal relationship between international tourism receipts and real economic growth. Meanwhile in the second part, the causal relationship between international tourism receipts and real economic growth was analysed using panel data (ASEAN and non-ASEAN countries) through Pedroni panel cointegration test and panel Granger causality test.

4.5.3.1 Determination of the Causal Relationship between International Tourism Receipts and Real Economic Growth by using Time Series Data

4.5.3.1.1 Unit Root Tests

Firstly, before estimating the cointegration and VAR, the examination of the stationarity of the variables is required. Stationarity means that the mean and variance of

the series are constant through time and the autocovariance of the series is not time varying (Enders, 2004). Therefore, the first step is to test the order of integration (I) of the variables. Integration means that past shocks remaining undiluted affects the realisations of the series forever and a series has theoretically infinite variance and a time-dependent mean. For this purpose the study used tests proposed by Dickey and Fuller (1979) test (ADF), and Phillips and Perron (1988) test (PP) in testing the properties of unit root in all variables used. If all of the series are non-stationary in levels, it should be stationary in first difference with the same level of lags. For appropriate lag lengths, this study used the Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC).

(i) **Dickey-Fuller (DF) Test**

The DF test is conducted by estimating one of the following three equations:

$$\Delta Y_t = \beta_1 Y_{t-1} + \varepsilon_t \tag{4.49a}$$

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \varepsilon_t \tag{4.49b}$$

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 T + \varepsilon_t \tag{4.49c}$$

where β_0 is an intercept or drift term, T is a linear time trend, and ε_t is white noise. The parameter of interest in all equations is β_1. For each equation, testing the null hypothesis H_0: $\beta_1 = 0$ against H_a: $\beta_1 < 0$, the nonstationarity (H_0) is rejected if the observed t-statistic is sufficiently negative compared to the critical values in Fuller (1976, p.373) – the critical values are labelled as τ, τ_μ, and τ_t for equation (4.49a), (4.49b), and (4.49c), respectively.

(ii) Augmented Dickey-Fuller (ADF) Test

The ADF test is an extension of the Dickey-Fuller test by allowing a higher order of autoregressive process. It takes the following form:

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \varepsilon_t \tag{4.50}$$

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 T + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \varepsilon_t \tag{4.51}$$

The ADF auxiliary regression tests for a unit root in Y_t, namely the logarithm of total arrivals, real GDP, relative prices, cost in substitute destinations, and exchange rates. Where $\Delta Y_t = Y_t - Y_{t-i}$ (the first difference of total arrival, real GDP, relative tourism prices, cost in substitute destinations, and exchange rates); β_1 and β_2 are constant parameters; ε_t is white noise error term; T denotes the deterministic time or trend variable; ρ is the number of lagged variables. Equation (4.50) excludes the constant term but without the trend variable and equation (4.51) includes both the constant term and trend variable. The number of lagged variable, ρ is significant to ensure the residuals are serially uncorrelated. The results of the unit root test are sensitive to the lag-length chosen. In this regard, the optimum lag length is selected based on the Akaike's Information Criterion (AIC). The null hypothesis of a unit root will be rejected if the coefficient of Y_{t-1} is significantly different from zero, which implies that the series tested are stationary.

(iii) Phillips-Perron (PP) Test

Another recommended method to check for series stationarity is by performing the Phillips and Perron (1988) test (hereafter PP test). The PP test statistics are

modifications of the Dickey-Fuller *t*-statistics. The test allows the error terms to be weakly dependent and heterogeneously distributed. The PP test can be conducted using the following equations:

$$Y_t = \alpha_0^* + \alpha_1^* Y_{t-1} + \varepsilon_t \tag{4.52}$$

$$Y_t = \overline{\alpha}_0 + \overline{\alpha}_1 Y_{t-1} + \overline{\alpha}_2 (t - T/2) + \varepsilon_t \tag{4.53}$$

and testing the following null hypotheses:

$Z(t\alpha_1^*)$: tests the hypothesis $\alpha_1^* = 1$

$Z(t\alpha_1)$: tests the hypothesis $\overline{\alpha}_1 = 1$

$Z(t\alpha_2)$: tests the hypothesis $\overline{\alpha}_1 = 0$

$Z(\Phi_3)$: tests the hypothesis $\overline{\alpha}_1 = 1$ and $\overline{\alpha}_2 = 0$

The PP test is used because it will make a correction to the *t*-statistics of the coefficient from the AR (1) regression to account for the serial correlation. However, unlike the ADF test, there are no lagged difference terms. Instead, the equation is estimated by OLS and then the *t*-statistics of the α coefficient is corrected for serial correlation in ε_t. Hence, by combining ADF and PP tests, it is likely to provide a more clear-cut conclusion with regard to the order of integration for all the series.

4.5.3.1.2 Cointegration Tests

After identifying the order of intergration, the Johansen (1988, 1991), and Johansen and Juselius (1990) Full Information Maximum Likelihood (ML) technique (hereafter JJ) was used to determine whether there are long-run relationships

(cointegrating) between the various series (MacKinnon, 1991; Maddala, 1988; Maddala, 2001; Maddala & Kim, 2002). The JJ cointegration procedure poses several advantages over the residual-based Engle-Granger two-stage approach in testing for cointegration. Phillips (1991) documented the desirability of this technique in terms of symmetry, unbiasedness, and efficiency. The procedure also does not suffer from problems associated with normalisation and it is robust to departures from normality (Cheung & Lai, 1993; Gonzalo, 1994) and when conditional heteroskedasticity is present (Lee & Tse, 1996). The test utilises two likelihood ratio (LR) test statistics for the number of cointegration vectors: The maximum eigenvalue [$T \ln(1 - \hat{\lambda}_{i+1})$] and trace [$-T \sum^{\rho} \ln (1-\hat{\lambda}_{I})$] statistics.

The maximum eigenvalues test (λ-max) is based on the comparison of H_0 (r-1) against the alternative H_1 (r). In general the null hypothesis (H_0: $r = 0$) is tested against an alternative (H_1: $r = 1$), against (H_1: $r = 2$), and so on. In the trace test, the null hypothesis (H_0) is that there is at most r cointegrating relationships, for example, $r = 0$, 1, 2, 3 is tested against a general alternative. Critical values for both the maximum eigenvalue and trace tests are tabulated in Osterwald-Lenum (1992). If there is cointegration between two variables, there exists a long-run effect that prevents the two series from drifting away from each other and this will force the series to converge into long-run equilibrium.

For the two series to be cointegrated, both need to be integrated of the same order, 1 or more. If both series are stationary or integrated of order zero, there is no need to proceed with cointegration tests since standard time series analysis would then be applicable. If both series are integrated of different orders, it is possible to conclude

non-cointegration. Lack of cointegration implies no long-run equilibrium among the variables so that they can wander from each other randomly. Their relationship is thus spurious.

In this study, if there is a long-run relationship between tourist arrivals and the explanatory variables in equation (4.17), then all variables should be cointegrated. Given that it is possible to have multiple long-run equilibrium relationships between tourist arrivals and their determinants, the techniques described by Johansen (1988, 1991), and Johansen and Juselius (1990) allow one to determine the number of statistically significant long-run relationships. The Johansen approach to cointegration is based on Vector Autoregression (VAR). Consider the unrestricted VAR model represented by the following equation:

$$Y_t = \alpha + \sum_{K=i}^{\rho} \Pi_\kappa Y_{t-k} + \varepsilon_t, \qquad t=1, \ldots, T \tag{4.54}$$

where ε_t is a i.i.d. P-dimensional Gaussian error with mean zero and variance matrix Λ, Y_t is an (nx1) vector of $I(1)$ variables, and α is an (nx1) vector of constants. Given that Y_t is assumed to be non-stationary, specifying $\Delta Y = Y_t - Y_{t-1}$. Equation (4.54) can be expressed in error correction form as follows,

$$\Delta Y_t = \alpha + \sum_{K=i}^{P-1} \Gamma_\kappa \Delta Y_{t-k} + \Pi_\kappa Y_{t-k} + \varepsilon_t \tag{4.55}$$

where Y_t is a column vector of m variables, Γ and Π represent coefficient matrices, Δ is the first difference operator, and P represents the lag length. There exists no stationary linear combination of variables if Π has zero rank. If, however, the rank r of Π is

greater than zero, then there will exist r possible stationary linear combinations. Here, Π may be decomposed into two matrices α and β, such that $\Pi = \alpha\beta'$. The cointegration vector β has the property that $\beta'Y$ is stationary even though Y is non-stationary. The cointegration rank, r, can be formally tested using the maximum eigenvalue (λ_{max}) test and the trace test (λ_{tr}). The asymptotic critical values are provided in Johansen and Juselius (1990).

4.5.3.1.3 Causality Tests

The generally accepted definition of causality is, given a set of variables, variables X causes variable Y if present values of Y can be predicted more accurately by only past values of X than by using all or any combination of other variables in the information set that includes X and Y. The Granger causality test assumes that the information relevant to the prediction of the respective variables is contained solely in the time series data on the respective variables (Gujarati, 1995; Gujarati, 2003).

In investigating the causal relationship between international tourism receipts and real economic growth, the direction of causality between the two series must be determined. Engle and Granger (1987) pointed out that if two series are cointegrated, then, there must be Granger-causation in at least one direction, or an error-correction mechanism exists. Therefore, two causality tests, namely the Vector Error Correction Model (VECM) and Vector Autoregression Model (VAR), were used to test for the short-run and long-run relationship between international tourism receipts and real economic growth (real GDP) in Malaysia from 1994 to 2004.

4.5.3.1.3.1 Bivariate Causality Test

In determining the causal relationship between international tourism receipts and real economic growth, first, the study used the bivariate causality test to test for the individual time-series data of international tourism receipts and real GDP. The bivariate causality tests, namely Vector Error-Correction model (VECM) and Vector Autoregression model (VAR) were employed in testing the hypothesis.

(i) Vector Error-Correction Model (VECM)

The Vector Error-Correction model was employed to test the relationship between the series which are cointegrated. If the variables are cointegrated in the short term, then the error-correction model indicates that the deviation from the long-run equilibrium is resulted from the change in the dependent variable that forces the movement toward the long-run equilibrium. Hence, if the dependent variable is driven directly by long-term equilibrium of $I(0)$ error, then it is said to respond to the feedback. If not, then it is said to respond to short-term shocks to the stochastic environment. In this case, economic and tourism growth models to be tested are as follows:

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LREC_{t-j} + \delta_1 EC_{t-1} + \varepsilon_{1t} \quad (4.56)$$

$$\Delta LREC_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LGDP_{t-j} + \delta_1 EC_{t-1} + \varepsilon_{2t} \quad (4.57)$$

where $\Delta LGDP_t$ and $\Delta LREC_t$ are the differenced stationary and cointegrated variables; t stands for time; EC_{t-1} is the lagged value of the error correction term from the cointegrating vector regression; the coefficient δ represents the response of dependent variable in each period to departures from equilibrium; ε_{1t} and ε_{2t} are white noise error

terms following the classical linear regression model assumptions; and α_1 and α_2 are parameters of interest. In equation (4.56) and (4.57), the error-correction model regresses the change in the variables, both dependent and independent, on lagged deviations.

As Granger (1988) pointed out, there are two channels of causality. One channel is through the lagged values of $\Delta LREC$ and $\Delta LGDP$, where, $\alpha_{i1},...,\alpha_{im}$ are jointly significant, and the other is through the value δ. If δ_1 and δ_2 are significant, that is different from zero, based on the t-statistics, both the independent and dependent variables have a stable relationship in the long run.

The F-test is usually used in testing the different explanatory variables in determining the short-term causal effects, whereas the t-test is used to test the lagged error-correction term in searching for long-run relationships between the variables. Therefore, the coefficient of lagged error-correction term presents the short-term adjustment coefficients and indicates the proportion by which the long-run disequilibrium in the dependent variable is being corrected in each short period.

(ii) Vector Autoregression (VAR) Model

In this section, the hypotheses to be tested are whether tourism-led economic growth or economic growth drives tourism. The test involved estimating the following bivariate VAR model:

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LREC_{t-j} + \varepsilon_{1t} \tag{4.58}$$

$$\Delta LREC_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LGDP_{t-j} + \varepsilon_{2t} \tag{4.59}$$

The two-variable VAR model can be expressed as follows:

VAR Model

$$\begin{pmatrix} \Delta LGDP_t \\ \Delta LREC_t \end{pmatrix} = \alpha_0 + \alpha_1 \begin{pmatrix} \Delta LGDP_{t-1} \\ \Delta LREC_{t-1} \end{pmatrix} + \alpha_2 \begin{pmatrix} \Delta LGDP_{t-2} \\ \Delta LREC_{t-2} \end{pmatrix} + \ldots + \alpha_p \begin{pmatrix} \Delta LGDP_{t-p} \\ \Delta LREC_{t-p} \end{pmatrix} + \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{pmatrix} \quad (4.60)$$

where α_0 is a vector of constant term, α_p is the matrix of parameters, and ε_t is the white noise innovation term. The number of lag was determined by using the Akaike Information Criteria (AIC), Schwartz Bayesian Criterion (SBC), and Likelihood Ratio (LR) test. Basically, the optimum lag was selected with the lowest values of AIC and SBC criteria, and with the rejection of the null hypothesis in LR test.

4.5.3.1.3.2 Multivariate Causality Test

Instead of just using the bivariate causality test, this study also tested the causal relationship between international tourism and real economic growth by using the multivariate causality test (Chan *et al.*, 2005). The causal hypotheses that were tested are as follows:

- Do international tourism receipts cause economic growth?
- Does economic growth cause international tourism receipts?
- Does real effective exchange rate cause international tourism receipts?
- Do international tourism receipts cause real effective exchange rate?
- Does economic growth cause real effective exchange rate?
- Does real effective exchange rate cause economic growth?
- Does tourism price cause international tourism receipts?
- Do international tourism receipts cause tourism price?

In order to test the causal relationships discussed above, the study specified the following four-variable VAR model:

$$Z = (GDP, ER, Pm, REC) \tag{4.61}$$

where,

GDP = real gross domestic product,
ER = real effective exchange rate,
Pm = price of tourism in Malaysia,
REC = international tourism receipts,
Z = vector.

In investigating the causal relationships of a vector autoregressive VAR, the model popularised by Sims (1980) was formulated for the vector Z defined in equation (4.61). The advantage of the VAR model is that it treats each variable in the system as potentially endogenous and relates each variable to its own past values and to past values of all other variables included in the model. In the latter case the error correction term, *ECT*, which represents the long-run relationship between the variables, is reintroduced back into the VAR and the resulting model is known as the vector error correction model (VECM).

(i) Multivariate Error-Correction Model

The multivariate error-correction tests were conducted to test the relationship among all the series which are cointegrated. If the variables are cointegrated in the short-run, then the error-correction model indicates that the deviation from the long-run equilibrium is resulted from the change in the dependent variable that forces the movement towards the long-run equilibrium. If the dependent variable is driven directly by long-run equilibrium of $I(0)$ error, then it is said to respond to the feedback. If not, then it is said to respond to short-term shocks to the stochastic environment.

Therefore, to explain the above statement, a four-variable unrestricted VAR model with the deterministic term can be written as follows:

$$Z = \beta_0 + \beta(L)Z_t + \varepsilon_t \tag{4.62}$$

where

$\beta(L)$ $= [b_{ij}(L)]$ is a 4 x 4 matrix of the polynomial,
$b_{ij}(L)$ $= \sum b_{ij1}L^1$,
β_0 $= (b_{10}\ b_{20}\ b_{30}\ b_{40})'$ is a constant, and
ε_t is a 4 x 1 vector of random errors.

Equation (4.62) can be rewritten as a VECM assuming there exists at least one cointegrating vector;

$$\Delta Z_t = \beta_0 + \beta(L)\Delta Z_{t-1} + \delta EC_{t-1} + \mu_t \tag{4.63}$$

Where EC_t is the error correction term, μ_t is a 4 x 1 vector of white noise errors, $E(\mu_t) = 0$ and $(\mu_t\ \mu_{t-1}) = \Omega$, for $t = s$, and zero otherwise.

After normalising the cointegrating vector, the economic growth equation can be written as:

$$LGDP_t = a_1 LREC_t + a_2 LPm_t + a_3 LER_t \tag{4.64}$$

The error-correction term, obtained from equation (4.63) is as follows:

$$EC_t = LGDP_t - a_1 LREC_t - a_2 LPm_t - a_3 LER_t \tag{4.65}$$

Hence, the economic growth and tourism growth equation in the detailed form for model (4.63) are written as:

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1j} \Delta LGDP_{t-j} + \sum_{i=1}^{p} \alpha_{2j} \Delta LREC_{t-j} + \sum_{i=1}^{p} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{p} \alpha_{4j} \Delta LER_{t-j} + \delta_1 EC_{t-1} + \varepsilon_{1t} \quad (4.66)$$

$$\Delta LREC_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1j} \Delta LREC_{t-j} + \sum_{i=1}^{p} \alpha_{2j} \Delta LGDP_{t-j} + \sum_{i=1}^{p} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{p} \alpha_{4j} \Delta LER_{t-j} + \delta_2 EC_{t-1} + \varepsilon_{2t} \quad (4.67)$$

where $\Delta LGDP_t$ and $\Delta LREC_t$ are the differenced stationary and cointegrated variables; t stands for time; EC_{t-1} is the lagged value of the error correction term from the cointegrating vector regression; the coefficient δ represents the response of dependent variable in each period to departures from equilibrium; ε_{1t} and ε_{2t} are white noise error terms following the classical linear regression model assumptions; and α_1, α_2, α_3, and α_4 are parameters of interest. In equation (4.66) and (4.67), the error-correction model regresses the change in the variables (dependent and independent) on lagged deviations.

(ii) Multivariate VAR model

The multivariate VAR test was conducted to test for the short-run relationship among all the series, which are not cointegrated in the long run. In this study, the cointegration among the series was examined by using the Johansen and Juselius multivariate cointegration procedure. When the null hypothesis of the non-stationary is rejected, this means the series is not cointegrated in the long run. Thus, the long-run equilibrium does not exist among the series. Therefore, the multivariate VAR model would be applied because the model needs to include first differenced series without any error correction terms in the model. The Sim's structural VAR model[14] shown in equation (4.68) below was used to test the relationship among the series.

[14] For details of Sim's structural VAR approach, see Enders (2004, p.291).

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LER_{t-j} + \varepsilon_{1t} \quad (4.68a)$$

$$\Delta LER_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LER_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LPm_{t-j} + \varepsilon_{2t} \quad (4.68b)$$

$$\Delta LPm_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LPm_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LER_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LREC_{t-j} + \varepsilon_{3t} \quad (4.68c)$$

$$\Delta LREC_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LER_{t-j} + \varepsilon_{4t} \quad (4.68d)$$

The four-variable SVAR model can be expressed as follows:

SVAR Model

$$\begin{pmatrix} \Delta LGDP_t \\ \Delta LER_t \\ \Delta LPm_t \\ \Delta LREC_t \end{pmatrix} = \alpha_0 + \alpha_1 \begin{pmatrix} \Delta LGDP_{t-1} \\ \Delta LER_{t-1} \\ \Delta LPm_{t-1} \\ \Delta LREC_{t-1} \end{pmatrix} + \alpha_2 \begin{pmatrix} \Delta LGDP_{t-2} \\ \Delta LER_{t-2} \\ \Delta LPm_{t-2} \\ \Delta LREC_{t-2} \end{pmatrix} + \alpha_3 \begin{pmatrix} \Delta LGDP_{t-3} \\ \Delta LER_{t-3} \\ \Delta LPm_{t-3} \\ \Delta LREC_{t-3} \end{pmatrix} + \ldots + \alpha_p \begin{pmatrix} \Delta LGDP_{t-p} \\ \Delta LER_{t-p} \\ \Delta LPm_{t-p} \\ \Delta LREC_{t-p} \end{pmatrix} + \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \end{pmatrix} \quad (4.69)$$

where, α_0 is a vector of constant term, α_p is the matrix of parameters, and ε_t is the white noise innovation term. In addition, the number of lags was determined by using the Akaike Information Criteria (AIC), Schwartz Bayesian Criterion (SBC), and Likelihood Ratio (LR) tests. The optimum lag was selected with the lowest values of AIC and SBC criteria, and with the rejection of the null hypothesis in LR test.

In this study, the hypothesis tested was whether tourism-led economic growth or economic growth-led tourism holds true in Malaysia. Concerning this, the test involved estimating the following pair of regression:

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LER_{t-j} + \varepsilon_{1t} \quad (4.70)$$

$$\Delta LREC_t = \alpha_0 + \sum_{i=1}^{\rho} \alpha_{1j} \Delta LREC_{t-j} + \sum_{i=1}^{\rho} \alpha_{2j} \Delta LGDP_{t-j} + \sum_{i=1}^{\rho} \alpha_{3j} \Delta LPm_{t-j} + \sum_{i=1}^{\rho} \alpha_{4j} \Delta LER_{t-j} + \varepsilon_{2t} \quad (4.71)$$

Hence, the Granger-causality test was implemented by calculating the *F*-statistic (Wald test) based on the null hypothesis that the set of coefficients (α_1, α_2, α_3 and α_4) on the lagged values of independent variables are not statistically different from zero. If the null hypothesis is not rejected, then it can be concluded that the dependent variables do not cause the dependent variable. Therefore, lagged values of differences of the economic variables $\Delta LGDP_{t-1}$ and $\Delta LREC_{t-1}$ are added to ensure white noise in the error terms of the vector autoregressive system.

4.5.3.2 Determination of Causal Relationship between International Tourism Receipts and Real Economic Growth by using Panel Time-Series Data

4.5.3.2.1 Panel Unit Root Tests

Before proceeding with the panel cointegration test, the establishment of the panel unit root properties for all series used is required. In order to achieve this objective, four (4) panel unit root tests (as discussed in 4.5.2.1), namely the LLC, the Breitung, the IPS, and the MWF tests were used.

4.5.3.2.2 Panel Cointegration Test

After identifying the order of integration, the study then used the panel cointegration test as suggested by Pedroni (1999) in testing for cointegration relationship among the series. We specified the following panel cointegration regression:

$$\ln GDP_{it} = \alpha_i + \sum \beta_i \ln REC_{it} + \varepsilon_{it} \tag{4.72}$$

for t=1,..., T; i=1,..., N; where T refers to the number of observations over time and N refers to the number of individual country (cross-sectional unit) in the panel. ln*GDP* is the natural logarithm of real GDP and ln*REC* is the natural logarithm of international tourism receipts. In estimating equation (4.72), this study followed the steps that were mentioned earlier in section 4.5.2.2 and computed the seven test statistics, namely panel v-statistic, panel ρ-statistic, panel PP t-statistic (non parametric), panel t-statistic (parametric), group ρ-statistic, group PP t-statistic (non-parametric), and group t-statistic (parametric).

4.5.3.2.3 Panel Granger Causality Test

Following the work of Engle and Granger (1987), if two non-stationary variables are cointegrated, a vector autoregression (VAR) in first differences will be misspecified. To remedy this, the study needed a model with a dynamic error correction representation assuming that real GDP and international tourism receipts are cointegrated. This means that the traditional VAR model is augmented with a one period lagged error correction term, which is obtained from the cointegrated model.

The study extended this to a panel data case, thus specifying the following equations for the Granger causality test:

$$\Delta \ln GDP_{it} = \alpha_{1GDP} + \sum_{\rho} \alpha_{11i\rho} \Delta \ln GDP_{it-j} + \sum_{\rho} \alpha_{12i\rho} \Delta \ln REC_{it-\rho} + \beta_{1i} ECT_{t-1} \quad (4.73)$$

$$\Delta LREC_{it} = \alpha_{1REC} + \sum_{\rho} \alpha_{21i\rho} \Delta \ln REC_{it-j} + \sum_{\rho} \alpha_{22i\rho} \Delta \ln GDP_{it-j} + \beta_{2i} ECT_{t-1} \quad (4.74)$$

where Δ denotes the first difference of the variable, and ρ denotes the lag length. The significance of the first differenced variables provides evidence on the direction of the short-run causation; while the *t*-statistics on the one period lagged error correction term denotes long-run causation.

4.6 Concluding Remarks

Generally, this chapter has focused on the methodologies that were used in addressing the objectives of the study. The study employed the panel data econometrics fixed- and random-effects model in determining the socioeconomic factors affecting tourism demand in Malaysia. Whereas, panel cointegration analysis and error-correction model were used in investigating the presence of short-run and long-run relationships between tourism demand and the factors influencing tourism demand. Furthermore, in examining the causal relationship between international tourism receipts and real economic growth, the study utilised individual and panel causality tests.

CHAPTER 5

RESULTS AND DATA ANALYSIS

5.1 Introduction

Recognising tourism as an important source of foreign exchange earnings contributing to growth, employment opportunities, as well as strengthening the services account of the balance of payments, Malaysia therefore needs to increase and sustain the growth of tourist arrivals, thus in order to achieve this, it is important to understand the factors that significantly influence tourism demand in Malaysia. This chapter presents the results of data analysis. These empirical findings are presented and discussed based on the objectives of the study as highlighted in Chapter 1.

5.2 Socioeconomic Variable and Tourism Demand in Malaysia

The results of this section are divided into three parts based on the sample of study:

(i) tourists from ASEAN and non-ASEAN countries (or Whole sample),

(ii) tourists from ASEAN countries, and

(iii) tourists from selected non-ASEAN countries

Section 5.2.1 presents the results of Pooled OLS and fixed-/random-effects models for tourists from the whole sample (ASEAN and non-ASEAN countries); followed by section 5.2.2 with the presented results in the case of tourists from ASEAN countries; and section 5.2.3 shows the results in the case of tourists from selected non-ASEAN countries.

5.2.1 Results for tourists from the whole sample (both ASEAN and non-ASEAN countries)

The estimation results for the whole sample using pooled OLS and fixed-/random-effects models are presents in Table 5.1. The coefficients in each column, i.e. columns two through seven differ in the assumptions on the non-observable individual effects. Columns two and three refer to pooled OLS model (based on the assumption that all countries react in the same manner after a change in the values of the explanatory variables and that the non-observable individual characteristics, α, are the same for all tourism routes). In columns four and five, the individual effects are treated as fixed, and in columns six and seven, the values are considered random and form part of the error term.

The regression results of pooled OLS showed that the coefficients of determination R^2 are 0.307 (Eq. 1) and 0.878 (Eq. 2), and for the one-way fixed effects model, R^2 are 0.985 (Eq. 1) and 0.986 (Eq. 2). Therefore, controlling for country effects causes R^2 to increase considerably. However, conditioning both country- and time-effects does not change the R^2 for both equations. For the random-effects model, R^2 are 0.307 (Eq. 1) and 0.878 (Eq. 2). In comparing the pooled OLS model with the one-way fixed-effects model, the null hypothesis that (country-effects) equal to zero is rejected at the 0.01 level of significance. This implies the presence of country-effects in the model. Moreover, in comparing the one-way fixed effects model with the two-way fixed effect model, the null hypothesis that θ_t (time-effects) equal to zero, could not be rejected. These results imply that the one-way fixed-effects model is more appropriate. To compare the one-way fixed effects model with the random-effects model, the study referred to the Hausman test. The Hausman statistic of 1.58 indicated that the hypothesis that the individual effect is uncorrelated with the regressors cannot be rejected. Hence, the random-effects model is more appropriate.

Table 5.1. Estimates of tourism demand equation by tourists from ASEAN and Non-ASEAN countries (whole sample)

Variable	Pooled OLS		One-way Fixed Effects		Random-Effects	
	Eq.1	Eq.2[b]	Eq.1	Eq.2[b]	Eq.1	Eq.2[b]
Constant	13.597***	2.438***			12.198***	11.858***
	(20.425)	(3.641)			(9.402)	(15.902)
GDP	-0.255***	0.119	0.053	0.072	0.0367	0.104*
	(-3.302)	(1.533)	(0.390)	(0.522)	(0.276)	(1.840)
GDP_{t-1}		-0.175**		-0.019		-0.034
		(-2.351)		(-0.651)		(-1.203)
TAR_{t-1}		0.819***		0.054		0.113***
		(18.430)		(1.421)		(3.065)
Pm_{t-1}		-0.658***		-0.036		-0.080*
		(-7.989)		(-0.880)		(-1.985)
Pm	-1.438**	-0.465*	-0.148	-0.157	-0.149	-0.183*
	(-2.341)	(-1.734)	(-0.098)	(-1.582)	(-1.511)	(-1.842)
Ps	6.201**	-5.043***	-0.979*	-1.369**	-0.983*	-1.707***
	(1.735)	(-2.916)	(-1.722)	(-2.110)	(-1.730)	(-2.643)
Pt	-11.011**	2.784	-0.515	-0.109	-0.516	0.142**
	(-2.407)	(1.274)	(-0.705)	(-0.135)	(-0.706)	(2.176)
Pi	-0.188***	-1.510***	-0.421**	-0.496***	-0.422**	-0.575***
	(-0.154)	(-2.841)	(-2.236)	(-2.503)	(-2.241)	(-2.910)
Pp	5.519**	2.676**	0.803*	0.836*	0.809*	1.011**
	(1.933)	(2.149)	(1.761)	(1.798)	(1.778)	(2.181)
D_{mta}	0.654	0.319	0.594***	0.577***	0.595***	0.566***
	(1.145)	(1.298)	(6.764)	(6.444)	(6.772)	(6.330)
D_{afc}	0.333	0.144	-0.063	-0.055	-0.065	-0.062
	(0.826)	(0.826)	(-0.977)	(-0.847)	(-1.006)	(-0.970)
D_{SARS}	-0.262	-0.437*	-0.325***	-0.334***	-0.325***	-0.343***
	(-0.510)	(-1.983)	(-4.132)	(-4.210)	(-4.132)	(-4.319)
D_{s11}	-0.016	-0.168	-0.048	-0.057	-0.049	-0.081
	(-0.032)	(-0.775)	(-0.612)	(-0.721)	(-0.629)	(-1.033)
R^2	0.307	0.878	0.985	0.986	0.307	0.878
Adjusted R^2	0.218	0.857	0.982	0.981	0.218	0.857
Hausman statistics	1.580					
Overall Significance (F-Test)	3.420***	41.070***	2760***	232.810***		
LM Test (one-way)	302.810					
Autocorrelation 1st order	1.970					

Notes:
1. [b] represent results for model 2 (Eq. 2) with lagged variables.
2. Figures in parentheses are t-values.
3. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Therefore, equation (2) of the random-effects model is selected since the estimate coefficients are highly statistically significant with the correct expected sign and commented on in the main results. For income elasticity, it is statistically

significant at 10 percent level, with the estimated coefficient of 0.104. According to demand theory, coefficient values between zero and one ($0 < Ey < 1$) indicates that the product (or service) is a *normal necessities* (Divisekera, 2003). A 1 percent increase in real income would lead to less than 1 percent increase in demand. Hence, in this case, tourism demand in Malaysia is generally regarded as *normal necessities*. In addition, to explore the possibility that income does not only have an instantaneous effect but also previous income can affect current tourist flows, the same model had been estimated by adding lagged income as one regressor. However, the lagged income turned out to be insignificant. This indicated that previous income has no effect on the current tourist flows to Malaysia.

Moreover, in order to insert dynamics into the tourism demand function, a lagged dependent variable (TAR_{t-1}) was also introduced as an explanatory variable to capture persistence effects of the tourist's behaviour or the *word-of-mouth* effect, which turned out to be significant at the 1 percent level. The results revealed that approximately 11.3 percent of tourist arrivals in Malaysia are attributed to habit persistence and/or word-of-mouth effects (Garin-Muňoz, 2007). This indicated that the word-of-mouth effect plays an important role in determining tourism demand for Malaysia. Hence, the major implication of this finding for the Malaysian tourism industry is that the provision of high-quality tourism products/services and promotional strategies are crucial for earning good reputation as well as attracting new and repeat tourists.

Regarding the relative prices of tourism, the estimated coefficient is -0.183, and it is statistically significant at the 10 percent level, suggesting that tourism demand in Malaysia is price inelastic. Therefore, a 1 percent increase in price of tourism in Malaysia would decrease tourist arrivals by 0.183 percent. The comparison of this result

with those previous studies is not straightforward. The reason is that different studies had used different measures of price and this explains why the estimates of price elasticity varied considerably.

In exploring the possibility that prices do not only have an instantaneous effect but past price also can affect current tourist flows, the study had estimated the same model by adding lagged price as a regressor. The variable turned out to be statistically significant at the 10 percent level. This suggests that past prices have an affect on current tourist flows to Malaysia. The result is consistent with the argument that lagged effect is likely to occur when the countries considered are geographically very distant (Garin-Muñoz & Amaral, 2000).

Concerning the price of tourism in competing destinations, the study also included the price of tourism in Singapore, Thailand, Indonesia, and the Philippines as regressors. Results of the study revealed that the price of tourism for both Singapore and Indonesia are negatively significant at the 1 percent level, with estimated coefficients of -1.707 and -0.575, respectively. The negative signs indicate that Singapore and Indonesia are complementary destinations for Malaysia. Therefore, a 1 percent decreases in the price of tourism in Singapore and Indonesia would increase arrivals to Malaysia by 1.707 percent and 0.575 percent, respectively. For Thailand and the Philippines, the price elasticity of demand for tourism is positively significant at the 5 percent level, with estimated coefficients of 0.142 and 1.011, respectively. The results indicated that Thailand and the Philippines are substitute destinations for Malaysia. Hence, an increase in the international tourist arrivals in Malaysia could be expected when there is an increase in price of tourism in Thailand and the Philippines.

Interestingly, the Malaysian government's international tourism promotional campaign (under the popular theme of *Malaysia...Truly Asia*) was found to be

statistically significant at the 1 percent level. This suggests that the campaign is effective in attracting international tourists to Malaysia. Moreover, the promotional effort by Tourism Malaysia, as well as Malaysia's increasingly strong reputation as a centre for international events has boosted incoming arrivals.

The spread of SARS in Asia is also significant in explaining tourism demand in Malaysia. The results indicated that tourist arrivals from these countries decreased by 34.3 percent because of the SARS epidemic. This could be due to the fact that tourists are very sensitive to the presence of any spread of infectious diseases.

However, contrary to expectations, the 1997/98 Asian financial crisis and the 2001 September 11 incident in the U.S. are not significant in explaining tourism demand in Malaysia. These indicated that the 1997/98 Asian financial crisis and the 2001 September 11 incident do not deter international tourist arrivals to Malaysia. The insignificant result of the 1997/98 Asian financial crisis could be explained by the fact that the sample of the study (whole sample) were from both ASEAN and non-ASEAN countries, therefore the effect of the 1997/98 Asian financial crisis would be lessened. Hence, to further examine the effect of the 1997/98 Asian financial crisis, the sample of the study were segmented by ASEAN and non- ASEAN countries in the following section. Additionally, the insignificant results of the 2001 September 11 incident in the U.S. might be due to the fact that tourists from these markets regarded Malaysia as a safe and pleasant place to visit. Moreover, the commitment by the Malaysian government in combating terrorists to ensure the safety of tourists has further increased the confidence of tourists to travel within Malaysia. This is particularly true since the comfort, safety, and security of tourists are crucial for the success of the tourism industry.

5.2.2 Results in the Case of Tourists from ASEAN countries

This section presents the estimation results in the case of tourist arrivals from ASEAN countries using pooled OLS and fixed-/random-effects models. The regression results, as displayed in Table 5.2, show that for the pooled OLS model, the R^2 are 0.278 (Eq. 1) and 0.932 (Eq. 2); whereas, for the one-way fixed effects model, the R^2 are 0.996 (Eq. 1) and 0.997 (Eq. 2). These show that controlling for country-effects leads to a further improvement of R^2. Conditioning on both country- and time-effects does not change the R^2 for both equations. Therefore, the findings showed the results of the one-way fixed-effects model. For the random-effects model, R^2 are 0.278 (Eq. 1) and 0.932 (Eq. 2), slightly lower than the fixed-effects model. The Hausman statistics for this sample was 0.30, which indicated the hypothesis that individual effects is uncorrelated with the regressor cannot be rejected. Hence, equation (2) from the random-effects model was chosen.

Concerning tourists from ASEAN countries, income appears to be the most important determinant for tourism demand in Malaysia. The estimated income elasticity is 0.499 and it is statistically significant at the 1 percent level. This shows that tourism demand in Malaysia is regarded as a normal necessity by tourists from ASEAN countries.

Besides, the estimated coefficient of lagged income is also statistically significant at the 1 percent level. This indicates that the previous income also plays an important role in determining tourists' arrivals from ASEAN countries.

The lagged dependent variable, which represented the *word-of-mouth* effect, turned out to be significant at the 1 percent level, in explaining tourism demand in Malaysia. The results revealed that approximately 24.4 percent of tourist arrivals in Malaysia are attributed to the *word-of-mouth* effect. Hence, the *word-of-mouth* effect is

influential in determining tourism demand in Malaysia by tourists from ASEAN countries.

Table 5.2. Estimates of tourism demand equation by tourists from ASEAN countries

Variable	Pooled OLS		One-way Fixed Effects		Random-Effects	
	Eq.1	Eq.2[c]	Eq.1	Eq.2[c]	Eq.1	Eq.2[c]
Constant	9.444***	0.924			12.240***	9.392***
	(3.344)	(0.773)			(8.632)	(12.653)
GDP	0.609	1.209***	0.182	0.304**	0.182	0.499***
	(0.917	(4.488)	(1.305)	(2.069)	(1.309)	(3.670)
GDP_{t-1}		-1.323***		-0.119		-0.403***
		(-5.592)		(-1.558)		(-5.555)
TAR_{t-1}		0.956***		0.025		0.244***
		(16.565)		(0.573)		(6.334)
Pm_{t-1}		0.357*		0.095*		0.156***
		(1.656)		(1.829)		(3.026)
Pm	-1.611*	-0.304	-0.220***	-0.215***	-0.221***	-0.234***
	(-1.838)	(-1.039)	(-3.045)	(-3.061)	(-3.050)	(-3.343)
Ps	6.686	-7.768***	0.673	0.375	0.675	-1.561**
	(1.002)	(-3.287)	(1.192)	(0.542)	(1.196)	(-2.353)
Pt	-10.327	7.720***	-1.411**	-0.867	-1.414**	1.143
	(-1.399)	(2.862)	(-2.298)	(-1.146)	(-2.302)	(1.564)
Pi	-0.243	-1.597*	0.344	0.325	0.344	-0.136
	(-0.091)	(-1.847)	(1.558)	(1.397)	(1.558)	(-0.599)
Pp	3.775	-0.464	0.452	0.178	0.453	0.038
	(0.899)	(-0.315)	(1.361)	(0.512)	(1.364)	(0.109)
D_{mta}	1.081	0.536	0.599***	0.633***	0.599***	0.608***
	(0.953)	(1.405)	(6.653)	(6.946)	(6.655)	(6.687)
D_{afc}	0.268	0.163	-0.264***	-0.239***	-0.264***	-0.149**
	(0.361)	(0.669)	(-4.079)	(-3.676)	(-4.076)	(-2.328)
D_{SARS}	-0.115	-0.503	-0.285***	-0.297***	-0.285***	-0.346***
	(-0.116)	(-1.567)	(-3.667)	(-3.901)	(-3.667)	(-4.557)
D_{s11}	0.091	-0.248	-0.085	-0.096	-0.085	-0.134*
	(0.093)	(-0.786)	(-1.109)	(-1.270)	(-1.108)	(-1.780)
R^2	0.278	0.932	0.996	0.997	0.278	0.932
Adjusted R^2	0.059	0.903	0.994	0.995	0.059	0.903
Hausman statistics	0.30					
Overall Significance (F-Test)	1.270	31.660***	573.820***	497.800***		
LM Test (one-way)	142.580***					
Autocorrelation 1st order	1.950					

Notes:
1. [c] represent results for model 2 (Eq. 2) with lagged variables.
2. Figures in parenthesis are t-values
3. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

The estimated price elasticity of demand for tourism in Malaysia is -0.234 and this is statistically significant at the 1 percent level, suggesting that tourism demand in Malaysia is price inelastic. In order to explore the effect of past price on current tourists' inflow from ASEAN countries, lagged prices was also included as one of the regressors, which turned out to be significant at the 1 percent level, suggesting that the past prices also have a significant affect on current tourists flows to Malaysia.

Regarding the price of tourism in substitute destinations, results of the study revealed that the price of tourism in Singapore is negatively significant at the 5 percent level, with the estimated coefficient of -1.561. The negative sign indicates that Singapore is a complementary destination for Malaysia. Correspondingly, an increase in the arrivals of international tourists in Malaysia could be expected when there is a decrease in price of tourism in Singapore. However, for Thailand, Indonesia, and the Philippines, the estimated price elasticity indicates that these countries are insignificant in explaining tourism demand in Malaysia.

For the *Malaysia...Truly Asia* promotion campaign dummy variable, it was significant at the 1 percent level with the estimated coefficient of 0.608, suggesting that this promotion campaign increased tourist arrivals from ASEAN countries by 60.8 percent. The major implication of this finding for the tourism industry is that the marketing and promotion activities are important in attracting tourist arrivals from ASEAN countries to Malaysia. Therefore, Malaysia's image as an attractive tourist destination should be further internationalised through marketing and promotion activities.

The 1997/98 Asian financial crisis tends to have a significant negative effect on tourist arrivals from ASEAN countries. The estimated coefficient of -0.149 indicated that tourist arrivals from ASEAN countries decreased by 15 percent because of this

crisis. The 1997/98 Asian financial crisis really affected inbound tourists from the short-haul and regional market. Devaluation of the regional currencies had decreased the purchasing power of consumers in this region, hence, negatively affected their travelling plans.

The SARS dummy variable was negatively significant at the 1 percent level (the estimated coefficient was -0.346) indicating that the SARS epidemic decreased tourist arrivals from ASEAN countries by 34.6 percent. This can be explained by the fact that tourists are very sensitive to the presence of any spread of infectious diseases within the region.

The 2001 September 11 incident in the U.S. also significantly affects tourist arrivals from ASEAN countries to Malaysia. The number of tourist arrivals decreased by 13.4 percent because of this factor. This could be due to the fact that tourists are more concerned about their safety and security after the September 11 incident, particularly when travelling within the Asian regions.

5.2.3 Results in the Case of Tourists from non-ASEAN Countries

Table 5.3 presents the estimation results for tourists from selected non-ASEAN countries. The regression results of the pooled OLS showed that R^2 are 0.291 (Eq. 1) and 0.895 (Eq. 2). For the one-way fixed effects model, the R^2 are 0.957 (Eq. 1) and 0.956 (Eq. 2). Therefore, controlling for country effects causes R^2 to increase considerably. For the random-effects model, the R^2 are 0.291 (Eq. 1) and 0.895 (Eq. 2). To compare the pooled OLS model with the one-way fixed-effects model, the null hypothesis that α_i (recipient-effect) equals zero was rejected at the 0.01 level of significance. This implies the presence of country-effects in the model. To compare the one-way fixed-effects model with the two-way fixed-effects model, the null hypothesis

that θ_t (time effects) equals zero could not be rejected. Hence, the results preferred the one-way fixed effects model.

Then, to compare the one-way fixed-effects model with the random-effects model, the study referred to the Hausman statistic. The Hausman statistic for this sample was 0.13. This indicated the hypothesis that individual effect is uncorrelated with the regressor, which cannot be rejected. Hence, the random-effects model is the best model and equation 2, of the random-effects model (Table 5.3) was selected and commented on. For this sample group, the estimated income elasticity was statistically significant at the 10 percent level, with the estimated coefficient of 0.074, suggesting that tourism demand in Malaysia is regarded as *normal necessities*.

Furthermore, to explore the effect of past income on current tourist inflows, the study had estimated the same model by adding lagged income as a regressor. The lagged income variable turned out to be negatively significant at the 1 percent level. This could be explained by the fact that increase in the previous income, would decrease current tourist arrivals from these countries, since tourism demand in Malaysia is regarded as *normal necessities* or low market destinations.

In terms of *word-of-mouth* effect (lagged dependent variable), it is significant at the 1 percent level with the estimated coefficient of 0.589. This indicated that approximately 58.9 percent of all arrivals from non-ASEAN countries are repeat visitors, which attributed to habit persistence or *word-of-mouth* effects. This led to a conclusion that the *word-of-mouth* effect is very important in determining tourist arrivals from non-ASEAN countries. Therefore, Malaysia should focus on the provision of high-quality goods and services in order to attract new and repeat tourists from this market.

Table 5.3. Estimates of tourism demand equation by tourists from non-ASEAN countries

Variable	Pooled OLS		One-way Fixed Effects		Random-Effects	
	Eq.1	Eq.2[d]	Eq.1	Eq.2[d]	Eq.1	Eq.2[d]
Constant	11.995***	0.818			11.356***	4.340***
	(21.198)	(0.916)			(8.750)	(3.600)
GDP	-0.009	0.118***	0.126	0.118	0.069	0.074*
	(-0.208)	(2.658)	(0.574)	(0.508)	(0.412)	(1.677)
GDP_{t-1}		-0.126***		0.0117		-0.081***
		(-2.828)		(0.310)		(-2.475)
TAR_{t-1}		0.864***		0.0337		0.589***
		(12.857)		(0.231)		(6.455)
Pm_{t-1}		-0.747***		-0.046		-0.515***
		(-9.989)		(-0.360)		(-6.134)
Pm	9.985	-16.064	6.329	5.871	6.311	-8.766
	(0.392)	(-1.515)	(0.956)	(0.734)	(0.953)	(-1.180)
Ps	-10.418	13.775*	-5.953	-5.642	-6.073	-7.161
	(-0.582)	(1.793)	(-1.273)	(-0.928)	(-1.301)	(-1.305)
Pt	1.648	-8.988***	1.674	1.295	1.558	5.728***
	(0.219)	(-2.851)	(0.833)	(0.467)	(0.784)	(2.459)
Pi	-0.793	-1.394	-0.529	-0.613	-0.559	-1.172**
	(-0.391)	(-1.634)	(-0.980)	(-1.026)	(-1.048)	(-2.025)
Pp	-3.622	12.957***	-2.788	-2.202	-2.629	8.090***
	(-0.404)	(3.380)	(-1.157)	(-0.601)	(-1.106)	(2.750)
D_{mta}	0.659**	0.383***	0.658***	0.647***	0.656***	0.468***
	(2.072)	(2.939)	(7.936)	(6.577)	(7.926)	(5.130)
D_{afc}	-0.105	1.063***	-0.064	-0.023	-0.058	0.711***
	(-0.181)	(4.239)	(-0.421)	(-0.091)	(-0.379)	(3.606)
D_{SARS}	-0.478	-0.258*	-0.439***	-0.434***	-0.439***	-0.316***
	(-1.435)	(-1.898)	(-5.077)	(-4.527)	(-5.067)	(-3.406)
D_{s11}	-0.194	0.154	-0.137	-0.129	-0.138	0.059
	(-0.438)	(0.846)	(-1.191)	-0.988	(-1.197)	(0.475)
R^2	0.291	0.895	0.957	0.956	0.291	0.895
Adjusted R^2	0.076	0.849	0.938	0.932	0.076	0.849
Hausman statistics	0.130					
Overall Significance (F-Test)	1.350	19.640***	50.760***	37.710***		
LM Test (one-way)	179.200***					
Autocorrelation 1st order	1.890					

Notes:
1. [d] represent results for model 2 (Eq. 2) with lagged variables.
2. Figures in parenthesis are t-values.
3. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

For the lagged prices variable, it is statistically significant at the 1 percent level in explaining tourism demand in Malaysia by tourists from non-ASEAN countries. The results are in line with the previous studies that conclude lagged effects are likely to

occur when the countries are considered geographically very distant (Garin-Muñoz & Amaral, 2000). In this study, the sample of non-ASEAN countries was the U.S., the U.K., Germany, Japan, and Australia, all of which are geographically distant. Hence, past prices have an affect on current tourist inflows to Malaysia.

However, the current prices of tourism in Malaysia turned out to be insignificant in explaining tourist arrivals from non-ASEAN countries. This implies that current prices of tourism in Malaysia are not influential in determining international tourist arrivals from high GDP countries (since the sample of non-ASEAN countries were the U.S., the U.K., Germany, Japan, and Australia). Tourists from high GDP countries are not sensitive to the current prices of tourism when they travel to the low GDP countries (Eilat & Einav, 2003) and their decision to travel depends on their income and not the relative prices of tourism (Proenca & Soukiazis, 2005).

Regarding the price of tourism in competing destinations, the price of tourism in Indonesia was negatively significant, with the estimated coefficient of -1.172. This indicated that Indonesia is Malaysia's complementary destination. Therefore, decrease in the price of tourism in this country would increase tourist arrivals to Malaysia. Meanwhile, the price of tourism in Thailand and the Philippines are positively significant, with the estimated coefficients of 5.728 and 8.090, respectively. The results indicated that Thailand and the Philippines are substitute destinations for Malaysia. However, the price of tourism in Singapore was not significant in explaining tourism demand in Malaysia by tourists from non-ASEAN countries.

The *Malaysia... Truly Asia* promotion campaign dummy variable was influential in determining tourism demand for Malaysia. The estimated coefficient for this variable was significant at the 1 percent level, indicating that the campaign is effective in influencing international tourist arrivals to Malaysia.

In addition, the 1997/98 Asian financial crisis was significant in explaining tourism demand in Malaysia by tourists from non-ASEAN countries. The estimated coefficient for this variable was 0.711. The positive sign indicated that tourist arrivals from non-ASEAN countries increased by 71.1 percent because of the crisis. Evidently, the devaluation of the regional currencies had a major implication for the Malaysian tourism industry. Inbound tourists from non-ASEAN market (especially long-haul market) increased as tourists were attracted by the higher purchasing power in this country.

The effect of SARS in Asia was negatively significant in explaining tourism demand for Malaysia. The estimated coefficient for this variable was -0.316 and it was statistically significant at the 1 percent level, indicating that the SARS epidemic in Asia decreased tourist arrivals from non-ASEAN countries by 31.6 percent. However, the 2001 September 11 incident in the U.S. turned out to be insignificant in determining tourism demand for Malaysia. This could be explained by the fact that tourists regard Malaysia as a safe and pleasant place to visit. Therefore, the 2001 September 11 incidents will not deter their trips to Malaysia.

5.2.4 Concluding Remarks

The results from the panel data econometrics analysis denote that the random-effects model was the best model for all sample groups. For the whole sample (tourists from both ASEAN and non-ASEAN countries), the findings indicated that demand for tourism in Malaysia is influenced by income of tourists' country of origin; the *word-of-mouth* effect; the relative prices of tourism in Malaysia; lagged prices; the price of tourism in complementary destinations (Singapore and Indonesia); the price of tourism

in substitute destinations (Thailand and the Philippines); the *Malaysia...Truly Asia* global campaign, and the spread of the SARS in Asia.

However, for tourists from ASEAN countries, demand for tourism in Malaysia is determined by income of tourists' country of origin; lagged income; lagged prices; the relative prices of tourism in Malaysia; the *word-of-mouth* effect; the price of tourism in the complementary destination (Singapore); the *Malaysia...Truly Asia* global campaign; the effect of the 1997/98 Asian financial crisis; the spread of the SARS in Asia, as well as the 2001 September 11 incident in the U.S.

For tourists from non-ASEAN countries, demand for tourism in Malaysia is influenced by income of tourists' country of origin; lagged income; lagged prices; the *word-of-mouth* effect; the price of tourism in the complementary destination (Indonesia); the price of tourism in substitute destinations (Thailand and the Philippines); the *Malaysia...Truly Asia* global campaign; the effect of 1997/98 Asian financial crisis, and the spread of the SARS in Asia.

Therefore, the major differences in the results between tourists from ASEAN and non-ASEAN countries are the prices of tourism in competing destinations and the 2001 September 11 incident in the U.S. Tourists from ASEAN countries are influenced by the prices of tourism in Singapore only, which seems to be a complementary destination for Malaysia. Meanwhile, tourists from non-ASEAN countries are influenced by the prices of tourism in Indonesia, Thailand, and the Philippines. In this case, Thailand and the Philippines are substitute destinations for Malaysia, while Indonesia is Malaysia's complementary destination.

The 2001 September 11 incident in the U.S., however, is significant in influencing tourist arrivals from ASEAN countries only. Tourists from non-ASEAN countries are not influenced by this factor. This could be explained by the fact that

tourists from non-ASEAN countries regarded Malaysia as a safe and pleasant place to visit as compared to other ASEAN countries.

5.3 The Short-run and Long-run Relationships between Tourism Demand and Factors that Influence Tourism Demand

In this section, the study presents the investigation on the presence of short-run and long-run relationships between tourism demand and the factors that influence tourism demand in Malaysia by using panel cointegration test as suggested by Pedroni (1999, 2004).

5.3.1 Panel Unit Root Tests

Before proceeding with the panel cointegration test, the establishment of the panel unit root properties for all the series used is required. In order to achieve this objective, four panel unit root tests, namely the LLC test, the Breitung t-test, the IPS test, and the MWF test were used. Table 5.4 presents the results of panel unit root tests for all variables used in level and first differences. The results are organised as follows: columns two and three present the LLC test; followed by the Breitung test in columns four and five; while the IPS test in columns six and seven; and lastly, the MWF test in columns eight and nine. The estimated *t*-star statistics of LLC test and Breitung test, *t*-bar statistics for the IPS test, and λ-values for the Fisher $P(\lambda)$ test with their accompanying *P*-values are also reported.

The results of the panel unit root tests indicated that the null hypothesis of the non-stationary cannot be rejected at 1, 5, and 10 percent levels of significance for all series. The associated probability values were greater than 0.10. However, for the series in first difference, the results of the panel unit root test showed that the probability values were less than 0.10 for all the series, which suggests the panel non-stationarity of

Table 5.4. Panel unit root tests

Variable	Levin, Lin and Chu (LLS) Test, t^{*e}		Breitung Test, t^{*e}		Im, Pesaran and Shin Test (IPS), ψ_i^e		Maddala-Wu Fisher (MWF) Test, $P(\lambda)^f$	
	Level	First-Difference	level	First-Difference	Level	First-Difference	Level	First-Difference
lnTAR	-1.183(0-1) [0.118]	-6.492 (0-1)*** [0.000]	-1.183 (0-1) [0.118]	-1.840 (0-1)** [0.033]	0.390 (0-1) [0.652]	-3.342(0-1)*** [0.000]	14.953 (0-1) [0.528]	40.468(0-1)*** [0.001]
lnY	-0.559(0-1) [0.288]	-4.4971(0-1)*** [0.000]	0.598(0-1) [0.725]	-1.779(0-1)** [0.038]	-1.071 (0-1) [0.142]	-1.851(0-1)** [0.032]	12.948(0-1) [0.677]	27.809 (0-1)** [0.033]
Pm	1.809(0-1) [0.965]	-6.675 (0-1)*** [0.000]	0.493(2) [0.689]	-3.368 (0-1)*** [0.000]	0.026 (0-1) [0.510]	-2.307(0-1)*** [0.011]	15.160 (0-1) [0.513]	45.458 (0-1)*** [0.000]
Ps	-1.033(2) [0.193]	-6.479(0-1)*** [0.000]	-0.121 (0-1) [0.452]	-4.669 (0-1)*** [0.000]	1.161 (0-1) [0.877]	-2.813 (0-1)*** [0.003]	13.346(0-1) [0.647]	35.504(0-1)*** [0.003]
Pt	1.52543(0-1) [0.9364]	-4.547 (0-1)*** [0.000]	0.675 (0-1) [0.750]	-4.742(0-1)*** [0.000]	1.171 (0-1) [0.879]	-1.627 (0-1)** [0.052]	7.304 (0-1) [0.967]	24.771(0-1)* [0.074]
Pi	-0.209(0-1) [0.417]	-7.445 (0-1)*** [0.000]	-0.012(0-1) [0.495]	-3.829(0-1)*** [0.000]	-0.837(0-1) [0.201]	-2.839 (1)*** [0.002]	3.455(1) [0.999]	38.273(1)*** [0.001]
Pp	-0.649(0-1) [0.2580]	-6.761 (0-1)*** [0.000]	0.295 (0-1) [0.616]	-3.961(0-1)*** [0.000]	-0.137 (0-1) [0.446]	-1.295(0-1)* [0.098]	16.353(0-1) [0.429]	30.882 (0-1)** [0.014]

Notes:

i. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

ii. The number in the parentheses denotes the range of lag length and those in the square brackets are *p*-values.

iii. [e] Under the null hypothesis, the standardised t-bar statistic ψ_i (the IPS test statistic) is asymptotically distributed as a standard normal distribution. The *p*-values are estimated from the one-tail test of the standardised normal distribution.

iv. [f] Under the null hypothesis, the Fisher test statistic $P(\lambda)$ is distributed as a chi-squared distribution with $2N$ degree of freedom. The *p*-values are estimated from a chi-squared distribution with 2N degree of freedom.

v. Lag length chosen is based on SIC which is automatically selected by EViews 6.0.

the null hypothesis at 1, 5, and 10 percent levels of significance can be rejected. This indicates that the data were stationary in first-difference and not in level.

5.3.2 Panel Cointegration Tests

In the previous section, the results confirmed that all series were integrated of same order of $I(1)$ for the panel unit root tests. This allows for testing of any possible long-run relationships among the series in the equation. To achieve this objective the study used the panel cointegration test as suggested by Pedroni (1999, 2004). The results of the seven different panel test statistics are presented in Table 5.5. The statistical significance of these statistics is provided in the parentheses (in the form of *P*-values). Based from the Pedroni cointegration test, all the seven test statistics suggested evidence of panel cointegration at 10, 5, or 1 percent levels. The panel v, panel ρ, panel PP, panel ADF test statistics were 1.73, -3.57, -4.03, and -1.80, respectively. Meanwhile the group rho, group PP, and group ADF test statistics were -4.64, -11.92, and -4.22, respectively. All the seven test statistics have probability value less than 0.1, suggesting cointegration among the variables at less than 10 percent significant level.

Table 5.5. Pedroni's panel cointegration test

Tests	Statistics
Panel v-statistics	1.729*
	(0.089)
Panel rho-statistics	-3.571***
	(0.001)
Panel PP *t*-statistics	-4.029***
	(0.000)
Panel ADF *t*-statistics	-1.797*
	(0.079)
Group rho-statistics	-4.643***
	(0.000)
Group PP *t*-statistics	-11.917***
	(0.000)
Group ADF *t*-statistics	-4.225***
	(0.000)

Note: Probability values are in parenthesis and ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Table 5.6 reports the results of the panel long-run elasticity estimates, which were obtained by normalising with respect to total tourist arrivals. The results revealed that income in the tourists' country of origin has a positive influence on tourist arrivals to Malaysia. The estimated income elasticity was less than one, which indicates that a 1 percent increase in income of tourists' country of origin would increase tourist arrivals to Malaysia by 0.249 percent. The results also indicated that tourists from these markets are sensitive to the relative prices of tourism in Malaysia. The price elasticity of demand for tourism was statistically significant at the 1 percent level, with the estimated coefficients of -0.878. This indicated that tourism demand in Malaysia is price inelastic. In terms of price of tourism in the competing destinations, the estimated coefficients for tourism prices in Singapore and Indonesia were negatively significant. These revealed that Singapore and Indonesia are complementary destinations for Malaysia. Meanwhile for Thailand and the Philippines, the estimated coefficients were positively significant, which indicated that Thailand and the Philippines are substitute destinations for Malaysia.

Table 5.6. Panel long-run elasticities of tourism demand for Malaysia

Tourist arrivals from	Y	Pm	Ps	Pt	Pi	Pp
ASEAN and non-ASEAN countries	0.249 (0.023) [10.989]***	-0.878 (0.096) [-9.127]***	-18.343 (1.344) [-13.649]***	8.503 (1.919) [4.429]***	-9.528 (0.635) [15.007]***	8.183 (1.373) [5.960]***

Note: Figures in the parentheses indicate standard errors and figures in the square bracket indicate *t*-statistics. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

5.3.3 Error Correction Model

Using the information provided by the Pedroni panel cointegration test, an error correction model (ECM) was constructed to obtain the short-run elasticity. The coefficient of the error correction term represents the speed of adjustment to its long-run

relationship among the variables. In other words, it shows how quickly the system will return to equilibrium after a random shock. It is expected to be negative to ensure convergence. The final results of the error correction term (EC_{t-1}) as presented in Table 5.7 passed the diagnostic tests. From Table 5.7, the estimated error correction term (EC_{t-1}) is -0.15084 and it is statistically significant at the 1 percent level. The negative values of the estimated coefficient ensure that the series are not explosive and that in the long run, equilibrium can be attained.

In the short run, as expected, income is positively related to tourism demand in Malaysia. The estimated coefficient of income elasticity was 0.76 and it is statistically significant at 1 percent level. This indicated that a 1 percent increase in income of tourists' country of origin would increase international tourist arrivals in Malaysia by 0.76 percent. Regarding the relative prices of tourism in Malaysia, it is negatively significant at the 5 percent level, indicating that a 1 percent decrease in relative price of tourism would increase international tourist arrivals in Malaysia by 0.26 percent. In terms of price in the competing destinations, the estimated price elasticity of demand for tourism in Thailand and the Philippines were positively significant. The positive sign indicated that Thailand and the Philippines are substitute destinations for Malaysia. Therefore, increase in international tourist arrivals in Malaysia could be expected as prices of tourism in these countries increase.

On the other hand, the estimated price elasticity of demand for tourism in Singapore and Indonesia were negatively significant in explaining tourism demand for Malaysia. This indicated that Singapore and Indonesia are complementary destinations for Malaysia. Hence, a decrease in the price of tourism in Singapore and Indonesia would increase international tourist arrivals in Malaysia.

Table 5.7. Error correction model for tourism demand in Malaysia

Variable	Coefficients
Constant	0.284***
	(2.868)
$\Delta \ln TAR_{t-1}$	-0.292**
	(2.427)
$\Delta \ln Y_{t-1}$	0.759***
	(4.136)
$\Delta \ln Pm_{t-1}$	-0.258**
	(-2.447)
$\Delta \ln Ps_{t-1}$	-0.761*
	(1.828)
$\Delta \ln P_{T\,t-1}$	3.103***
	(4.102)
$\Delta \ln P_{It-1}$	-0.915***
	(-3.427)
$\Delta \ln Pp_{t-1}$	3.614**
	(2.404)
D_{mta}	0.373**
	(2.060)
D_{afc}	-0.026
	(-0.213)
D_{SARS}	-0.577***
	(-4.295)
D_{s11}	-0.033
	(-0.608)
Ec_{t-I}	-0.151***
	(-4.883)
R^2	0.776
Adjusted R^2	0.679
F-test	8.023
Jarque-Bera	25.665
(and probability)	(0.000)
Durbin-Watson	1.980
Serial Correlation LM	2.510
	(0.520)

Notes: 1. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.
2. The figures in parentheses are the *t*-statistics.

The results of the study also showed that the *Malaysia...Truly Asia* global campaign and the spread of SARS in Asia were significant in explaining tourism demand in the short run. However, contrary to expectation, the 1997/98 Asian financial

crisis and the 2001 September 11 incident in the U.S. were not significant in explaining tourism demand in Malaysia. This is because the samples of the study were from ASEAN and non-ASEAN countries, therefore, the 1997/98 Asian financial crisis did not significantly affect the whole group. The September 11 incident in the U.S. however was not a major factor in determining tourism demand for Malaysia. This could be explained by the fact that tourists from non-ASEAN countries regarded Malaysia as a safe and pleasant place to visit as compared to other ASEAN countries.

5.3.4 Concluding Remarks

In this section, the panel cointegration test suggested by Pedroni (1999, 2004) was used in determining the presence of short-run and long-run relationships between tourism demand and the factors that influence tourism demand in Malaysia. The results of the Pedroni cointegration test revealed that all seven test statistics had probability values less than 0.1, suggesting cointegration among the variables. The findings showed the presence of a common trend or long-run relationship between tourism demand and its determinants. Meanwhile, the results of error correction model indicated that income of tourists' country of origin, the relative prices of tourism in Malaysia, and the price of tourism in competing destinations were significant in explaining tourism demand for Malaysia in the short run. The findings also indicated that the *Malaysia...Truly Asia* global campaign and the spread of SARS in Asia were significant in explaining the demand for tourism in the short run. Therefore, the result produced by the panel cointegration approach was consistent with the panel data econometrics fixed-/random-effect techniques.

5.4 The Causal Relationships between International Tourism Receipts and Real Economic Growth

In examining the causal relationship between international tourism receipts and real economic growth for Malaysia, individual time-series and panel data were utilised. In the first section, the bivariate and multivariate causality tests (using individual time-series data) were employed in testing for the presence of causal relationships among the series. Furthermore, in the second section, the Pedroni panel cointegration test and panel Granger causality test (using panel data) were utilised in order to identify the causal relationship among the series.

5.4.1 The Causal Relationship between International Tourism Receipts and Real Economic Growth by using Time-Series Data

In this section, the bivariate and multivariate causality tests, namely Vector Autoregression Model (VAR) and Vector Error Correction Model (VECM) were utilised in testing for the presence of short-run and long-run causal relationships among the series. Therefore, before proceeding with the cointegration test, the establishment of the order of integration for all series used is required.

5.4.1.1 Unit Root Tests

Tables 5.8(a) and 5.8(b), present the stationarity test results of real GDP, exchange rate, relative price of tourism, and international tourism receipts, in level and first differences using ADF and PP tests. The results of the unit root tests indicated that the null hypothesis of the unit root cannot be rejected at 1 percent and 5 percent critical values. However, the null hypothesis was rejected at 1 percent and 5 percent critical values when it was tested on the first-difference. This suggests that the data are stationary in first-difference but not in level.

Table 5.8 (a) Augmented Dickey Fuller (ADF) test

Variable	Constant			Trend		
	Level	First-Difference	Conclusion	Level	First-Difference	Conclusion
lnREC	-1.435	-7.759**	$I(1)$	-3.045	-7.723**	$I(1)$
lnGDP	-1.124	-7.588**	$I(1)$	-3.024	-7.508**	$I(1)$
lnPr	-0.372	-6.415**	$I(1)$	-1.508	-6.539**	$I(1)$
lnER	-1.751	-5.287**	$I(1)$	-1.666	-5.242**	$I(1)$

Note: ** and * denote rejection of a unit root hypothesis based on Mackinnon critical values at 1% and 5% respectively.

Table 5.8 (b) Phillip-Perron (PP) test

Variable	Constant			Trend		
	Level	First-Difference	Conclusion	Level	First-Difference	Conclusion
lnREC	-1.256	-9.578**	$I(1)$	-2.944	-10.969**	$I(1)$
lnGDP	-0.832	-10.671**	$I(1)$	-3.001	-11.066**	$I(1)$
lnPr	-0.449	-6.415**	$I(1)$	-1.508	-6.539**	$I(1)$
lnER	-1.869	-5.259**	$I(1)$	-1.804	-5.211**	$I(1)$

Note: ** and * denote rejection of a unit root hypothesis based on Mackinnon critical values at 1% and 5%, respectively.

5.4.1.2 Cointegration and Causality Tests

Having established that the variables are integrated of the same order of $I(1)$, therefore, the study proceeded with the bivariate and multivariate cointegration tests and causality tests in testing for the cointegration and causal relationships among the series.

5.4.1.2.1 Cointegration Test

In verifying the hypothesis, first, the relationships between the series was tested by using the cointegration test. The cointegration test was used in determining the relationships between real GDP and international tourism receipts that are found $I(1)$. The results of the JJ cointegration test are summarised in Table 5.9. The testing strategy began with r = 0. Using the trace (λ_{tr}) test statistics, one can reject the null r = 0, against

the alternative r = 1. This implies that, there exists cointegrating vector between the series (real GDP and international tourism receipts)[15].

Table 5.9. Cointegration tests based on the Johansen, and Johansen and Juselius (JJ) Approach

H_o	Trace test	5% CV	1% CV	Max-Eigen test	5% CV	1% CV
H_0: r = 0	13.440*	12.530	16.310	12.450*	11.440	15.690
H_0: r ≤ 1	3.990*	3.840	6.510	3.990*	3.840	6.510

Notes:

i. r stands for number of cointegrating vectors

ii. Column 1 lists the null hypothesis of zero, at least one cointegrating vector; column 2 lists the trace statistics; column 3 and 4 lists the critical values for trace statistics at 5% and 1% significant level; column 5 lists the maximum Eigen value statistics; and column 6 and 7 list the critical value for maximum Eigen statistics at 5% and 1% significant levels.

iii. ** and * indicate statistical significance at 1% and 5% levels, respectively.

5.4.1.2.2 Bivariate Causality Test

The results of the bivariate causality test, as reported in Table 5.10, indicated that coefficient δ was statistically significant only in the case when international tourism receipts (REC) is used as an endogenous variable. This refers to channel two, which means in the long-run, real GDP through the lagged error correction term Granger causes international tourism receipts. However, the coefficients of lagged variables were not significant in all cases. This led to a conclusion that there is no evidence of short-run Granger causality running from international tourism receipts to real GDP or vice-versa.

[15] Although the application of JJ procedure has been quite popular in a multivariate context, results from JJ statistics in bivariate studies have also been proven to be more robust than those adopting Engle-Granger approach (Masih & Masih, 1994, 1995)

Table 5.10. Causality test results based on Vector Error-Correction Model

Dependent Variable	Independent Variables (F-Statistics)		ECT[$\varepsilon_{i,t-1}$]	
	ΔlnREC	ΔlnGDP	C	*t*-statistics
ΔlnREC	-	0.408 (1)	-0.307	-2.479*
ΔlnGDP	0.0271 (2)	-	-0.009	-0.152

Notes: i. C stands for coefficient
ii. ** and * indicates statistical significance at 1% and 5% levels, respectively.
iii. Number in parentheses indicates lag length

5.4.1.2.3 Multivariate Cointegration Test

Instead of using bivariate test, we also use the multivariate tests in verifying the hypothesis. The multivariate cointegration tests were employed in determining the relationships among the variables, namely real GDP, relative price of tourism, exchange rate, and international tourism receipts. The results of the multivariate cointegration test, as summarised in Table 5.11, suggested the existence of cointegration relationships between the four variables. This indicated the presence of a common trend or long-run relationships among the series.

Table 5.11. Multivariate Cointegration Tests based on the Johansen, and Johansen and Juselius (JJ) Approach

H_o	Trace test	5% CV	1% CV	Max-Eigen test	5% CV	1% CV
H_0: r = 0	52.350**	39.890	45.580	33.950**	23.800	28.820
H_0: r ≤ 1	18.390	24.310	29.750	9.980	17.890	22.990
H_0: r ≤ 2	8.410	12.530	16.310	7.380	11.440	15.690
H_0: r ≤ 3	1.030	3.840	6.510	1.030	3.840	6.510

Notes:
1. r stands for number of cointegrating vectors
2. Column 1 lists the null hypothesis of zero, at least one, two, three cointegrating vector; column 2 lists the trace statistics; column 3 and 4 list the critical values for trace statistics at 5% and 1% significant levels; column 5 lists the maximum Eigen value statistics; and column 6 and 7 list the critical value for maximum Eigen statistics at 5% and 1% significant levels.
3. ** and * indicate statistical significance at 1% and 5% levels, respectively.

5.4.1.2.4 Multivariate Causality Tests

The multivariate causality tests based on Vector Error Correction Model (VECM) was used to test for the presence of short-run and long-run relationships among the variables: real GDP, relative price of tourism, exchange rate, and international tourism receipts in Malaysia, from 1994 to 2004. Hence, using the information provided by the Johansen multivariate cointegration test that indicates the variables are cointegrated, the study then proceeded with the multivariate error-correction model.

The multivariate error-correction model was used in investigating the causal relationships among the variables: real GDP, relative price of tourism, exchange rate, and international tourism receipts, which were cointegrated. Such analysis provides the short-run dynamic adjustment toward the long-run equilibrium. The *F*-statistics for the lagged variables and the *t*-statistics for the coefficient δ of the EC_{t-1} were used to test for Granger causality. As discussed earlier in Chapter 4, there are two channels of causality; channel one is through the joint significance of the lagged values of variables on the right hand side of the equation (which refer to equations 4.66 and 4.67), except for the lagged value of the dependent variable. On the other hand, channel two is when the lagged value of the error-correction term (EC_{t-1}) is significant.

Table 5.12 reports the results of the multivariate causality test based on the error-correction model. The results indicated that coefficient δ was statistically significant only in the case when international tourism receipts (REC) is used as an endogenous variable. This refers to channel two, which means in the long-run real GDP, relative price of tourism and exchange rate Granger causes international tourism receipts. However, the coefficients of lagged variables were significant only in the case where international tourism receipts and real GDP are used as a dependent variable

(channel 1). This indicated that in the short-run relative price of tourism Granger causes international tourism receipts and real GDP.

Table 5.12. Multivariate Causality test results based on Vector Error-Correction Model

Dependent variable	F-Statistics				ECT[$\varepsilon_{i,t-1}$]	
	ΔlnREC	ΔlnGDP	ΔlnPr	ΔlnER	C	t-statistics
ΔlnREC	-	0.064	1.179**	0.298	-0.888	-2.074*
ΔlnGDP	0.189	-	1.209**	0.274	-0.761	-1.744
ΔlnPm	0.188	0.152	-	0.257	-0.046	-0.258
ΔlnER	0.2041	0.217	0.172	-	-0.182	-1.834

Notes: i C stands for coefficient
ii. ** and * indicate statistical significance at 1% and 5% levels, respectively.

5.4.2 The Causal Relationship between International Tourism Receipts and Real Economic Growth by using Panel Time-Series Data

In this section, Pedroni's panel cointegration test and panel Granger causality were used to test for the causal relationship between international tourism receipts and real economic growth. Before proceeding with the panel cointegration test, the establishment of the panel unit root properties for all series used is required.

5.4.2.1 Panel Unit Root Tests

The panel unit root tests, namely the LLC test, the Breitung test, the IPS test, and the MWF test were used to determine the order of integration of all series. Table 5.13 presents the results of panel unit root tests for all series in level and first differences. The results of the panel unit root tests indicated that the null hypothesis of non-stationary cannot be rejected at 1, 5, and 10 percent level of significance for all series.

Table 5.13. Panel unit root tests

Variable	Levin, Lin and Chu Test, t^{*g}		Breitung Test, t^{*g}		Im, Pesaran and Shin (IPS) Test, ψ_i^g		Maddala-Wu Fisher (MWF) Test, $P(\lambda)^h$	
	Level	First-Difference	Level	First-Difference	Level	First-Difference	Level	First-Differece
lnGDP	-0.318 (1) [0.375]	-5.661(0)*** [0.000]	-1.904 (1) [0.208]	-3.824(0)*** [0.000]	0.197(0) [0.578]	-1.370(0)* [0.085]	9.291(0) [0.678]	26.895 (1)*** [0.008]
lnREC	1.523(0) [0.936]	-16.548 (0-1)*** [0.000]	-0.230 (0) [0.409]	-3.197(0)*** [0.000]	0.494(0) [0.689]	-10.346(1)** [0.000]	5.910(0) [0.921]	18.716 (0)* [0.096]

Notes:

i. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

ii. The number in parentheses denotes the range of lag length and those in the square brackets are *p*-values.

iii. [g]Under the null hypothesis, the standardised t-bar statistic ψ_i (the IPS test statistic) is asymptotically distributed as a standard normal distribution. The *p*-values are estimated from the one-tail test of the standardised normal distribution.

iv. [h]Under the null hypothesis, the Fisher test statistic $P(\lambda)$ is distributed as a chi-squared distribution with $2N$ degree of freedom. The *p*-values are estimated from a chi-squared distribution with 2N degree of freedom.

v. Lag length chosen is based on SIC which is automatically selected by EViews 6.0.

The associated probability values were all greater than 0.10. However, for series in first difference, the results of panel unit root test denoted probability values less than 0.10 for all the series, suggesting that the panel non-stationarity null hypothesis can be rejected at 1, 5, and 10 percent levels of significance. This indicated that the data were stationary in first-difference but not in level.

5.4.2.2 Panel Cointegration Tests

After confirming that all series were integrated of same order, the study then proceeded with the panel cointegration test as suggested by Pedroni (1999, 2004) in order to determine the presence of common trend or long-run relationships between the variables. The results of the seven different panel test statistics are presented in Table 5.14.

Table 5.14. Pedroni's Panel Cointegration test

Tests	Statistics
Panel v-statistics	2.760***
	(0.009)
Panel rho-statistics	-2.615***
	(0.013)
Panel PP *t*-statistics	-0.777
	(0.295)
Panel ADF *t*-statistics	-2.347**
	(0.025)
Group rho-statistics	-3.217***
	(0.002)
Group PP *t*-statistics	-1.433
	(0.143)
Group ADF *t*-statistics	-4.942***
	(0.000)

Note: Probability values are in parenthesis and ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Based on Pedroni cointegration test, five of the seven test statistics suggested evidence for panel cointegration either at the 1 percent or 5 percent levels. For instance, the panel v, panel rho, and panel ADF test statistics were calculated as 2.76, -2.61 and -

2.34, respectively. The group rho and group ADF test statistics were -3.22 and -4.94, respectively. All these five test statistics have a probability value less than 0.05, suggesting cointegration between the variables.

5.4.2.3 Panel Granger Causality Test

The results of panel Granger causality test, as reported in Table 5.15, indicates that there is a strong relationship between international tourism receipts and real economic growth in Malaysia. Specifically, the long-run bidirectional causality of real economic growth and international tourism receipts was found through the lagged error correction terms, which were significant for both variables. In addition, for the short run, evidence also appeared that real economic growth Granger causes international tourism receipts and Granger causality running from international tourism receipts to real economic growth.

Table 5.15. Panel Granger Causality Test

Dependent variable	F-Statistics		ECT[$\varepsilon_{i,t-1}$]	
	ΔlnGDP	ΔlnREC	C	t-statistics
ΔlnGDP	-	0.058 **(1)	-0.002	-2.774**
ΔlnREC	9.570**(1)	-	-0.041	-3.513**

Notes: i. C stands for coefficient
ii. ** and * indicate statistical significance at 1% and 5% levels, respectively.
iii. Number in the parentheses indicates lag length.

Hence, tourism-led economic growth and economic growth-led tourism hypotheses were confirmed for Malaysia since there exists a bidirectional relationship between real economic growth and international tourism receipts.

5.4.3 Concluding Remarks

In determining the causal relationship between international tourism receipts and real economic growth in Malaysia, individual time-series and panel data analysis were used. The results of causality test using individual time-series data indicated that there was one-way causal effect running from real economic growth to international tourism receipts in Malaysia. The results are in line with the studies done by Narayan (2006) and Oh (2005).

However, the results of panel Granger causality test, which utilised the panel data, indicated that there was a two-way causal effect or a strong relationship between international tourism receipts and real economic growth in Malaysia for both short-run and long-run periods. Therefore, the results are consistent with Dritsakis (2004), Durbarry (2004), and Kim *et al.* (2006). In this study, however, the results produced by panel Granger causality test by using panel data was preferred over the causality test results that were produced by using individual time-series data, since panel data search for more powerful tests than those obtained by applying individual time-series test (Baltagi, 2005)[16]. Moreover, the panel data analysis gave more accurate and reliable results because it allowed for controlling of individual heterogeneity as well as the country- and time-invariant variables.

On the other hand, the time-series studies did not control for this heterogeneity and run the risk of obtaining biased results (Moulton, 1986; Moulton, 1987). Therefore, by using the panel data analysis, biases resulting from aggregation over countries may be reduced or eliminated (Blundell, 1988; Klevmarken, 1989). Moreover, by implementing the panel-based error correction model (ECM), the panel unit root tests were used along with heterogeneous panel cointegration tests. Hence, one can find the

[16] For details of superiority of panel data, see Baltagi (2005: p.4).

short-run and long-run causalities between tourism and economic growth when considering the properties of the data (Dritsakis & Athanasiadis, 2005). As a final concluding remark, it can be inferred that the results obtained through the panel data analysis are more robust and accurate as compared to the time-series.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Despite the important role of tourism industry in the Malaysian economy, the industry faced several issues and challenges. In recent years, a number of socioeconomic factors and uncertainty events had occurred, such as increasing oil prices, terrorist attacks, contagious disease outbreaks, natural disasters, and political conflicts in some parts of the world. Such unexpected events have significantly affected the performance of tourism industry globally.

As noted in Chapter 1, the aim of the present study is threefold: to identify the socioeconomic factors that might significantly affect tourism demand in Malaysia; to investigate the presence (if any) of short-run and long-run relationships between tourism demand and its determinants; and to determine the causal relationship between international tourism receipts and real economic growth.

Given the aforementioned objectives of the study, empirical findings of this study, as discussed in Chapter 5, are summarised in the following sections.

6.2 Summary of the study

The aim of this section is to summarise the study in line with the objectives of the thesis as noted in Chapter 1. This includes the discussion of conclusions based on the findings and interpretation as presented in the previous chapter.

6.2.1 Socioeconomic Variable and Tourism Demand in Malaysia

In this study, a model of tourism demand based on the consumer theory had been developed and estimated. The estimated models proved to be theoretically consistent and the derived elasticity estimates were statistically sound with empirically plausible magnitudes. The results enable broad inferences to be drawn regarding the socioeconomic factors that significantly influence international tourism demand in Malaysia.

As in most previous empirical studies[17], income appears to be the single most important determinant of international tourism demand. The results of the study indicated that tourist arrivals from ASEAN and non-ASEAN countries to Malaysia are significantly influence by income of the origin country. These findings suggest that economic conditions of ASEAN and non-ASEAN countries are very important in determining tourism demand in Malaysia. Therefore, it is important for policymakers to closely monitor the economic cycles in these countries. The estimated income elasticity was between zero and one ($0<Ey<1$), which confirms the hypothesis that tourism demand in Malaysia is generally regarded as *normal necessity* (Divisekera, 2003).

Economic theory ensures that price must be included in any demand study, but in the tourism demand study, the issue of price is particularly vexatious. Several studies had made a comprehensive attempt to evaluate price effects, among others, Anastasopoulos (1984), Fujii *et al.* (1985), and Rosensweig (1988). All these studies, however, had considerable difficulty in deciding on an appropriate measure of price. In this study, the estimated price elasticity of demand for tourism in Malaysia is less than one, suggesting tourism demand in Malaysia is price inelastic. The comparison of this result with those previous studies was not straightforward. The reason is that different

[17] Previous empirical studies that found income as the single most important determinant of international tourism demand, amongst others, Bakkalsalihoglu (1987), Barry and O'Hagan, (1972), Bond and Ladman (1972), Bond (1979), Crouch *et al.* (1992), and Narayan (2003).

studies used different measures of price and this explains why the estimates of price elasticity vary considerably.

Besides, the lagged price of tourism added as an additional explanatory in the model was significant in all the sample group estimations. This could be explained by the fact that the effect of price changes is also likely to be delayed because inclusive tour prices are set well in advance. International tourists tend to plan well in advance, and the low general awareness of relative prices means they will only affect the following year's trip (Edwards, 1987). However, Garin-Muňoz and Amaral (2000) argued that lagged effect is likely to occur when the countries considered are geographically very distant.

In addition, the significant value of the lagged dependent variable in all sample group estimations may be interpreted as: habit persistence and/or *word-of-mouth* effects are important in explaining tourism demand in Malaysia. Hence, the major policy implication of this finding for the Malaysian tourism industry is that the provision of high-quality tourism products/services is important in order to receive a good reputation and attract new and repeat tourists.

Regarding the price of tourism in competing destinations, the estimation results indicated that Singapore and Indonesia are complementary destinations for Malaysia, whereas Thailand and the Philippines are Malaysia's substitute destinations. Therefore, Malaysia must be aware of its rivalry and try to maintain competitiveness. Besides, Malaysia should be promoted as a destination within a package or multi-destination holidays with its complementary destinations.

In terms of dummy variables, the *Malaysia... Truly Asia* global campaign and the spread of SARS in Asia were significant in all sample group estimations. However, contrary to expectation, the 2001 September 11 incident in the U.S. is only significant

for the sample group from ASEAN countries, not for non-ASEAN countries and the whole sample. This led to a conclusion that the 2001 September 11 incident in the U.S. is not a major factor in determining tourism demand for Malaysia. This could be explained by the fact that Malaysia is stable in terms of political, economic, and geographical factors compared with other countries in the region. Besides, it is a safe and pleasant place to visit.

6.2.2 The Short-run and Long-run Relationships between Tourism Demand and Factors that Influence Tourism Demand in Malaysia

The results of Pedroni's panel cointegration test revealed the existence of cointegration between tourism demand and its determinants. This suggests the presence of common trend or long-run relationships between tourism demand and its determinants. Furthermore, the results of error correction model indicated that income of tourists' country of origin, the relative prices of tourism in Malaysia, and the price of tourism in competing destinations are significant in explaining tourism demand for Malaysia in the short run. The findings also indicated that the *Malaysia...Truly Asia* global campaign and the spread of SARS in Asia are significant in determining the demand for tourism in the short run. This led to a conclusion that in order to attract more tourist arrivals, Malaysia needs to closely monitor the economic conditions in the tourists' country of origin as well as maintain the competitiveness of tourism products and services relative to other ASEAN countries.

6.2.3 The Causal Relationship between International Tourism Receipts and Real Economic Growth

The results of causality tests using individual time-series data (for both bivariate and multivariate tests) indicated that, there is one-way causal effect (simply causal)

running from real economic growth to international tourism receipts in Malaysia. Therefore, the results are consistent with Narayan and Prasad (2004) and Oh (2005). On the other hand, the results of panel Granger causality test (using panel data) showed that there is a two-way causal effect (strong causal) between international tourism receipts and real economic growth in Malaysia for both in the short run and long run. In this case, the results produced by panel Granger causality test are preferred over the individual causality test because panel data search is a more powerful test than those obtained by applying individual time-series test. Hence, the tourism-led economic growth and economic growth-led tourism hypotheses were confirmed for Malaysia as there exists a bidirectional relationship between international tourism receipts and real economic growth. This result is in line with the previous studies done by Dritsakis (2004), Durbarry (2003), and Kim *et al.* (2006).

This finding revealed that the provision of better tourism related infrastructures as well as other facilities are important in order to increase and sustain the growth of tourist arrivals in Malaysia. The results therefore justified the necessity of public intervention in providing tourism infrastructure and facilities in order to attract more international tourists. Apart from developing tourism infrastructure, efforts should be intensified to draw more tourists to stay longer, increase spending and make repeat visits, which would help increase tourism receipts.

6.3 Policy Implications

Based on the results of the study, the following are some policy implications and strategies that can be proposed for the development of the tourism industry in terms of sustaining and stimulating the growth of tourist arrivals, in line with previous research findings (Ahmed & Miller, 1999; Lanza *et al.*, 2002; Loganathan, 2006).

6.3.1 Prices of Tourism

The results of the study showed that the relative price of tourism is statistically significant in determining tourism demand in Malaysia. Both fixed-random/-effects analysis and Pedroni's panel cointegration analysis produced significant results that confirm that the price of tourism plays an important role in determining tourist arrivals to Malaysia. The results suggested that Malaysia needs to maintain its price competitiveness as compared to Thailand and the Philippines in order to attract more tourist arrivals. In this regard, the government should consider reducing certain taxes such as sales tax and stamp duty, as well as further liberalise tax on luxury goods.

Besides, hotel and restaurants should be encouraged to provide special concessions and offer fair prices. Travel and tour agencies should focus on improving the design, attractiveness, and marketing of travel packages, paying particular attention to special interests, quality, and pricing. These therefore would add to Malaysia's price competitiveness, hence help attract more tourists to Malaysia, increase spending, and average length of stay (ALOS), as well as make a repeat visits.

6.3.2 Strategic Alliances and Smart Partnerships

The results of the study from the fixed-random/-effects analysis as well as Pedroni's panel cointegration analysis indicated that Singapore and Indonesia are complementary destinations for Malaysia, while Thailand and the Philippines are Malaysia's substitute destinations. Hence, to further promote the tourism industry, Malaysia should continue to facilitate global and regional strategic alliances and smart partnerships among governments, tourist organisations, and the industries; especially with Singapore and Indonesia, which were found to be complementary destinations for Malaysia.

Furthermore, Malaysia should continue to benefit from greater intra-ASEAN travel trade by intensification of regional cooperation through cultural and information exchanges, development of attractively priced joint-tour packages, as well as the establishment of special travel arrangements for ASEAN travellers. In addition, the progressive liberalisation of tourism services under the ASEAN Framework Agreement on Services should continue to promote Malaysia as a lead-on and add-on destination within ASEAN as well as the Asia Pacific regions.

Moreover, increased joint development efforts under the purview of the Indonesia-Malaysia-Thailand Growth Triangle are expected to further encourage cross-border tourism activities. Further cooperation under the Brunei Darussalam-Indonesia-Malaysia-the Philippines East ASEAN Growth Area (BIMP-EAGA) should continue to encourage travel and tour activities among these countries.

6.3.3 Intensifying Marketing and Promotion Activities

The results of the study showed that the *Malaysia...Truly Asia* global campaign is the most important factor in determining tourism demand in Malaysia and it is significant in all sample group estimations. Hence, based on this finding, Malaysia's image as an attractive tourist's destination should be further internationalised through marketing and promotional activities. In this regard, the competitiveness and attractiveness of the Malaysian tourism products/services should be further promoted and highlighted in overseas markets. More emphasis should be given to the new and emerging markets such as West Asia, China, and India.

Furthermore, the theme *Malaysia...Truly Asia* should continue to be capitalised as a distinct and identifiable image recognised by the international tourism community.

In this regard, multi-pronged marketing and promotional activities should be further pursued through active participation in trade shows, exhibitions and sales missions.

Moreover, the country should also be promoted as a destination within a package or multi-destination holiday with other ASEAN countries, especially Singapore and Indonesia, which were found to be complementary destinations for Malaysia. In addition, travel agencies or promoters specialising in ASEAN destinations should be encouraged to give greater emphasis on Malaysia as an attractive destination through active participation in exhibitions and shows at the international level.

Malaysia should also provide more effective promotional information to reach consumers particularly through the use of electronic media. The existing websites, such as Tourism Malaysia Official Site and Sabah Tourism Board Official Website, should be upgraded to a full-fledged tourism portal, to expedite direct online business-to-business and business-to-consumer transactions. Service providers should be encouraged to utilise the portal in advertising tourism products and services as well as manage sales activities.

6.3.4 Ensuring the Comfort, Safety and Security of Tourists

The significant effects of the 2001 September 11 incident in the U.S. on tourist arrivals from ASEAN countries to Malaysia indicated that the safety and security of tourists are also crucial for the success of the tourism industry. Countries worldwide are putting extra effort in the fight against terrorism following the incidents of September 11, an attack in Madrid, Bali, London, Sharm el Sheikh, and elsewhere.

Hence, Malaysia should step up security patrols, particularly in remote tourist resorts, to ensure the safety of tourists. At the same time, adherence to safety measures in transportation of passengers by road, rail, sea, and air should remain a top priority.

Operator, guides and instructors in the tourism business need to be more conscious of the well-being of tourists and strive to ensure their comfort and safety. In addition, adequate training should be provided to produce professional and competent personnel that can practice the highest safety standards. All these would reinforce Malaysia's image as a safe and pleasant place to visit, as well as encourage return tourists.

6.3.5 Investment in Tourism Infrastructure, Facilities and Human Resource Development

The results of causality analysis indicated that there is a strong relationship between international tourism receipts and real economic growth. This result proved the hypothesis that tourism significantly contributes to the economic growth of Malaysia. The findings justified the necessity of expansion of tourism related infrastructure, facilities, as well as human resource development.

Hence, to continue promoting Malaysia as a preferred tourist destination in this region, tourist related infrastructure and facilities must be improved including the establishment of additional tourist information centres as well as provision of better facilities in popular tourist's destination. In addition, the public sector should supplement private sector efforts and concentrate on the upgrading and maintenance of existing facilities, such as public parks; pedestrian pathways; rest and recreation areas as well as public amenities. This also includes the upgrading and beautification of selected tourism sites and the restoration of historical buildings and sites.

Moreover, the private sector should also be encouraged to develop innovative tourism products and services to meet the demand of different market segments as well as develop potential niche markets. In addition, travel and tour agencies should be encouraged to improve the design, attractiveness, and marketing of travel packages to meet the varying demands of tourists. For this purpose, the provision of incentives

should be considered for the development of special interest products such as eco-tourism, cultural products, and MICE. These opportunities are also expected to encourage greater participation in tourism-related commercial and business activities.

In addition, effort should be aggressively undertaken in promoting access into the country. Air, surface, and sea transportation should be continuously upgraded in facilitating accessibility as well as the growth of the tourism industry. In terms of air transportation, the government should intensify its efforts in obtaining additional and new landing rights for the national airline to operate more frequencies and capacities to overseas destinations. According to data, Malaysia receives only a total of 334 flights per week giving a weekly seating capacity of 67,400 compared with more than 600 flights per week for Singapore and about 500 flights per week to Thailand (Okposin *et al.*, 2005).

As such, Kuala Lumpur the major gateway to Malaysia is considered only a minor gateway regionally. Therefore, to promote greater tourist inflows, this issue must be vigorously addressed. The government should continue to encourage foreign airlines to increase services into Malaysia through the country's liberal and open sky policy. Other strategies include promoting more chartered flights from abroad, undertaking joint operations with other airlines, and increasing cooperation with ASEAN tourism organisations to foster greater intra-ASEAN travel.

Besides, to encourage inflow of tourists by land from Thailand and Singapore, regulations on entry of foreign vehicles should be eased. At the same time, the viability of providing short-haul train service along the Singapore-Johor Bahru and Thailand-Padang Besar routes should be studied. In addition, a ferry linkage between Singapore and the south-east coast of Johor can be used to complement transportation by road and rail.

Nevertheless, the promotion of the tourism industry not only requires the expansion of tourism related infrastructure and facilities, but also the trained and experienced manpower at the managerial and supervisory levels, as well as skilled and semi-skilled workers. To meet the increasing demand for trained and experienced human resource, particularly for the hotel and travel subsectors, provision of relevant training programmes have been emphasised by the government. During the Ninth Malaysia Plan 2006-2010 (Malaysia, 2006), more than 2,500 tourism-related training programmes were conducted utilising RM29.2 million from the Human Resource Development Fund (HRDF), accommodating 113,139 training places. These included initiatives to improve the quality of tourist services through extensive training under the supervision and coordination of the National Tourism Human Resource Development Council (NTHRDC), and the National Vocational Training Council (MLVK). Hence, the NTHRDC together with the MLVK and the Ministry of Higher Education as well as the Tourism Accreditation Board have coordinated technical and vocational, as well as management and supervisory training, and liaise with the private sector to ensure the output is in line with the growing sophistication of the tourism industry (Malaysia, 2006).

However, in providing the tourism infrastructure, facilities, accessibility, as well as human resource development, a more integrated approach of the tourism planning and implementation should be undertaken in order to ensure sustainable development[18] of the tourism industry. Emphasis should be given to preserving and enhancing existing natural and cultural assets that are susceptible to environmental damage. Local

[18] The most commonly used definition of sustainable development is that given in the 1987 World Commission on Environment and Development report; it is "*a process to meet the needs of the present without compromising the ability of future generations to meet their own needs*". In other words, sustainable development is based on principles of sound husbandry of the world's resources, and on equity in the way, those resources are used and in the way in which the benefits obtained from them are distributed.

authorities and communities should be encouraged to be more actively involved in project preparation, implementation, and maintenance to ensure adverse environmental impact is minimised. Studies had shown that successful tourism destinations rely on strong support and involvement by the local people. Local understanding and involvement would create favourable and pleasant places to visit while tourists can enjoy better services and sincere hospitality.

The role of State Tourism Action Councils or local authorities should be further strengthened to include monitoring, surveillance, and regular evaluation of project outcomes. This is to reinforce, among others, the environmental impact assessment and other relevant guidelines, which continue to be important considerations when formulating, and implementing projects and related infrastructure. It would be necessary to ensure that providers of tourism products and services take into account the specific criteria and guidelines on carrying capacity of environmentally-sensitive tourist areas, such as islands, highlands, and coastal areas.

Hence, tourism development should be managed carefully so that the resources are not destroyed by attracting tourists to those certain areas. Besides, greater efforts should be made to reduce pollution, beautify, and enhance the nation's beaches and rivers as well as improve air quality.

6.4 Limitation

Although domestic tourism is also important to the Malaysian economy, this study only focused on international tourism in determining the factors influencing tourism demand in Malaysia. This was due to the difficulty in quantifying and measuring data related to domestic tourism. Moreover, due to the limited access of data, the time-series data (quarterly data) that were used in the study only spanned from

1995:1 to 2005:2 and the panel data (yearly data) covered 1994 through to 2004. Besides, the study also does not consider the supply factors, such as tourist attraction, natural resources, lodging service, etc., because of difficulty in identifying and quantifying those factors since tourists consume a wide variety of goods.

6.5 Recommendation for Future Research

Based on this study, the following recommendations should be considered for future research:

(i) Further analysis of the factors that determine tourism demand in Malaysia by incorporating variables such as transportation and accommodation costs, which, according to the literature are also important in measuring tourism demand.

(ii) Future studies may consider expanding the sample period by including the data prior to 1990 until 2007 in order to examine the significant effects of the first, second, and third *Visit Malaysia Year* campaign.

(iii) Instead of using total tourist arrivals as a proxy for tourism demand in Malaysia, future researchers may perhaps use total tourists' expenditure or the number of nights spent in hotels, which have been found in the literature to be more accurate in determining the demand for tourism.

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APPENDIX

Appendix 1: Total Tourist Arrivals and Receipts to Malaysia 1974-2007

Year	Tourist Arrivals	Tourism Receipts (Rm Million)
1974	1,165,270	353.9
1975	1,461,603	389.5
1976	1,451,441	275.2
1977	1,546,866	414.3
1978	1,880,646	450.0
1979	2,039,154	495.0
1980	2,250,509	713.1
1981	2,533,104	1,000.9
1982	2,774,698	1,131.5
1983	2,926,550	1,329.3
1984	2,947,314	1,426.1
1985	3,109,106	1,543.1
1986	3,217,462	1,669.2
1987	3,358,983	1,795.1
1988	3,623,636	2,011.7
1989	4,846,320	2,802.7
1990	7,445,908	4,500.5
1991	5,847,213	4,282.6
1992	6,016,209	4,595.4
1993	6,503,860	5,065.8
1994	7,197,229	8,298.3
1995	7,468,749	9,174.9
1996	7,138,452	10,354.1
1997	6,210,921	9,699.6
1998	5,550,748	8,580.4
1999	7,931,149	12,321.3
2000	10,221,582	17,335.4
2001	12,775,073	24,221.5
2002	13,292,010	25,781.1
2003	10,576,915	21,291.1
2004	15,703,406	29,651.4
2005	16,431,055	31,954.1
2006	17,546,863	38,200.0
2007	20,900,000	46,070.0

Source: Malaysia Tourism Promotion Board (Planning and Research Division)

Appendix 2 (a): Total Tourist Arrivals to Malaysia from ASEAN-4 Countries, 1994-2004

Country	Year	Tourist Arrivals
Singapore	1994	4,469,748
	1995	4,537,352
	1996	4,157,757
	1997	3,489,032
	1998	3,007,666
	1999	4,900,084
	2000	5,420,200
	2001	6,951,594
	2002	7,547,761
	2003	5,922,306
	2004	9,520,306
Indonesia	1994	225,854
	1995	233,996
	1996	230,340
	1997	227,339
	1998	157,391
	1999	307,373
	2000	545,051
	2001	777,449
	2002	769,128
	2003	621,651
	2004	789,925
Thailand	1994	538,493
	1995	530,254
	1996	560,774
	1997	483,406
	1998	454,789
	1999	498,578
	2000	940,215
	2001	1,018,797
	2002	1,166,937
	2003	1,152,296
	2004	1,518,452
The Philippines	1994	42,221
	1995	46,059
	1996	51,941
	1997	53,750
	1998	32,743
	1999	47,238

	2000	81,927
	2001	122,428
	2002	107,527
	2003	90,430
	2004	143,799

Source: Malaysia Tourism Promotion Board (Planning and Research Division)

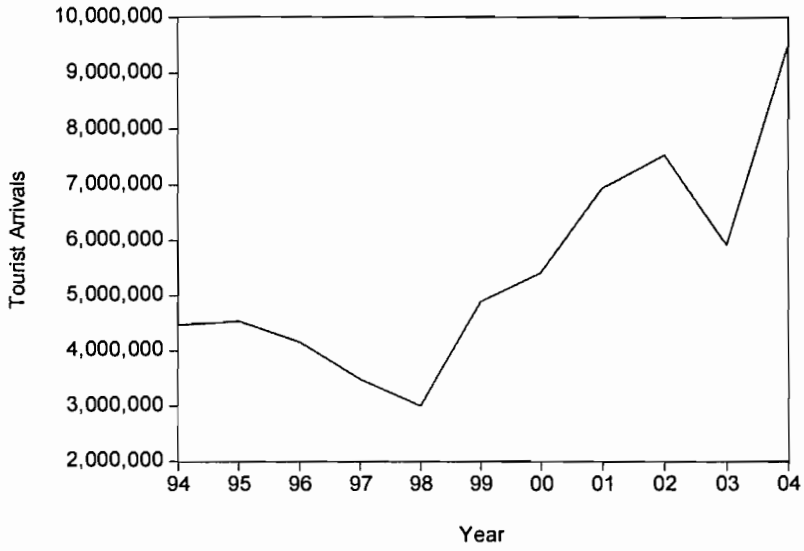
Appendix 2 (b): Total Tourist Arrivals to Malaysia from Selected non-ASEAN Countries, 1994-2004

Country	Year	Tourist Arrivals
U.S	1994	94,403
	1995	97,546
	1996	101,056
	1997	94,649
	1998	83,089
	1999	83,260
	2000	184,100
	2001	145,827
	2002	127,920
	2003	131,071
	2004	145,094
U.K	1994	157,929
	1995	164,489
	1996	166,588
	1997	162,079
	1998	160,678
	1999	136,398
	2000	237,757
	2001	262,423
	2002	239,294
	2003	125,569
	2004	204,409
Germany	1994	70,164
	1995	63,914
	1996	63,508
	1997	57,722
	1998	50,583
	1999	43,316
	2000	74,556
	2001	70,401
	2002	54,645
	2003	41,145
	2004	53,783
Japan	1994	286,330
	1995	330,724
	1996	353,204
	1997	308,902
	1998	252,178
	1999	286,940
	2000	455,981
	2001	397,639
	2002	354,563
	2003	213,527
	2004	301,429

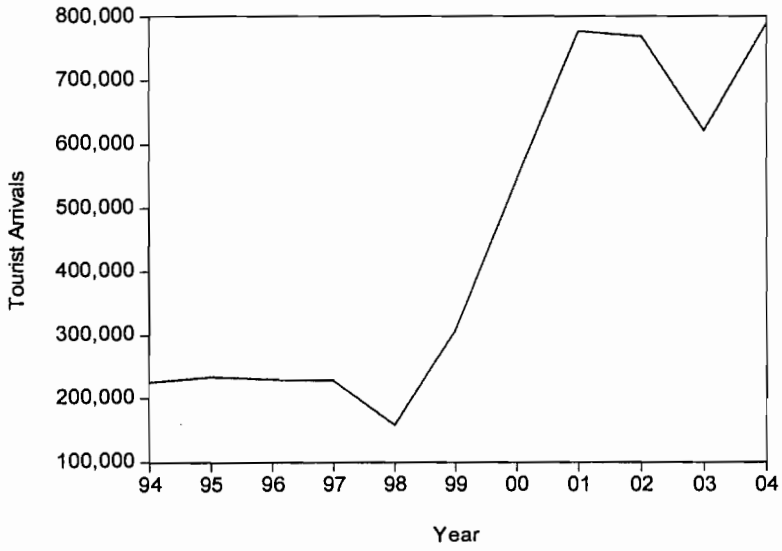
Australia	1994	128,420
	1995	136,162
	1996	150,026
	1997	129,262
	1998	145,162
	1999	134,311
	2000	236,775
	2001	222,340
	2002	193,794
	2003	144,507
	2004	204,053

Source: Malaysia Tourism Promotion Board (Planning and Research Division)

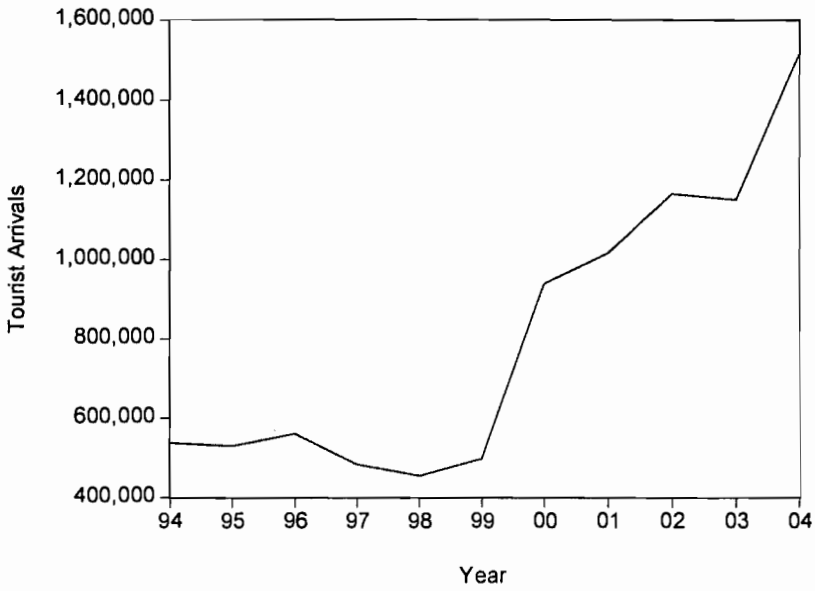
Appendix 3 (a): Tourist Arrivals to Malaysia from ASEAN-4 Countries 1994-2004



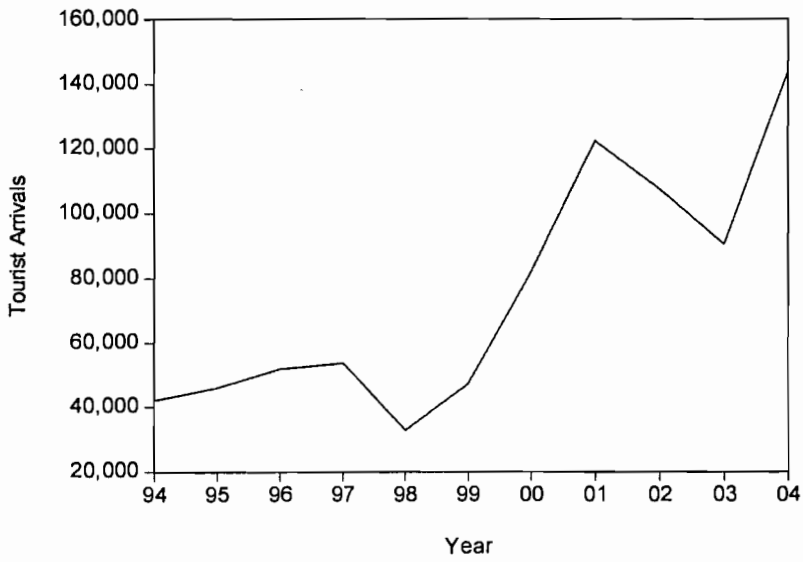
i) Tourist Arrivals from Singapore



ii) Tourist Arrivals from Indonesia

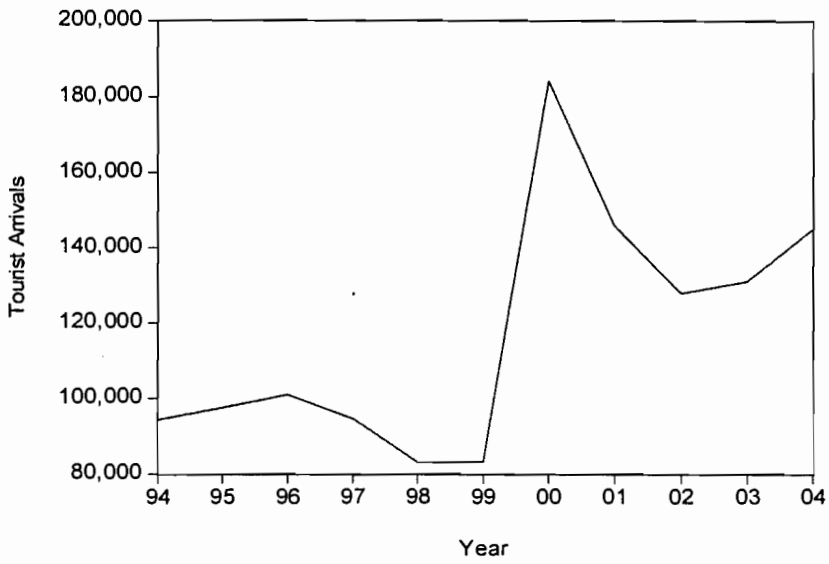


iii) Tourist Arrivals from Thailand

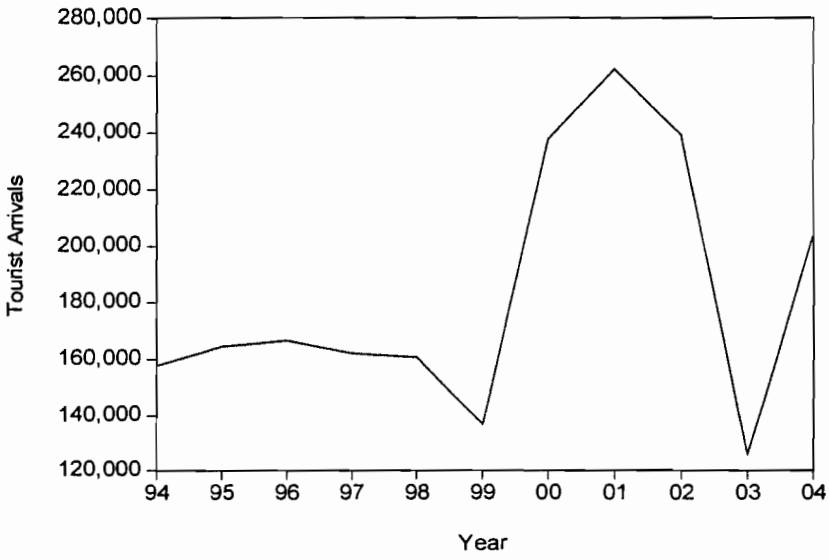


iv) Tourist Arrivals from the Philippines

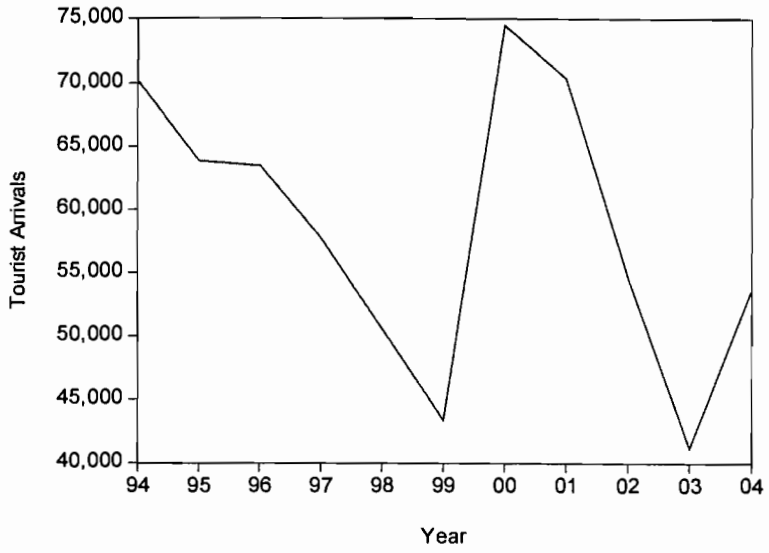
Appendix 3 (b): Tourist Arrivals to Malaysia from Selected non-ASEAN Countries 1994-2004



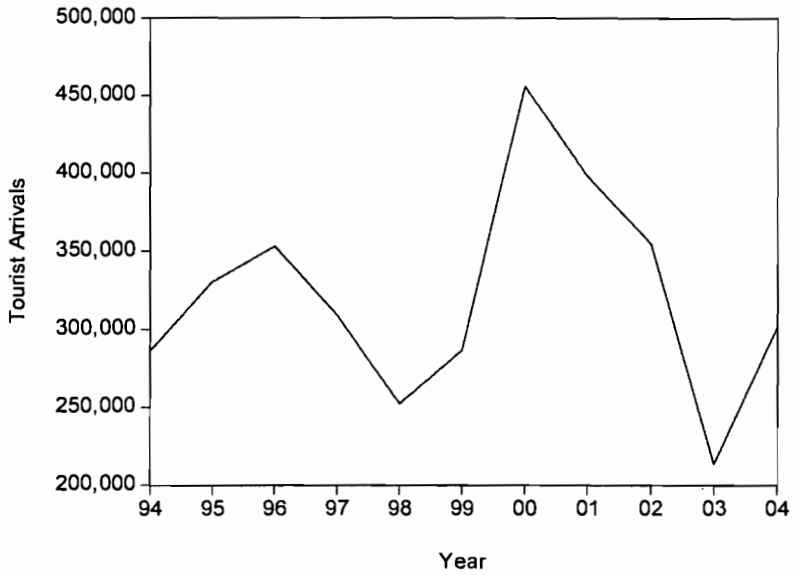
i) Tourist Arrivals from the U.S



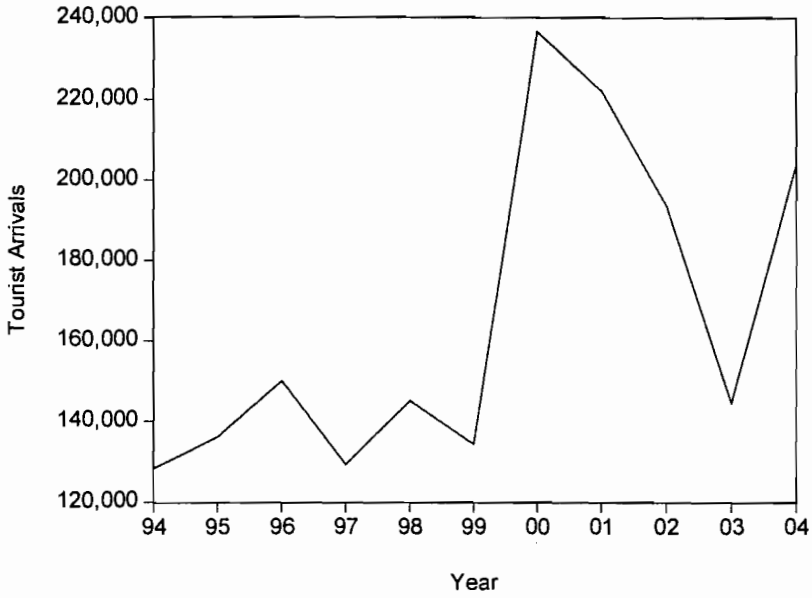
ii) Tourist Arrivals from the U.K



iii) Tourist Arrivals from Germany



iv) Tourist Arrivals from Japan



v) Tourist Arrivals from Australia

Appendix 4: Top Ten Tourist Generating Markets 2004-2005

Market	2004	Market	2005
Singapore	9,520,306	Singapore	9,634,506
Thailand	1,518,452	Thailand	1,900,839
Indonesia	789,925	Indonesia	962,957
China	55,241	Brunei	486,344
Brunei	453,664	China	352,089
Japan	301,429	Japan	340,027
UK	204,409	Australia	265,346
Australia	204,053	UK	240,030
Taiwan	190,083	India	225,789
India	172,966	Philippines	178,961

Source: Tourism in Malaysia, Key performance Indicators 2005

Appendix 5: Main Features in Promoting Malaysia 2005/2004

Features	2005 (%)	2004 (%)	Growth (%)
Friendly People	26.8	26.2	0.6
Beaches	15.4	17.4	-2.0
Safe Destination	9.1	7.5	1.6
Island Resorts	9.0	8.8	0.2
Multi-Racial Country	7.3	7.9	-0.6
Jungle Sport/Greenery	6.2	4.9	1.3
Shopping Facilities	5.6	4.6	1.0
Modern City	4.5	4.8	-0.3
Historical Sites	2.5	2.8	-0.3
Variety Goods	2.1	2.6	-0.5
Hill Resorts	1.6	1.8	-0.2
Cultural & Festival Events	0.7	0.6	0.1
International Sport & Event Organiser	0.6	0.2	0.4
Health Facilities	0.3	0.1	0.2

Source: Malaysia Profile of Tourists by Selected Markets 2005

Appendix 6: Information Obtained Before Coming to Malaysia 2005/2004

Information Sources	2005 (%)	2004 (%)	Growth (%)
Friends/Relatives Visited	37.8	35.1	2.7
Travel Agents	28.0	17.3	10.7
Travel Guide Books	23.3	21.9	1.4
Business	21.0	19.3	1.7
Travel Magazine	19.7	16.9	2.8
Internet	19.6	14.7	4.9
Newspaper	12.8	14.5	-1.7
Friends/Relatives Living in Malaysia	11.6	9.5	2.1
Airlines	11.6	11.6	N.C.
Tourism Malaysia Collaterals	8.1	4.4	3.7

Source: Malaysia Profile of Tourists by Selected markets 2005
Note: N.C. stands for non-comparable