# DETERMINANTS OF TOURISM DEMAND IN ASEAN COUNTRIES: A PANEL DATA APPROACH

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A research project submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF ECONOMICS (HONS)
FINANCIAL ECONOMICS

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE
DEPARTMENT OF ECONOMICS

APRIL 2018

# DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our original work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 15273 words.

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Date: 20 April 2018

# ACKNOWLEDGEMENT

We would like to take this opportunity to express our gratitude and appreciation to those who gave us the possibility to complete this research project. A special thanks to our final year project supervisor, Mr Kuar Lok Sin who was abundantly helpful and offered invaluable assistance, support and guidance, as well as sharing his expertise and knowledge to us in order to enhance the research project's quality.

Furthermore, we would like to thank UTAR in providing us sufficient and useful facilities for us in order to proceed our research project. The database provided by the university enables us to obtain relevant data and materials while preparing our research project.

Besides, we would like to take another moment to thank our final year coordinators, Miss Thavamalar a/p Ganapathy and Mr Kuar Lok Sin. They showed the process and flow of research composition clearly and understandable. Their information and explanation lead to our success of this research.

Last but not least, we would like to thank our group member for giving out their best works and also stimulating discussion, for those sleepless nights we were working together to completing this final year project.

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# ABSTRACT

The purpose of this study is to examine the relationship between tourism demand and its macroeconomic determinants. This research consists of the data from 8 ASEAN countries from year 1995 to 2015, using annually data for both dependent variables and independent variables. Then, we applied the panel unit root test, panel co-integration test and Fully Modified Ordinary Least Square (FMOLS) analysis to analyse the significance of the determinants of tourism demand based on the panel data.

Determinants such as gross domestic product (GDP), trade, exchange rate, and consumer price index (CPI) are significant toward to tourism demand. Besides, gross domestic product (GDP), trade, and consumer price index (CPI) showed positive relationships with the tourism demand while exchange rate showed a negative relationship with the tourism demand.

# CHAPTER 1: INTRODUCTION

## 1.0 Overview

Tourism industry is one of the largest and rapid growth industries in today's global economy. It is one of the important income sources for a country. Many entrepreneurs start to involve in this industry because of its potential and the changes happening in human lifestyle which getting more to relaxing. They are promoting to public that enjoy life while you still can, and this create a great effect to current economy and helped tourism industry to grow in this decade.

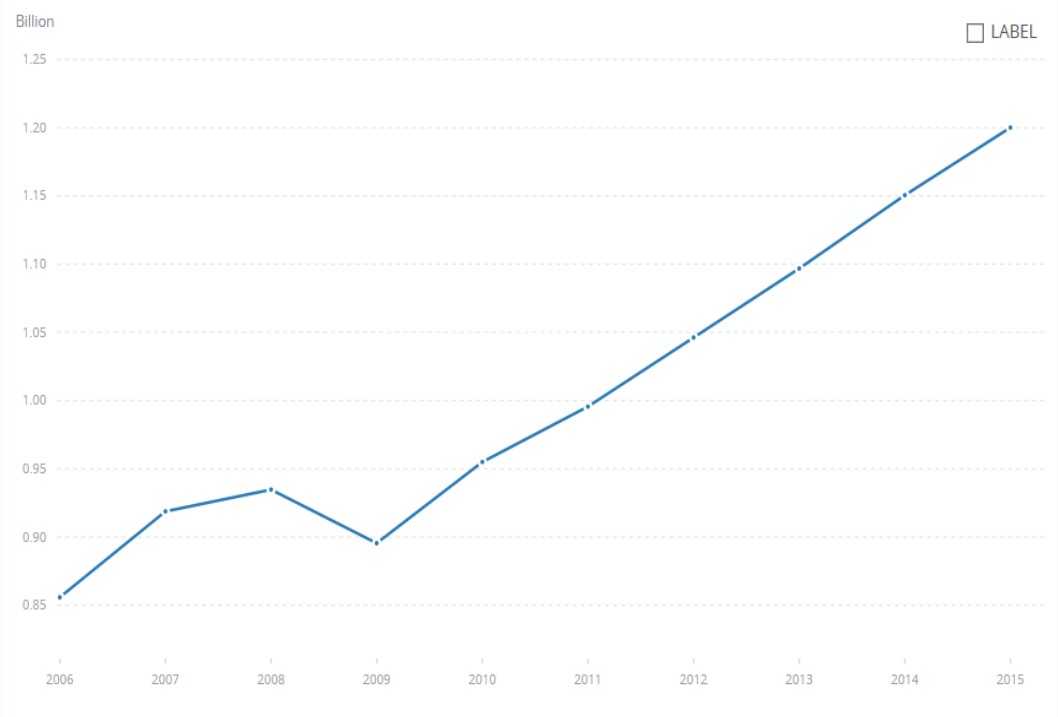
Tourism is one of the top five export categories of up to 83% of countries, with at least 38% of the country's main source of foreign exchange earnings. The economic effect of tourism on a country is significant. Especially in developing countries, one of the main motivations for the region to promote itself as a tourism destination is the expected economic enhancement. They believe the potential of tourism industry and put a lot of effort to ensure the outcome.

Discussing about benefits of tourism toward the economy, the very first significant effect is it created more job opportunities. When number of tourist increases, they demand more workers in services sector to serve for the tourists. According to the International Labor Organization's Global Dialogue Development and Challenge Forum, although the international tourism is affected by the global economic and social crisis, it is expected that in 2019, the global economic tourism sector will provide 296 million jobs, making tourism the potential to become the main generator. Tourism is labour intensive and also an important source of employment. One of the world's top entrepreneurs is to require varying degrees of skill and allow rapid entry into youth, women and migrant workers' labour.

Besides that, tourism also contributes to government revenues. Revenues are generate from income taxes from tourism employment and tourism businesses, and departure taxes on tourists. Government also earns from duties and taxes on goods and services supplied to tourists. After increases government revenues, it stimulates infrastructure investment. Tourism can induce the local government to make infrastructure improvements such as better views, roads, and public transport. These also improve standard living for citizens as well as facilitate tourism. So, tourism's benefits are clearly worth to study in order to improve the tourism industry.

However, everything has both good sides and bad sides, tourism is not excluded. First of all, increase in price is the most significant, it due to increases demand for goods and services. When demand is high, seller will mark up the price as well as the housing price will also increase. It will affect resident facing high living costs with the same level of income. Although it creates more jobs, but it was exist seasonal character's job problems. Peak season like school holiday and public holiday are the best time for a person to travel. But in weekdays, adults need work and some children need study so people may not always travel in that period. So, only the peak season, they will require more workers and it was no guarantee of employment from one season to the next. Mostly local people are employed in low skill, low paid and work in unsatisfactory working conditions. It also increases the number of air travel and therefore contributes towards air pollution. So, this may need more attention to solve it or at least reduce its negative impacts.

Figure 1.1: International Tourism Arrivals




*Source: World Bank Databank*

Figure 1.1 shows the trend of international tourism arrivals starting from year 2006 until 2015, where y-axis represents the total number of arrivals (in billion) while x-axis represents period of time (year). From the graph, we can observe that there is significant upward trend in the international tourism arrivals except for year 2009, due to the effect of global financial crisis, the tourism arrivals seem to follow the effect of crisis but after that the number of arrivals getting higher than before crisis.

The trend shows that the tourism industry is booming, this forced the government of the countries to develop more in this industry. As our research targets are mostly from ASEAN, therefore we can say that the ASEAN Tourism Agreement is the prove which the governments are taking serious on the tourism industry. After all the discussion and negotiation between countries, this

agreement was finally done at 4th of November 2002 at Phnom Penh, Kingdom of Cambodia.

ASEAN Tourism Agreement were signed with the objectives to cooperate in facilitating travel into and within ASEAN, to enhance cooperation in the tourism industry among ASEAN Member States in order to improve its efficiency and competitiveness. It also aims to substantially reduce restrictions to trade in tourism and travel services among ASEAN Member States, and to establish an integrated network of tourism and travel services in order to maximise the complementary nature of the region's tourist attractions. To enhance the development and promotion of ASEAN as a single tourism destination with world-class standards, facilities and attractions also the objective of the agreement, and it help to enhance mutual assistance in human resource development and strengthen cooperation to develop, upgrade and expand tourism and travel facilities and services in ASEAN. Finally, it is hope to create favourable conditions for public and private sectors to engage more deeply in tourism development, intra-ASEAN travel and investment in tourism services and facilities. All of the objectives had link to a single target which is to improve the economic performance of every countries.

Among ASEAN countries, we choose 8 of them which is Malaysia, Thailand, Philippines, Singapore, Indonesia, Laos, Cambodia and Vietnam, to carry out the analysis. We doing the analysis basically because of Malaysia's tourism industry is growing rapidly in past 20 years, we wish this analysis could help out the decision-maker to make an efficient and effective decision to make sure Malaysia's tourism industry could have a stable growth in future.

# 1.1 Research background of Selected Country

Table 1.1: Tourism receipts and GDP

| County<br>Year 2015 | GDP<br>(USD in billion) | Tourism Receipts<br>(USD in billion) |
|---|---|---|
| Indonesia | 861.256 | 12.054 |
| Thailand | 399.235 | 48.527 |
| Singapore | 296.841 | 16.563 |
| Malaysia | 296.434 | 17.666 |
| Philippine | 292.774 | 6.415 |
| Vietnam | 193.241 | 7.35 |
| Cambodia | 18.05 | 3.418 |
| Laos | 14.39 | 0.725 |

*Source: World Bank*

As we mentioned that our research target will be 8 countries out of the Top 10 ASEAN country list. Top 1 from the list will be Indonesia, granted the crown with 861.256 billion dollars of gross domestic product (GDP) in year 2015. Approximately 1.40% of the GDP is from tourism receipts which is 12.054 billion dollars in total for the year. It proved that tourism sector is one of the important industry for Indonesia economy.

In the World Economic Forum's Travel & Tourism Competitiveness Report, stated that the reason of why Indonesia's tourism arrival is far less than neighbouring countries Singapore and Malaysia, said that because Indonesia is not putting enough efforts to emphasis the environmental sustainability. Another reason is the safety and security concerns that endangering tourist causing foreign tourist hesitated to visit the country. Most of the tourist will looking on the ranking of the country before they decide where to visit, on this concept, Indonesia lag quite far behind from his neighbouring countries Singapore (11th), Malaysia (25th) and Thailand (35th) whereby Indonesia only ranked 50 in 2015 Travel & Tourism Competitiveness Report.

Right after that is Thailand, obtained a total of 399.235 billion dollars in year 2015. Tourism sector earned a total of 48.527 billion dollars out of the same year which contributed 12.15% out of total GDP, it is a great number for Thailand government as they are promoting their tourism industry. The capital city of Thailand is Bangkok, it is in the list of top 10 world's most attractive cities to visit. Their government increased the visa procedures by making it easier for tourist from foreign countries to raise the competitiveness against neighbouring countries. Tourism industry is important for economy of Thailand because it helped to compensate the low growth rate of other sectors and boosted related businesses.

Singapore is a nation that small on physical but been a giant in economic. It had been the most modern city over a century in Southeast Asia. Since its independence, it had grown exponentially and become one of the most prosperous countries of the world with its port. In year 2015, tourism industry generated a total of 158,500 jobs directly which equal to 4.3% of the total employment in Singapore. These employments basically came from hotels, travel agents, airlines, and transportation services. Singapore gains 296.841 billion dollars at the year with 16.563 billion dollars approximately 5.58% of total GDP from tourism industry.

Following by Singapore is Malaysia who ranked 4$^{th}$ with just 0.407 billion dollars different with Singapore, granted with 296.434 billion dollars and 5.96% of it was came from tourism industry, equal to 17.666 billion dollars. By dividing the tourism receipts, we found that 48.8% of the total receipts came from leisure spending and 51.2% came from business spending. Promoting tourism industry at the same time will increase the foreign investment inflow to boost the economy. Although tourist arrivals and receipts noted to have a decline of 6.3% and 4.0% respectively compared to year 2014, but when compared with year 2013, it still has 1% growth in total receipts.

Philippines is an island nation located in the Malay Archipelago in Southeast Asia. It is well known as an agricultural exporting with light industry and service sector economy. Most of the trading happen was related to agricultural sector, as the main industry in the nation, government care much about it and

always have it supported. Recently, the government of Philippines tend to encourage businessmen involve more in industrial development, policies were specially designed to assist it. Philippines earned a total of 292.774 billion dollars in year 2015 and tourism receipts contributed only 6.415 billion dollar which equal to 2.20% of total GDP. This result shows that Philippines's tourism industry is not active enough to stimulate a boost for their economy.

A natural beauty nation that captivating tourist's interest and the tranquil village life is another attraction of Vietnam. Vietnam have a lot of islands and beaches and those were the finest among Southeast Asia. Over the year 2015, Vietnam stimulated a total of 193.241 billion dollars with 7.35 billion dollars from tourism industry which equal to 3.80% of the total GDP. Tourism industry helped Vietnam economy indirectly by bringing in 10.4% out of total investment inflows 11.8 billion dollars. From World Travel & Tourism Council, Vietnam was rated as rank 40$^{th}$ based on the total contribution from tourism industry toward GDP.

Cambodia is a neighbour country of Laos, Thailand and Vietnam with 15.52 million population. It is not a large nation but as for ASEAN countries, it ranked at 8$^{th}$ with 18.05 billion dollars of total GDP for year 2015. Its tourism industry supported its economy with a contribution of 18.94% out of total GDP which equal to 3.418 billion dollars. Tourism industry plated an important role in the development of Cambodia, not only contribute to total GDP but also on employment. It also helped on improve the infrastructure, general education and enhance the living standards of the citizen, most importantly it helped to raise the international profile of Cambodia. The growth of tourism industry assisted their economy to diversify their activity and enlarge the base of foreign earnings.

Lastly, the country that ranked 9$^{th}$ in the list of top 10 ASEAN country, Laos. Laos is a land-locked nation whereby most of it is mountainous and thickly forested, Mekong River forms a huge part of the western boundary with Thailand. Laos had a total of 14.39 billion dollars income in year 2015 and tourism industry contribute 5.04% of total GDP which is 0.725 billion dollars. The countryside of Laos is the most attractive tourist destination that exercise simple existence of the

local inhabitants of the rural areas. The government of Laos is implementing gradual economic and business reforms to liberalize its domestic markets.

## 1.2 Problem Statement

Nowadays, tourism has become one of the world top important sectors that have a huge impact on the development of economy in a country (Agaraj & Murati, 2014). The significant benefits of tourism sector include the creation of income and generation of jobs. The expenditure obtained by the inflows of tourists has contributed greatly to the economics of host countries (Vongprasert, 2016). Thus, for many regions and countries, tourism sector is viewed as the most important source of welfare. According to World Travel & Tourism Council (WTTC), ASEAN becoming one of the regions in which the countries have a large dependence on tourism sector to drive their economic growth. Tourism sector have contributed 12.4% of the total GDP and this is considered exceeding 4% of the other world's regions. The average growth in this sector is expected to be 6.3% per annum for the upcoming 10 years. WTTC also forecasted that investment made to ASEAN economies will be 1 in 10 of all the investment dollars which calculated up to US$ 782 billion for the next decades.

Giving the fast growing trends of tourism sector, it is important for the ASEAN countries to ensure that they are able to deliver the infrastructure that are demanded. This also placed a challenge in the capacity volume and the sustainability of quality expands which meet the expectation of visitors (Travel & Tourism Investment in ASEAN, 2016). In this context, ASEAN have developed the Tourism Strategic Plan in 2011 to ensure a sustainable development in this sector. In addition with this, a marketing strategy was developed by the ASEAN members in 2012 with the aim to improve the image of Southeast Asia as a competitive and world-class destination of tourism (Athanasopoulou, 2013).

This paper was carried out to examine how macroeconomics variables affect the tourism arrival in ASEAN countries. We have chosen gross domestic

product (GDP), trade, exchange rate and consumer price index (CPI) as our determinants. We are keen on investigating what is the relationship between these variables and tourism arrival. Our study may act as a guideline for the policy makers in choosing which aspect to be prioritized throughout the development of tourism sector.

## 1.3 Research Objective

### 1.3.1 General Objective

To examine the relationship between tourism demand independent variables such as Gross Domestic Product (GDP), trade, exchange rate and Consumer Price Index (CPI) among 8 ASEAN countries namely Malaysia, Thailand, Philippines, Singapore, Indonesia, Laos, Cambodia, and Vietnam.

### 1.3.2 Specific Objectives

i. To determine effects of Gross Domestic Product (GDP) on the tourism demand among 8 ASEAN countries.

ii. To examine the effect of exchange rate on the tourism demand among 8 ASEAN countries.

iii. To identify the effect of trade on the tourism demand among 8 ASEAN countries.

iv. To estimate the effect of inflation on the tourism demand among 8 ASEAN countries.

# 1.4 Research Question

In order to fulfil the objectives the objectives of this study, a few questions are formed according to the problem statements above:

i. Does the GDP significantly affect Tourism demand?

ii. Does the trade significantly affect Tourism demand?

iii. Does the exchange rate significantly affect Tourism demand?

iv. Does the inflation significantly affect Tourism demand?

# 1.5 Hypothesis of Study

According to our research, four hypotheses is required to examine the relationship between tourism demand and its independent variables which are Gross Domestic Product (GDP), trade, exchange rate, and Consumer Price Index (CPI) among 8 ASEAN countries.

## 1.5.1 Gross Domestic Product (GDP)

According to Cheng, Chen, Chung, Chen, and Li (2016), they stated that gross domestic product (GDP) has positive effect to tourism demand. They found that when the economy grown will lead to significantly increase the income of the people in a country, the number of tourist travelling aboard will also increase because of they are able to demand more goods and services. In short, increase in income will lead to increase tourism demand.

*H*0: There is no significant relationship between gross domestic product (GDP) and tourism demand

*H*1: There is a significant relationship between gross domestic product (GDP) and tourism demand

### 1.5.2 Trade

Puranti, Sarmidi, and Salleh (2011) stated that there is a positive relationship between trade and tourism demand. Trade is not just only the exchanges of goods and services across aboard, it also included that the business purposes such as movement of technology transfer, business travels, physical and capital accumulation. Thus, when the level of business activities increases will increase the tourism demand (Habibi, Rahim & Ramchandran, 2009).

*H*0: There is no significant relationship between trade and tourism demand

*H*1: There is a significant relationship between trade and tourism demand

### 1.5.3 Exchange rate

According to the Ministry of Tourism (2007), they mentioned that exchange rate is highly correlated to tourism demand because tourists or travellers are highly sensitive to exchange rates. If the currency depreciate will lead to tourism demand decline. Therefore, there are a negative relationship between exchange rate and tourism demand.

*H*0: There is no significant relationship between exchange rate and tourism demand

*H*1: There is a significant relationship between exchange rate and tourism demand

### 1.5.4 Consumer Price Index (CPI)

According to Hanafiah and Harun (2010), they stated that consumer price index (CPI) or inflation rate will reduce the number tourists travelling aboard. If there is high inflation, the price of goods and services will increase. Thus, this will lead to decrease the number of people come to travel. Therefore, there are a negative relationship between consumer price index (CPI) and tourism demand.

$H0$: There is no significant relationship between consumer price index (CPI) and tourism demand

$H1$: There is a significant relationship between consumer price index (CPI) and tourism demand

## 1.6 Significance of Study

The purpose of this study is to examine the relationship between tourism demand and others macroeconomic variables such as gross domestic product (GDP), trade, exchange rate, and consumer price index (CPI). In this study, we collect some previous researchers' ideas or studies to do as our references. We are carrying out 8 ASEAN countries to study the relationship between tourism demand and its independent variables and also examine how tourism demand makes dedication to the economy. We also using panel data analysis to estimate our model because panel data analysis able to analyse the data which is over the time and the same individual at the same time. For instance, we are estimating the factors that affect tourism demand in 8 ASEAN countries over the time, thus panel data analysis is the most suitable analysis to analyse our model in our study.

Tourism demand studies are getting crucial in a country's economy nowadays. The reason why tourism is essential to the economic activity is because it creates the employment for every countries. This study addresses an important

gap in tourism demand research on the main factors of tourism demand and finally comes out refreshment to existing research on tourism demand. Furthermore, the findings of this study are very useful for policy maker as they can set out their main policy implication in order to increase the number of tourists in the country and therefore enhance country's economy since our study involve the factors of gross domestic product (GDP), trade, exchange rate, and consumer price index (CPI) as well.

Through our study, we may bring benefits or references to other countries which they are not developing their tourism unsuccessfully after we get the result in this research. Therefore, it may increase the awareness of the current tourism demand extension and the importance of tourism demand in a country in order to help them to improve in tourism sector.

Moreover, this study will give a signal to the government. It can helps to provide government the idea on how the factors such as gross domestic products (GDP), trade, exchange rate, and consumer price index (CPI) will influence tourism demand. This research not only can bring benefit to the government, it also can benefit some different parties in the society. It can bring attention to our researchers on the tourism demand. They will have the knowledge about what actually causing the tourism demand. In this case, other researchers might start to do more studies or researches on this field in order to contribute to the entire society.

## 1.7 Chapter Layout

It consists of total 5 chapters in our study. In Chapter 1, we explain about the detail about our research background and the research problem. We also discuss about the research objectives, hypothesis, research questions, and also significance of study. At the end of this chapter, we summarize the whole chapter briefly.

In Chapter 2, we provide the review of the literature review in our study. In this chapter, we discuss about the relationship between tourism demand and each independent variables, the development of the hypothesis, and with the summary as our conclusion to conclude this chapter.

Chapter 3 discuss about the overview of the methodology that we used in our research. We display our outlines of our data that we used in this study and various types of methodology we applied to investigate our result of this study. For example, we will carrying out the method which in terms of research design, data collection methods, variables specification of measurement, method of data analysis and conclude this chapter with a summary.

In Chapter 4, we present the empirical testing and empirical results in our research. We also analyses the empirical results of the estimated model and discuss about the discussion of the major findings. In the end of this chapter, we summarize to conclude our chapter 4.

Chapter 5 is include with the summary and conclusion of all the chapter above. Besides that we also provide policy implication, limitation, and recommendation for future studies in our research.

## 1.8 Conclusion

The purpose of doing this study is to investigate the determinants of the tourism demand in 8 ASEAN countries by using Gross Domestic Product (GDP), trade, exchange rate, and Consumer Price Index (CPI) as the independent variables in our model. In tourism industry, these independent variables always are the common factors that affect tourism demand. But, there are still lack of improvement in tourism demand, it is very important to those policymakers of the ASEAN countries to concern more about this problem in order to maximize the revenue or profit from tourism industry in their own country. In the previous researchers' studies, there are many literature studying on tourism demand in

developed countries or developing countries. Therefore, we are using ASEAN countries to find out the determinants of tourism demand in these 8 countries.

# CHAPTER 2: LITERATURE REVIEW

## 2.0 Relationship between tourism demand and gross domestic product (GDP)

### 2.0.1 Introduction

Tourism sector is getting more popular and became an important source of income for a country. This attracted economists from different countries to examine the factors behind this growing industry. There were numbers of economists studied the relationship between tourism demand and gross domestic product (GDP) which means that this is one of the important factors behind the scheme. Over the time, more and more reviews showed up by proving there is relationship between tourism demand and GDP but also some saying it in the different way. There is no exact and fixed result from the previous studies by economists. GDP is the total monetary value of final goods and services produced by a certain country within a certain period, this is the best measurement to measure the country's country. In brief, GDP is known as the income of a country. From the results of Munoz and Amaral (2000), they showed economic demand theory assuming when country's income getting better, more of the citizens able to afford travel and showing the country's economic is good government may have more budgets on building tourist destinations and facilities. Thus, tourism demand assume have a direct positive relationship with income.

## 2.0.2 Literature review

Literature on the tourism demand's determinant and the uncertainty was done by plenty of researchers. (Onder, Candemir and Kumral, 2009); (Martins, Gan, and Lopes, 2017); (Deluna, and Jeon, 2014) and (Kosnan, and Ismail, 2012) are the articles done the research on tourism demand and GDP, from these article's empirical results are showing they are having positive relationship.

Onder, Candemir, and Kumral (2009), performed a Jarque-Bera Test on the effects of GDP on tourism demand in OECD countries for 15 years (1980-1995) and all used variables are in double logarithmic forms and it was time series data. In this article, tourist arrival as dependent variable, follow by real exchange rate, GDP per capita and transportation capital stock as independent variables. There were total 4 independents variables used in this article as they separate two different type of GDP, one is GDP per capita of the OECD countries and the other is GDP per capita of their home country which is Izmir. From this article's empirical result, it showed that the GDP is one of the main determinants of tourism demand and they have positive relationships. Which mean when GDP increases, the tourism demand will also increases. GDP increases mean government has more funds to upgrade tourist destinations, infrastructure and marketing promotion, so this will lead to an increase in tourism arrival.

In a recent paper, Martins, Gan, and Lopes (2017) analysed a panel of 218 countries between 1995 and 2012 to reach a conclusion on the importance of macroeconomic variables as determinants for tourism demand. The macroeconomic variables used are the relative prices, nominal exchange rate, and world income per capita. The reason they focused on only three macroeconomic variables is to minimize chances of estimation bias. Those models were estimated by log-log specifications, so the coefficients are assume as elasticities, and different of the measurement units are chosen for each of the variables. The results get from this journal is positive and significant between tourism demand and GDP. Besides, Deluna, and Jeon (2014) were using a total of 8 independent variables as determinants of tourism demand including relative price of Malaysia,

Thailand and Indonesia. The author used these variables to study the external factors that will affect tourism demand in the Philippines to understand clearer on the literature. Although many previous researches reviewed the trustworthy result but not really specify it for a single country. (Deluna and Jeon, 2014) studied 50 papers and came out with the model for their thesis to help on explaining the future trend of Philippines. Result is showing that GDP having significant effect towards tourism demand in Philippines.

According to Kosnan and Ismail (2012) used panel data to do an analysis review between year 1998 to 2010 and 24 countries on the macroeconomic factors impact toward tourism arrival and tourism receipts in Malaysia. Although the timeline of reviews, the analysis testing method and the data inputs could influence on the estimations, but the authors found that the GDP having significant positive relationship with tourism demand and tourism receipts. The authors also recommend that the tourism expenditure should be consider in the model in future research.

In addition, bidirectional effects in tourism and GDP was proven by many researchers, improvement in either one area will benefit both sides. (Chen and Chiou-Wei, 2009), (Lee and Chang, 2008).

First, Chen and Chiou-Wei (2009) were testing the causality relationship between economic growth and tourism expansion over 33 years (1975-2007) in South Korea and Taiwan. GARCH model was used in this research and the result was showed they have significant impacts on each other. Next, (Lee and Chang, 2008) explore the causality relationship between tourism development and economic growth for OECD countries and non-OECD countries in 1992 to 2002. This research is using fully modified ordinary least squares (FMOLS) and ECM heterogeneous panel cointegration techniques. Researcher found out tourism has bigger impact on GDP in non-OECD countries compare to OECD countries. They conclude up there is unidirectional relationship. Lastly, Tang and Tan (2015) analysed the causality relationship between tourism and economic growth from year 1975 to 2011 in Malaysia. In this research they found out tourism and

economic growth are cointegrated and having positive relationship in both long run and short run.

Furthermore, there is no absolute answer, some researchers found out there is no causality effects between tourism and GDP. From Antonakakis, Dragouni, and Filis (2013) and Tugcu (2014), they found there is no relationship at all between tourism and economic growth, the impact relationship is insignificant. Oh (2005) reviewed there is short run relationship in tourism and economic growth, means upgrade tourist destinations and infrastructure may not effective in long run. Tourists may only interest when new launching, will not visit the same location for twice or more.

### 2.0.3 Summary & Hypothesis

In a nutshell, all of the studies show that the relationship between tourism demand and gross domestic product is positive which means increasing in country's GDP performance could attract more tourists. There are some reviews telling that the relationship between tourism demand and GDP is positive but they meant tourism demand giving impact to GDP instead of GDP affecting tourism demand, it is true to say this as if tourists are getting more thus we will need to develop more tourism services business therefore it will create a positive cycle and boost the economic even better. After all of the studies, we formed a hypothesis says that there will be positive relationship between tourism demand and GDP.

# 2.1 Relationship between tourism demand and trade

## 2.1.1 Introduction

Other than international tourism, there is another factor that contribute greatly to a nation's economy which is international trade. Most of the imports and exports were associated with agricultural and industrial sectors also include service sector Apart from international tourism, international trade (imports and exports) significantly contributes to the economic growth of a nation. Directly associated with the agricultural and industrial sectors, international trade is also linked to the service sector, including international tourism. This variable included in the model with the reason that international trade is one of the rapidly growth factors that have huge effect on a country's gross domestic product. New trade theory is an economic theory used to predict patterns of international trade and also explain on the dynamic income from international trade. Once the international trade stimulates higher income to our country, the country has more budgets to improve tourist destination and standard of living.

## 2.1.2 Literature Review

Most of the studies suggest positive relationship between trade and tourism demand. Gallego, Rodriguez, and Rodriguez (2011) analysed the causal relationship between inbound tourism and international trade over the period year 1980-2006 for OECD countries. The authors conduct this test due to three reasons. First, authors found that business trips able to boost up international trade. Second, consumer could be attracted by the imported product and wish to visit the country to explore more products. Last but not least, in order to promote international trade, the local government needs to put efforts on improving the basic facilities of the country and tourist will be attracted by the higher living standard. Authors are using Granger causality test and panel data cointegration techniques in this study, they found long term bidirectional and positive long run relationship

between trade and tourism. In other words, trade could promote tourists inbound. Next, Chaisumpunsakul and Pholphirul (2017) examined the relationship between international tourism and international trade in Thailand, they are using panel data from 207 trading partners of Thailand from 1998 to 2010. The results showed there is significant positive impact on international tourism and international trade with Thailand's trading partner.

Gautam and KG (2012) applicate the granger causality test to investigate the causal relationship between tourism and trade of India with Canada, France, Germany, Italy, Netherland, Switzerland, USA and UK. The monthly data used are from 1994 January to 2009 December collected from Business Beacon. For the empirical analysis, the variables used are in log form, Germany, France and Netherland are excluded from analysis due to non-stationary at log form. In addition, Canada, USA and Italy are significant bidirectional causal relation between tourism arrivals and trade. In contrast, UK and Switzerland are no significant causality. Besides, LEITAO (2010) investigated the linkage between tourism and trade in Portugal for the period year 1995-2006. Tourism demand in Portugal is endogenous variable and immigration, bilateral trade, border and geographical distance as exogenous variables. The main objective of this study was to examine the determinants of tourism demand in Portugal. This study was used static and dynamic models as estimation. Dynamic models formed to understand the phenomenon due to tourism is a dynamic nature and lagged tourism demand represents expected positive sign. The results obtained from their findings are positive relationship between tourism and trade and this was same as his expectation and similar with most of the studies.

### 2.1.3 Summary & Hypothesis

Conclusively, all of the studies we referred to showing positive relationship between tourism demand and trade, most of it explain this situation as the trading amount increase will raise the interest of tourist to visit the origin country of the imported product they like. We agreed with this explanation,

therefore we expect our result to be positive as well. Some of it also says that tourism will increase international trade because tourist will bring their product to the destination country and will raise the interest of local citizen on their product thus it will create chances for those products to involve in international trade.

## 2.2 Relationship between tourism demand and exchange rate

### 2.2.1 Introduction

By now, plenty of studies have showed that exchange rate has significant effect on tourism demand. Exchange rate is represent the tourist's cost of living in their destination, demand theory suggests an inverse function between tourism demand and tourism prices. However, most of the studies are specifying in only tourism sector of one country but not on macroeconomic issue on selective region. Does the volatility of exchange rate influence significantly in tourism demand in the region? The answer is important for developing countries as tourism is one of the main income source of them so they can figure how to make the decision on resources allocation efficiently and effectively. Thus, reviewing the relationship between exchange rate and tourism demand is critically needed. Hereby I will show some studies done by researcher in different countries and time.

### 2.2.2 Literature Review

Empirical study examining the impact of tourism had found that devaluation of exchange rate at the destination country more tourists in contrast appreciation of the currency reduced the outflow of tourism (Munóz and Amaral, 2000). This seems like tourists are more aware of the exchange rates they use because this will be their cost of living when they travel overseas.

Recent studies, Agiomirgianakis, Serenis, and Tsounis (2015) did a further research on effects of exchange rate volatility on tourist flows in Iceland by analysis 25 years (year 1990-2014) in quarter form. Autoregressive Distributed Lags (ARDL) model is used in this research, other than exchange rate there is another two exogenous variables which is GDP and relative prices. Overall, their findings suggest negative effect between tourist arrivals and exchange rate for Iceland. Moreover, Ruane (2014) using Ordinary Least Squares regression models applied monthly data from October 2003 to July 2013 to examine the relationship between tourist arrival and exchange rate. This studies using data from Guam country, from this study they confirm a stronger home currency will discourage tourists to Guam.

Kosnan and Ismail (2012) performs a gravity model on 288 observations. Dependent variable is tourist receipts in Malaysia and independent variables are tourism price, exchange rate, income and population. This study suggest depreciation of Ringgit Malaysia will lead to the lower the cost of transaction and transportation cost thus increase number of tourist to Malaysia, so the relationship between tourism demand and exchange rate is negative. Author suggest that policy maker should put effort on determine which factors will increases the tourist's number and neighbouring country's tourism promotion if Malaysia's goal is to be an International tourist attraction. Besides, Onder, Candemir, and Kumral (2009), this paper study about factors that influence international tourism demand in Izmir from year 1980 to 2005 by using time series data. The model used is double logarithmic model due to nonlinear in parameters. Real exchange rate, transportation public capital stock, GDP per capita of Izmir and GDP per capita of OECD countries are used as explanatory variables. From the empirical results, it showed real exchange rate and international tourism demand is negative same as their expectation. From this study, author suggests that Izmir government should promote different tourism development such as organic agriculture.

In addition, Martins, Gan, and Lopes (2017) were using three econometric models to test the relationship between tourism demand and macroeconomic variables. The macroeconomics variables use as control variables are GDP, exchange rate and relative prices and data collected from 218 countries over 18

years (year 1995-2012). This research shows the GDP has the largest impact on tourism demand and followed by the exchange rate. Depreciation of national currency will increase the tourist arrivals.

There was different from the most researches, Odhiambo (2011) used Autoregressive Distributed Lag (ARDL) method to investigate the relationship between tourism development and economic growth in Tanzania with the data of 1980–2008. This study also use real exchange rate as intermittent variable between economic growth and tourism demand. In short run, tourism development stimulates more economic growth compare to long run and long run results show there is distinct unidirectional causality. However, long run was still playing important role. In addition, short run results there have bidirectional relationships between tourism development and exchange rate, and between economic growth and exchange rate.

However, some researches showed that exchange rate has no relationship with tourism demand. Deluna and Jeon (2014) were using augmented panel gravity model with double-log to estimate the factors affect Philippine tourism demand. They used 8 exogenous variables, which include real exchange rate. The results show there is insignificant relationship between tourism demand and exchange rate in Philippine. This means that the exchange rate has no or few effect on attracting tourist. This study recommends that Philippines should always promote their tourism abroad with "It's more fun in the Philippines" since the finding show insignificant result thus it hypothesized that the result might be the unique phenomenal only happens in Philippines. It also suggests the tourism promotion should focus on high income countries such as Canada, US and etc. Same results proven by Dincer, Dincer, and Ustaoglu (2015), they say that there is no long-term relationship between exchange rate and tourism revenues also there is no granger causality relationship between them. Although the result shows no relationship but yet they say exchange rate is an important variable especially related to international trade. This is because the decision of tourists is determined by different factors but not only on the economic circumstances of a country.

### 2.2.3 Summary & Hypothesis

We found various kind of result among all the studies we did, most of them show negative result but there is one with no relationship and another one with bidirectional effects in short run also one with unidirectional effects in long run. Although there are different in results, but we expect our research result will be negative relationship between exchange rate and tourism demand since we are determining the exchange rate with domestic currency which means if the exchange rate for domestic currency drop, foreign tourists can exchange their currency to domestic currency of the destination with same amount but get more domestic currency to spend.

## 2.3 Relationship between tourism demand and consumer price index (CPI)

### 2.3.1 Introduction

Tourism industry is an important industry of tertiary sector that growing rapidly over the past few decades with great contribution toward economic growth and this raise the interest of researchers to have their research on this sector. Consumer price index could be defined as relative price because both of them share the same characteristic and will have same result even if we record it separately. Classical economic theory expects that prices are the main factor that influences the tourism demand. Tourism demand will be affect by many variables including CPI, the inflation or deflation rate of good and services of the destination. CPI could directly affect the expense of tourists, high CPI means they need to spend more money because of the relative price goes up.

To know the tourism arrival, first we need to know the relationship between CPI and tourism demand before we can determine the tourism arrival.

Government could act to control the CPI as if they want their tourism sector to growth.

### 2.3.2 Literature Review

First of all, most the studies suggest the negative relationship between CPI and tourism demand sue to CPI means the relative price of goods is increasing; tourists tend to pay more when travel. Kim and Lee (2017) compared their study with six tourism demand models and all of them are having different variables to determine the proper price variables that are affecting Japanese tourism from Korea. This study said separate relative prices with exchange rates in a model will be more accurate in this case than combine them together as price indicators in a model. With separation, these two variables are showing significant determinants, this supports the application of classic demand theory to Japanese inbound tourism. After analyses the most appropriate model's result for other explanatory variables, the result shows the relative prices is the variable that have most contribution toward the elasticity of Japan's inbound tourism. Most important factor for tourists is the tourism products price, therefore an effective pricing strategy by government will be critical for Japanese tourism industry's future.

Based on Martins, Gan, and Lopes (2017), they analysed the effect of few key macroeconomic variables including relative prices with a panel data having 218 countries input from year 1995 to year 2012. There are three model used with three different proxies for tourism demand in each model. It stated that relative price will become the most important variable if the proxy chosen for tourism demand is expenditures. Consumers are always looking on the price to do comparison when they choosing their destination for travel, so we cannot reject the hypothesis that say relative prices which having negative relationship with tourism demand are unitary elasticity of real expenditures. But in Europe countries, the effect of relative prices is lower compared to other nations. Hanafiah & Harun (2010) analysed economic factors that affect tourism demand in Malaysia as well. They are using seven economic factors, six are independent

variables and one dummy variable. Consumer price index (CPI) is one of the independent variable and we are going to use in our research. CPI is serve as two characters which is inflation and price, authors were examine them in two different models. Modified Gravity model is used in this study, data used are from unpublished tourism Malaysia report from year 1993 until 2007. On price, empirical results showed that CPI or inflation increases tend to reduce tourist arrivals in Malaysia. In general, CPI can say as lower living cost, transportation cost and cheaper food will attract more tourists to visit Malaysia. However, on inflation side, the result showed CPI increases will stimulate increases in number of tourist arrival in Malaysia. So, authors were assumed that developing countries such as Malaysia, government will spend much money on improve the standard of living and encourage tourism arrivals so it tends to increase CPI's value. Authors conclude that there is significant relationship between number of tourist arrivals and economic factors. Authors also suggest to use bigger sample size and latest data to reinforce the result of similar study.

Another study from Dogru, Turk, and Crouch (2017), they were doing the research to advance the tourism demand theory. Thus, it indicates that prices and exchange rate, when included independently in a model, it will be not significant. It stated that separating exchange rate effect and price effect might mislead the result of the model because exchange rate could offset inflation rate and vice versa. Also, it will be high level of correlation occur among exchange rate and relative prices then create multicollinearity and the result could be bias. It suggests that both destination and substitute destination prices should use price standardized exchange rates as proxy to be included in model.

Deluna and Jeon (2014) conducted a gravity model by using panel data to examine the factors affecting tourism demand of Philippines from year 2001 to 2012. These factors are income, market size, CPI and distance. CPI was described as the cost of living in Philippines when the tourists travel to Philippines including the cost of goods and services spend by tourists. At the end, authors also found out CPI had insignificant effect to tourism demand in Philippines. This represents in Philippines, the low cost and living and cheap goods and services will not

attracting tourist inbound. Besides, the relative prices in other countries also no effect on the tourism demand in Philippines.

### 2.3.3 Summary & Hypothesis

As to conclude all of the studies result, we found total 5 studies with only 2 have same result saying that both exchange rate and CPI should not be put in a same model because they could offset each other's effect and it might mislead the result if include this 2 variables in a model to analyse but they also said that the relative price is the most important factors that affecting tourists destination selection. Another research says that there is no relationship between tourism demand and CPI in their finding. We found two studies saying there is negative relationship between them but one of it also declare that if the data input for CPI is inflation, then the result will be positive relationship. Thus we expect our empirical result to be positive as our CPI input is inflation.

# CHAPTER 3: METHODOLOGY

## 3.0 Introduction

In chapter 3, we tend to investigate the relationship between tourism demand and its independent variables, which are GDP, trade, exchange rate, and CPI. There are five sections in this chapter, the first section is discussing about the research design of the model. For the second section, we explain about the variables specification of measurements. In section 3, we discuss about the sources of the date we used in this study. We also discuss about research methodologies that are used in this study. For the last section which is section 5 is the conclusion of the study.

## 3.1 Research design

According to our research, this study is investigating the relationship between tourism demand and its independent variables, the literature review places emphasis on the dependent variable (Tourism Demand) and independent variables (GDP, TR, ER, and CPI). The empirical model of this study can be specified as below:

$$ln(TA)_{it} = \beta_1 ln(GDP)_{it} + \beta_2 ln(TR)_{it} + \beta_3 ln(ER)_{it} + \beta_4 ln(CPI)_{it} + u_{it}$$

Where,

TA = Tourism arrivals

GDP = Gross domestic product (current US$)

TR = Trade (percentage of GDP)

ER = Exchange rate

CPI = Consumer price index (2010=100)

## 3.2 Variables Specification of Measurements

### 3.2.1 Gross Domestic Product (GDP)

In this study, we found that using GDP as an independent variable to explain tourism demand is very common because GDP plays an significant role as a source or consequence of tourism demand. According to Martins and Ferreira-Lopes (2015), they expected that the rise of World income will increase the tourism demand. Uysal and Crompton (1984) found that the larger amount of high income population in a country, the more citizens able to afford to purchase foreign tourism.

According to Cheng, Chen, Chung, Chen, and Li (2016), they also found that the number of Chinese citizens that capable to travel aboard increased as their income increased significantly once the economy has grown. The economic expansion also effect tourists travel abroad from the fact that they are willing to spend their money on a larger variety of goods and services (Harcombe, 2013). Samimi, Sadeghi, and Sadeghi (2011) also found that the relationship between GDP and tourism demand is bilateral causality and positive. Due to the expansion in countries economy, the government will aim to promote and provide tourism facilities to enhance the tourism industries. Likewise, as the economy has grown in developing countries can effects the tourism demand by improve or develop infrastructure and tourism facilities into tourism industry.

In the result from Habibi, Rahim, Ramchandran, and Lee (2015), they expected that their origin income increase in Malaysia, the number of tourist arrivals in Malaysia by its residents will also increase. Thus, the expected relationship between GDP and tourism demand is positive relationship.

### 3.2.2 Trade

In general, trade is a part of service sector which is including tourism demand. To advance tourism industry or activities, Santana, Ledesma, and Perez (2011) found that international trade stimulates a country to exploit and improve indispensable infrastructures, such as communication systems and transportations in order to attract more tourists or travellers and also necessary for tourism activities to function. Their result also showed that the availability of products increases when there is a strong international trade between countries. For example, the trade allows tourists or travellers easily find their products which they usually purchase from their own country. Besides that, they also found out that when a country has transaction with other country, it will create interest among consumers about the sources countries and improve tourism demand.

According to Gauton, and KG (2012), they found that most o the business travellers are tend to purchase or sell some products once they arrive in certain country. Thus, product arrival which is trade from a country to another country will rise the interest of consumers and notice about the product and source country. Therefore, a success business travel leads to export sales and import purchase which turn to lead tourism demand increases. Based on the result from Leitao (2010), he found that trade helps to reduce the transaction costs of international travel and the search costs of the destination country. So, it proof that international trade is positive related with tourism demand. Thus, in this study, we expected that there is positive relationship between tourism demand and trade.

### 3.2.3 Exchange Rate

In the research of Uysal and Crompton (1984), they found that exchange rate plays a very important role in tourism demand. Therefore, exchange rate will significantly effect on tourism demand. The changes in price of foreign currency will directly influence to the tourists or the travellers. Thus, when there is a

decrease in price of one country's currency, the travellers or tourist are likely to purchase more goods and services. For instance, if the price of the domestic currency decline in the next 2 years, the tourists or traveller from the foreign countries would demand more travel services from the domestic country from the next 2 years.

On the other point of view, in the Ministry of Tourism (2007) showed that the tourists travellers are very sensitive about to the changes of the exchange rates. For example, the amount of tourists decline when the exchange rates increase because the domestic currency appreciate. Thus, the tourists or travellers are less likely to demand travel goods and services. Therefore, we expected the relationship between tourism demand and exchange rate is negative in our study.

### 3.2.4 Consumer Price Index (CPI)

Familiarly, we know that when the travelling cost increase, there are inflation happens. So, the number of travellers or tourists will decrease. According to Yong (2017), he found that the most important matter in tourism demand is the consumption of consumers because it represents to whether the products are attracting to the consumers. At the same time, in order to attract consumers, tourism industries try to innovate attractiveness to the consumers. But, innovation increase inflation over two decades from the late 1980s to the early 2010s. Inflation can direct effects tourism sector significantly. Thus, when the inflation rise, tourism sector will have negative effects or even slow down. In his study, he proof that inflation have longer, larger and negative effects to tourism sector. Thus, we predict that tourism demand and consumer price index (CPI) have an expected negative relationship in our research.

## 3.3 Data Collection Method

In this study, we are investigating the relationship between tourism demand and its independent variables which are gross domestic product (GDP), trade, exchange rate, and consumer price index (CPI) among selected ASEAN countries included Malaysia, Thailand, Philippines, Indonesia, Laos, Cambodia, Vietnam, and Singapore. We are using these 8 ASEAN countries as the observations of our study. Besides that, the time period in our study is 21 years, which from year 1995 to 2015.

In our research, all the information or data were collected from World Development Indicator. Furthermore, we are using E-view as the computer econometric program to examine our research in order to get the final result.

Table 3.1: Data Collection Summary

| Variable | Proxy | Data sources | Definition |
|---|---|---|---|
| Tourism demand | Tourism arrivals | World Bank | Tourism arrivals measures the number of tourists who travel aboard from a country to another country. |

| | | | |
|---|---|---|---|
| Gross Domestic Product (GDP) | Income | World Bank | GDP is the value of entire finished goods and services produced in a particular country during a particular period of time. All the data can be collected in World Bank. |
| Trade | Trade openness | World Bank | Trade is defined as an activity which buying and selling on goods and services. The data can be found in World Bank |

| | | | |
|---|---|---|---|
| Exchange rate | Exchange rate | World Bank | Exchange rate can be defined as price of a country's currency in terms of another. There are two elements in exchange rate, including domestic currency and foreign currency that either quoted directly or indirectly. |
| Consumer Price Index (CPI) | Inflation | World Bank | Inflation can be explained as a rate at which the prices for goods and services increase and the purchasing power of currency is declining because of the improvement of standard living. |

## 3.4 Econometric Method

We are using balanced panel data in our research. There are few methodologies that were employed including panel unit root test, panel co-integration test and Fully Modified Ordinary Least Square (FMOLS) analysis. The tests included in panel unit root test are Augmented Dickey-Fuller test (ADF), Levin-Lin-Chu test (LLC) and Im-Pesaran-Shin test (IPS). For panel co-integration test, there are 2 tests included namely, Pedroni co-integration test and Kao co-integration test.

### 3.4.1 Panel Data Analysis

Panel data typically refer to cross-sectional time series data. The panel data models provide information containing time series observations of various individual. Observations in panel data set involve both cross-sectional dimension and time-series dimension. Baltagi (2005) and Hsiao (2007) stated that panel data able to control for individual heterogeneity, provides huge number of observations and more degrees of freedom, and better able to capture the dynamic of adjustment in the model.

It also provides more informative data, enhances the accuracy of model parameters and even allows studying more complicated behavioural models than pure time-series or cross-section data. Therefore, panel data analysis was conducted as it able to capture the time-invariant effects and individual unobserved heterogeneity to obtain consistent and unbiased estimation.

### 3.4.2 Panel Unit Root Tests

In order to conduct panel co-integration test, it is first necessary to go through panel unit root test to analyse the stationarity in time series data for all variables. The panel unit root test is used to test whether the series in the model

are stationary or possesses a unit root problem. The purpose of conducting this test is to prevent any biased estimation which leads to invalid results. As cited in Ramirez (2007), researcher Baltagi (2001) stated that the panel based unit root test are more powerful and effective as compared to unit root tests that applied in individual time series. Panel unit root tests are simply multiple series unit root tests that apply in panel data structure which generated as a multiple series with the presence of cross-sections out of a single series.

In addition, panel unit root test is also an important tool to determine the co-integrated relationship which potentially exists among variables in the model. The panel regression will suffer from spurious problems if the model is non stationary and consists of unit root. In this situation, co-integration test need to apply in the model when running the variables in the first differences, for example, stationary I(1) series. There are various types of panel unit root tests and these tests had been categorized into two types. The Fisher-ADF test, Levin, Lin and Chu test (LLC), Im, Pesaran and Shin test (IPS) and Breitung test is use to estimate regression with lagged difference terms while the Levin, Lin and Chu test (LLC), Hadri test and Fisher-PP test is use to estimate the regression with kernel weighting. In this study, Fisher-ADF test, Levin, Lin and Chu test (LLC) and Im, Perasan and Shin test (IPS) will be performed to determine the stationarity of the variables.

#### 3.4.2.1 Augmented Dickey-Fuller test (ADF)

Augmented Dickey-Fuller (ADF) test is one of the unit root tests which can handle larger and more complicated set of time series models than the Dickey-Fuller test. In econometrics, Augmented Dickey-Fuller (ADF) test is categorized as a parametric test used to test for a unit root in time series data. According to Dickey and Fuller (1979), Augmented Dickey-Fuller test is an augmented version of the original Dickey-Fuller test by adding lagged dependent variables into the model for larger and more complicated set of time series models. In this case, the error terms assumed to be correlated, an augmented version of Dickey-Fuller test which includes extra lagged term of dependent variable is conducted to remove

autocorrelation. The Akaike Information Criterion (AlC) or Schwartz Bayesian Criterion (SBC) can be used to determine the lag length on the extra terms (Asteriou & Hall, 2007).

There are three version of the model in the ADF test where the first type is the model with no constant and no trend, the second type is the model with constant but no trend and the third type is the model with constant and with trend. The Augmented Dickey-Fuller (ADF) statistic used in the test is always be a negative number and the larger the negative values, the stronger the rejection of the null hypothesis (Hill, Griffiths, & Lim, 2011). Hence, it can be concluded that series has no unit roots and stationary.

#### 3.4.2.2 Levin-Lin-Chu Test (LLC)

Levin-Lin-Chu test (LLC) is an extension of Augmented Dickey-Fuller test which use to estimate the pooled first-order autoregressive parameter.
LLC test is based on ADF regression:

$$\Delta Y_{i,t} = \alpha_{it-1} + \beta_{0i} + \beta_{1i}t + \varepsilon_{it}$$

Where:
$i$ = 1,2,3,... , N ; $t$ = 1,2,3,..., T

Hypotheses:

$H_0$: There is a unit root (Non-stationary)

$H_1$: There is no unit root (Stationary)

Based on the model, both individual effects, $\beta_{0i}$ and unit specific time trends, $\beta_{1i}t$ are incorporated. The deterministic components are crucial source of heterogeneity due to coefficient of the lagged dependent variable is restricted to be

homogeneous across all units of the panel. The error process $\varepsilon_{it}$ is assumed to be independently and identically distributed across individuals. In addition, the error term follow stationary autoregressive moving-average process for each individual at:

$$\varepsilon_{it} = \sum_{j=1}^{\infty} \theta_{ij} \varepsilon_{it-j} + \varepsilon$$

LLC test is effective when the individual cross-sections are identical with autoregressive roots. However, the test has been found for being not applicable in case the cross-sectional correlation is present and for the formulation of hypothesis referring to identical individuals (Levin, Lin, & Chu, 2002).

### 3.4.2.3 Im–Pesaran–Shin test

In this study, we have chosen Im, Pesaran and Shin test (IPS) which is based on the procedure of Dickey-Fuller. Im, Pesaran and Shin (2003) denoted a more flexible and simple unit root test in panels that combines the information from time series data as well as cross sectional dimension. The test allows for residual serial correlation, dynamics heterogeneity and error variances across groups.

IPS applied likelihood framework that based on the average of statistics from the individual Augmented Dickey-Fuller (ADF) regression in the panel instead of pooling it when the error term, $\varepsilon_{it}$ is serially correlated with different serial correlation patterns as well as N and T in the model are sufficiently large. The test begins by specifying a linear trend for each of the cross-section with individual effects and substituting $\varepsilon_{it}$ to the model:

$$\Delta y_{it} = \alpha_i + \rho_i y_{i,t\ 1} + \sum_{j=1}^{p_i} \beta_{ij} \Delta y_{i,t\ j} + \varepsilon_{it}$$

Where $i = 1, 2, 3, \ldots, N$ ; $t = 1, 2, 3, \ldots, T$

## 3.4.3 Panel Co-integration Test

After testing for stationarity by using unit root test, we employed the panel co-integration test to determine whether there exists co-integrating relationships between the variables. In the recent decades, there were increasingly researchers involving panel data in their studies which complied of time-series and cross-sectional dimensions. Followed by the introducing of panel unit root tests, panel co-integration tests appeared in the literature since the late 1990s in the desire of increasing its power by exploiting the cross-sectional dimension (Hadri, Kurozumi, and Rao, 2015). Most of the macroeconomic time series are non-stationary in their levels but stationary in differences. If we apply ordinary least square method on these non-stationary variables, it will cause spurious result in which the estimates are biased and inconsistent. Thus, co-integration test is used to identify whether there is a long-run equilibrium relationship in the variables. If the variables are co-integrated; which means long-run relationship exists, the variables will have same stochastic trends and thus will not drift far apart. Any regression on these non-stationary variables will not suffer from losing the important long term information (Bilgili, 1998). The test we employed in our studies are the residual-based Pedroni Co-integration Test and Kao Co-integration Test.

### 3.4.3.1 Pedroni (Engle-Granger Based) Co-integration Test

The Engle-Granger (1987) co-integration test is a residual-based test that examine the residuals of a spurious regression performed using I(1) variables. Residuals will be I(0) if the variables are co-integrated while on the other hand, it will be I(1) if the variables are not co-integrated. Pedroni (1999) proposed the co-integration test which allows for heterogeneous intercepts and trend coefficients across cross-sections. The model of regression is as follows:

$$y_{it} = \alpha_i + d_i t + \beta_{1i}x_{1it} + \beta_{2i}x_{2\,it} + \ldots + \beta_{Mi}x_{M\,it} + e_{it},\ t = 1, \ldots, T;\ i = 1, \ldots, N$$

where,

$t = 1, \ldots, T; i = 1, \ldots, N$

T = number of observations over time

N = number of individual members in the panel

M = number of independent variables

Slope coefficients $\beta_{1i}, \ldots, \beta_{M\,i}$ and the member specific intercept $\alpha_i$ can differ across each cross-section. This test follows the hypothesis below:

Null hypothesis:

$H_0$: $\rho_i = 1$ where $i = 1, \ldots, N$ (No co-integration)

Alternative hypothesis for within-dimension-based statistics:

$H_1$: $(\rho_i = \rho) < 1$ where $i = 1, \ldots, N$ (Has co-integration)

Alternative hypothesis for between-dimension-based statistics:

$H_1$: $\rho_i < 1$ where $i = 1, \ldots, N$ (Has co-integration)

Based on the null hypothesis of no co-integration, the residuals $e_{it}$ should be I(1). Thus, the approach of this test is to obtain the residuals from the above equation and test whether the residuals are I(1) by using the auxiliary regression:

$$e_{it} = \rho_i e_{it-1} + u_{it}$$

Then, the residuals will be used to calculate the test statistics for within-dimension (the panel-ρ and panel-t statistic) and between-dimension (the group-ρ and group-t statistic). There are a total of seven test statistics where four statistics are for within-dimension while three statistics are for between-dimension.

Within-dimension (panel test)

1. Panel *v*-statistic

$$T^2N^{\frac{3}{2}}Z_{\hat{V}N,T} \equiv T^2N^{\frac{3}{2}}\left(\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{e}_{i,t-1}^2\right)^{-1}$$

2. Panel Phillips-Perron (PP) type *p*-statistics

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

3. Panel Phillips-Perron (PP) *t*-statistics (Non-parametric)

$$Z_{tN,T} \equiv \left(\tilde{\sigma}_{N,T}^2\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{e}_{i,t-1}^2\right)^{-1/2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

4. Panel augmented Dickey Fuller (ADF) *t*-statistics (parametric)

$$Z_{tN,T}^{*} \equiv \left(\tilde{S}_{N,T}^{*2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{e}_{i,t-1}^{*2}\right)^{-1/2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\left(\hat{e}_{i,t-1}^{*}\Delta\hat{e}_{i,t}^{*}\right)$$

Between-dimension (group test)

5. Group Phillips-Perron (PP) type *p*-statistics (parametric)

$$TN^{-1/2}\tilde{Z}_{\tilde{\rho}N,T-1} \equiv TN^{-1/2}\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{e}_{i,t-1}^2\right)^{-1}\sum_{t=1}^{T}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

6. Group Phillips-Perron (PP) *t*-statistics (non-parametric)

$$N^{-1/2}\tilde{Z}_{tN,T-1} \equiv N^{-1/2}\sum_{i=1}^{N}\left(\hat{\sigma}_i^2\sum_{t=1}^{T}\hat{e}_{i,t-1}^2\right)^{-1/2}\sum_{t=1}^{T}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

7. Group augmented Dickey-Fuller (ADF) *t*-statistics (parametric)

$$N^{-1/2}\tilde{Z}_{tN,T}^{*} \equiv N^{-1/2}\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{S}_i^{*2}\hat{e}_{i,t-1}^{*2}\right)^{-1/2}\sum_{t=1}^{T}\left(\hat{e}_{i,t-1}^{*}\Delta\hat{e}_{i,t}^{*}\right)$$

Decision rule: Reject $H_0$ if P-value is smaller than $\alpha$ (0.05). Otherwise, do not reject $H_0$.

### 3.4.3.2 Kao (Engle-Granger Based) Co-integration Test

The approach of Kao test is similar to that of Pedroni test. It specifies the case where the co-integration vectors are homogenous between individuals (Barbieri, 2014). Kao test does not allow for heterogeneity under alternative hypothesis as compared to Pedroni test. It follows the model:

$y_{it} = \alpha_i + \beta x_{it} + e_{it}, \ t = 1, \ldots, T; i = 1, \ldots, N$

where,

$y_{it} = y_{it-1} + u_{it}$

$x_{it} = x_{it-1} + \varepsilon_{it}$

$\alpha_i$ = fixed effects varying across cross-section observations

$\beta$ = slope parameter common across i

$u_{it}$ = constant terms

Hypothesis:

$H_0$: $\rho = 1$

$H_1$: $\rho < 1$

There are two types of tests included which are the Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) type of tests. For the calculation of DF test statistic, it follows the formulas as:

$$DF_\rho = \frac{T\sqrt{N}(\hat{\rho} - 1) + 3\sqrt{N}}{\sqrt{10.2}}$$

$$DF_t = \sqrt{1.25}t_\rho + \sqrt{1.875N}$$

$$DF_{\rho}^{*} = \frac{\sqrt{N}T(\hat{\rho}-1)+3\sqrt{N}\hat{\sigma}_{v}^{2}/\hat{\sigma}_{0v}^{2}}{\sqrt{3+36\hat{\sigma}_{v}^{4}/(5\hat{\sigma}_{0v}^{4})}}$$

$$DF_{t}^{*} = \frac{t_{\rho}+\sqrt{6N}\hat{\sigma}_{v}/(2\hat{\sigma}_{0v})}{\sqrt{\hat{\sigma}_{0v}^{2}/(2\hat{\sigma}_{v}^{2})+3\hat{\sigma}_{v}^{2}/(10\hat{\sigma}_{0v}^{2})}}$$

On the other hand, for ADF test statistic, the formula is:

$$ADF = \frac{t_{\hat{\rho}}+\sqrt{6N}\hat{\sigma}_{v}/(2\hat{\sigma}_{0v})}{\sqrt{\hat{\sigma}_{0v}^{2}/(2\hat{\sigma}_{v}^{2})+3\hat{\sigma}_{v}^{2}/(10\hat{\sigma}_{0v}^{2})}}$$

Decision rule: Reject $H_0$ if P-value is smaller than $\alpha$ (0.05). Otherwise, do not reject $H_0$.

### 3.4.4 Fully Modified OLS Analysis (FMOLS)

Lastly, after proved that there is a long-run equilibrium relationship among the variables, we continue employ the fully modified OLS test to generate individual long-run estimates. This OLS test was originally proposed by Phillips and Hansen (1990) to estimate a single co-integrating relationship which has a combination of I(1) (Bashier & Siam, 2014). Then, Phillips and Moon (1999), Pedroni (2000) and Kao and Chiang (2000) had further extended this test to panel settings. There are three different types of FMOLS estimators, namely pooled, weighted and group-mean FMOLS. Here, we employed the weighted FMOLS which takes into account for heterogeneous co-integrated panels in which the long-run variances among each cross-section are different. This fully modified OLS estimator can generate consistent and unbiased estimates of the $\beta$ parameters in the small sample size data (Ramirez, 2007).

## 3.5 Conclusion

As a conclusion, this chapter mainly discussed on the methodology that was going to be used to test for the result. This chapter includes the basic empirical model and the sources of data. All of the data were taken from World Bank. Besides, the variables specification of measurements and the proxy of each variable were described clearly. Eviews 9 software will be used on the following chapter to run for the data analysis and the results will be further interpreted and discussed.

# CHAPTER 4: DATA ANALYSIS

## 4.0 Introduction

In this chapter, we focused on the results and interpretation of relationship between tourism demand and its independent variables in 8 ASEAN countries covers from the period of 1995-2015. As outlined in Chapter 3, the empirical results for panel unit root tests such as the Levin et al. (2002) (LLC), Im et al. (2003) (IPS) test and ADF-Fisher Chi Square, followed by panel co-integration test such as Pedroni and Kao co-integration test are presented. The LLC, IPS and ADF-Fisher test are conducted to examine the stationarity of the series. In addition, Pedroni and Kao co-integration test are employed to identify the long run relationship between the explanatory variables. The regression results for FMOLS which generate individual long run estimates are revealed. Lastly, further details about the relationship between tourism demand and independent variables are discussed in the subsections.

# 4.1 Unit Root Tests

Table 4.1: Results of Panel Unit Root Tests

| | Test Statistics | | | | | |
|---|---|---|---|---|---|---|
| | ADF-Fisher Chi Square | | LLC | | IPS | |
| Variables | Statistic | $\rho$ | Statistic | $\rho$ | Statistic | $\rho$ |
| **Level** | | | | | | |
| **LN Tourism Arrival** | 21.1339 | (0.1734) | -0.97948 | (0.1637) | -0.58591 | (0.2790) |
| **LN GDP** | 14.6502 | (0.5504) | -1.12378 | (0.1306) | -0.05384 | (0.4785) |
| **LN ER** | 19.9654 | (0.2218) | 4.20475 | (1.0000) | -0.14201 | (0.4435) |
| **LN TR** | 21.6080 | (0.1563) | -2.09542** | (0.0181) | -1.11389 | (0.1327) |
| **LN CPI** | 13.0734 | (0.6674) | -0.23350 | (0.4077) | 1.10376 | (0.8652) |
| **First Difference** | | | | | | |
| **Δ LN Tourism Arrival** | 95.2418*** | (0.0000) | -7.96766*** | (0.0000) | -8.86317*** | (0.0000) |
| **Δ LN GDP** | 58.5261*** | (0.0000) | -7.23862*** | (0.0000) | -5.56977*** | (0.0000) |
| **Δ LN ER** | 50.3107*** | (0.0000) | -6.31340*** | (0.0000) | -4.68463*** | (0.0000) |
| **Δ LN TR** | 96.0276*** | (0.0000) | -5.34564*** | (0.0000) | -8.89550*** | (0.0000) |
| **Δ LN CPI** | 78.3345*** | (0.0000) | -7.66508*** | (0.0000) | -7.40229*** | (0.0000) |

Note: *, **, *** indicate p-value significant at 10%, 5% and 1% respectively.

In order to carry out co-integration test, all variables need to be stable in first difference of the series, which follow the I(1) process. Therefore, it is first necessary to carry out unit root analysis. In this study, ADF-Fisher Chi Square, LLC and IPS test has been performed to investigate the presence of unit root in difference series. The three unit root tests use the null hypothesis of all the cross-units is non-stationary, which contains a unit root. LLC test is very restrictive in testing unit root as it based on the assumption cross-sectional independence which having the same autoregressive parameter. This indicates that it does not allow the existence of intermediate case, where some countries in the series subject to a unit root while others are not. While the IPS and ADF-Fisher test is not restrictive as LLC test as it allows for heterogeneous parameters which it allows the presence of unit roots in some countries in the series while others are not.

The results of panel unit root test for level and first difference form are given in Table 4.1. LLC test indicates that trade openness of the countries is stationary, which means that the null hypothesis of non-stationary is rejected at 5% significant level. The results for ADF-Fisher and IPS test indicate that all variables are non-stationary in the level form. In order to achieve the stationary, we should proceed to first difference form. The results of the three panel unit root tests suggest that the null hypothesis of non-stationary can be rejected at 1% significant level which concludes that all variables turn into stationary series in the first difference. Hence, there are strong evidence to show that each variable is integrated of order one. The results obtained also indicate that the panel data analysis will not suffer from spurious result. Given the results of ADF-Fisher, LLC and IPS tests, it is possible to conduct panel co-integration test to identify the existence of long run relationship between the variables.

## 4.2 Panel Co-integration Test

Table 4.2 Results of Pedroni Residual Co-integration Test

| Test Statistic | |
|---|---|
| Panel co-integration statistics (within dimension) | |
| Panel v-statistic | 0.672542 (0.2506) |
| Panel rho-statistic | 0.342455 (0.6340) |
| Panel PP-statistic | -2.348811 (0.0094) *** |
| Panel ADF-statistic | -2.614237 (0.0045) *** |
| Group mean panel co-integration statistics (between-dimension) | |
| Group rho-statistic | 1.452268 (0.9268) |
| Group PP-statistic | -2.250356 (0.0122) ** |
| Group ADF-statistic | -2.508638 (0.0061) *** |

Table 4.3 Results of Kao Residual Co-integration Test

| | |
|---|---|
| ADF statistic | -2.486157 (0.0065) *** |

*Note: *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels respectively. The figures without bracket represent test statistic values. Figure in parentheses are the probability of rejection. The lag length is selected automatically based on SIC.*

Based on the panel unit root test result, all the explanatory variables are integrated of order one. Hence, we can proceed to co-integration test to determine the existence of long run equilibrium relationship among the variables. Here, we employed two tests, namely Pedroni co-integration test and Kao co-integration test.

The null hypothesis is that the variables are not co-integrated whereas alternative hypothesis states that the variables are co-integrated with each other. We checked the result based on the weighted test statistic and its probability. If the probability is smaller than the significance level, we will reject the null hypothesis, showing that the variables are co-integrated.

For the Pedroni test, there are 3 out of 7 statistics which are significant at 1% and the Group PP-statistic is significant at 5%. Basically, we can conclude that there are 4 out of 7 statistics rejecting the null hypothesis of no co-integration. We have further compared this result with the Kao test. For the Kao test, the ADF statistic is also significant at 1%, rejecting the null hypothesis. Thus, we have strong evidence to prove that there exists a long run co-integrating relationship among all the explanatory variables.

## 4.3 Fully Modified Ordinary Least Square (FMOLS)

Table 4.4 Results of FMOLS analysis

| Variable | Coefficient | Std.Error | Probability |
|---|---|---|---|
| LN GDP | 0.691981 | 0.021325 | 0.0000 |
| LN TR | 0.780566 | 0.045057 | 0.0000 |
| LN ER | -0.082648 | 0.010103 | 0.0000 |
| LN CPI | 0.409462 | 0.015211 | 0.0000 |
| R-squared | 0.949939 | | |
| Adjusted R-squared | 0.946219 | | |

Based on the results of FMOLS as shown above, we can write the equation as:

$$LN\,(TA)_{it} = 0.691981\,LN(Y)_{it} + 0.780566\,LN(TR)_{it} + (-0.082648)\,LN(ER)_{it} +$$

**(0.021325)** **(0.045057)** **(0.010103)**

$$0.409462\,LN(CPI)_{it}$$

**(0.015211)**

Note: Figures bolded denotes the standard error of the coefficients above.

**Parameters Interpretation:**

$LN(Y)_{it}$ : 0.691981

If the GDP per capita increases by 1%, the number of tourism arrival is expected to increase by 0.691981% on average, holding other variables constant. It is significant at 1% significance level with the probability of 0.0000.

$LN(TR)_{it}$ : 0.780566

If the trade increases by 1%, the number of tourism arrival is expected to increase by 0.780566% on average, holding other variables constant. It is significant at 1% significance level with the probability of 0.0000.

$LN(ER)_{it}$ : -0.082648

If the exchange rate increases by 1%, the number of tourism arrival is expected to decrease by 0.082648% on average, holding other variables constant. It is significant at 1% significance level with the probability of 0.0000.

$LN(CPI)_{it}$ : 0.409462

If the consumer price index increases by 1%, the number of tourism arrival is expected to increase by 0.409462% on average, holding other variables constant. It is significant at 1% significance level with the probability of 0.0000.

**R-Squared Interpretation**

R squared, which is also called coefficient of determination, is used to measure how close the data are to the fitted on the regression line. It calculates the proportion of the dependent variable being explained by independent variables. In the FMOLS result shown above,

$R^2 = 0.949939$

This means that 94.99% of the variation in the number of tourism arrivals is explained by the variation in GDP, TR, ER and CPI.

**Adjusted R-Squared Interpretation**

Adjusted R-Squared is an improved form of the ordinary R-squared where the degree of freedom is being taken into consideration. In the FMOLS result shown above,

Adjusted $R^2$ = 0.946219

This means that 94.62% of the variation in the number of tourism arrivals is explained by the variation in GDP, TR, ER and CPI after taking into account the degree of freedom.

## 4.4 Discussions of Major Findings

### 4.4.1 Gross Domestic Product (GDP)

Based on the result of our research, gross domestic product (GDP) has positive relationship with the tourism demand at 1% significance level. Our result implied that if the GDP increases by 1% its number of tourism arrival is expected to increase 0.691981% on average, holding other variable constant. This is the relationship that we expecting according to our previous research and findings. It shows that the relationship between GDP and number of tourism arrival has a consistently positive relationship based on the findings which the previous researchers have been done in our previous chapter (Martins & Ferreira-Lopes, 2015).

According to Martins and Ferreira-Lopes (2015), they are using Arrivals as proxy for the dependent variable, tourism demand which is similar with our research because we are also using the number of tourist arrival as our tourism demand's proxy. They also mentioned that GDP is the most important factor or determinant when it comes to examine tourism demand because there is highest elasticity in absolute value. Instead of using other proxy for tourism demand, the

relationship will become positive when using Arrivals as proxy for tourism demand, their result shows that there is an increase in the number of people travelling when GDP increases at the same time.

When the GDP increases, it will lead to the tourism industry to enhance the quality of their goods and services and also increase the production of goods and services such as transportation, hotels, catering and others to the tourists or travellers. This obviously shows that the economic is getting well and improvement in goods and services will further attract tourists to visit and the number of tourist arrivals will increase in the same time.

### 4.4.2 Trade

In the empirical result of our research, we have enough evidence to state that the relationship between trade and number of tourism arrival is significance in the long run at 1% significant level. The relationship between trade and tourism arrival shows positive relationship which mean that when there is an increase in trade, the tourism arrival will also increase.

According to Santana-Gallego, Ledesma-Rodriguez, and Perez-Rodriguez (n.d), they were using FMOLS as one of their tests which is same with the test that we used in this research to examine the relationship between tourism arrival and its independent variables. They revealed that there is a positive relationship between tourism arrival and trade. When trade increases by 1%, tourism arrival increases around 1.02% to 1.65%. In their research, they stated that trade is able to promote tourism demand which mean that trade is positively affects tourism demand. An increase in trade between two countries will promote the products and lead to the rise of attractiveness for the tourists. Thus, the tourists will start to travel to the certain country and the thus tourism arrival increases.

In the result from Leitao (2010), he stated that trade has significant and positive effect to the tourism demand. Since there is a positive relationship

between trade and tourism, his result proved that trade partners is the most important factor to enhance tourism industry. For instance, countries export goods and services across foreign countries such as Thailand provides 'Thai massage' in foreign countries; Malaysia provides local foods in foreign countries, and so on. This will increase the attractiveness of the tourists because they feel curious about the goods and services that provided in their countries. Therefore, there is a rise in the number of tourists travelling because they will come to experience the actual local goods and services as they demand in their countries.

### 4.4.3 Exchange rate

In the result that we get, we found that the relationship between tourism arrival and exchange rate is negative at 1% significant level. The result is accurate with what we expected in the previous chapter which is negative sign. The result stated that when exchange rate increases, it will lead to a decline in tourism arrival. In the previous studies, it also mentioned that there is a negative relationship between exchange rate and tourism demand.

In the empirical result from Hanafiah and Harun (2010), they found that when exchange rate of Malaysia rises by 1%, the tourism arrival will decrease by 0.156% in Malaysia. It proved that an increase in exchange rate will negatively affect tourism demand. Uysal and Crompton (1984) also stated that tourism demand is very sensitive to the movement of exchange rate; hence exchange rate has a major and important effect to the tourism demand. In their result, they found that exchange rate is having a negative effect towards tourism demand.

When there is appreciation in a country's currency, the tourists are less likely to demand goods and services when they visit the country because the goods and services will become more expensive. When this happens, tourists are less likely to come and travel. Thus, the increase in exchange rate will lead to a decrease in tourism arrival.

### 4.4.4 Consumer Price Index (CPI)

According to the result that we get, there is a positive relationship between CPI and tourism arrival at 1% significance level. In our result, when CPI increases by 1%, tourism arrival will expected to increase by 0.409462% on average, holding other variable constant. It implies that CPI has a significant and positive effect towards tourism arrival. There are many researchers state that boost up the CPI will let the tourism arrival to raise.

In our research, an increase in CPI will lead to increase in living standard of a country. When the price increases, the quality of goods and services will increase too. Tourists are more likely to demand more for the accommodations, transportations and anything related to tourism industry. Thus, government will spend more to increase and improve tourist industry in order to attract tourists to travel abroad. Tourists will be more enjoy and demand the goods and services without worries because the improvement of quality of the goods and services and also the standard of living.

Hanafiah and Harun (2010) found out that an increase of 1% in CPI in Malaysia results to an increase of 5.366% in tourism arrivals in Malaysia. They also revealed that CPI has significant and positive effect to the tourism demand. They proved that when CPI has high value in a country, the government of the country will put a lot of money on the development in order to improve the living condition and also enhance the tourism industry in the country. When there is an advance improvement in country's living condition, it will attract and encourage tourists to come and visit. Thus, the number of tourism travelling will increase.

## 4.5 Conclusion

In this section, we have clearly interpreted and discussed on the results that have been generated. The results of each test were presented in the form of table. Besides, the discussions of major findings have been included also. We have discussed on the relationship of each independent variables with our dependent variable with the proven of journals. In the following chapter, there will be the summary of study, policy implications, limitations and recommendations.

# CHAPTER 5: CONCLUSION, IMPLICATION, LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

## 5.0 Introduction

In this chapter, the evaluation of major findings and policy implications on the relationship of tourism demand with all independent variables (GDP, trade, exchange rate and CPI) in 8 selected ASEAN countries will be discussed. Furthermore, we have highlighted some limitations arise in this study and recommendations for future research are provided.

## 5.1 Summary and Conclusion

In our research, we have chosen 8 ASEAN countries out of top 10 ASEAN countries based on World Bank ranking at year 2016 as our research target is to determine what impact will these chosen macroeconomic variables have on their tourism demand which is Indonesia, Thailand, Philippines, Malaysia, Singapore, Vietnam, Cambodia and Laos. The countries we chosen is based on the geographical distance between the countries using Singapore as a center point, but we exclude Brunei because the population is too small as compare to others and Myanmar being excluded because it is too far counting from the geographical distance from Singapore. We believe that countries with high gross domestic product will have better performance in tourism industry.

Throughout the study, the panel unit root tests have been carried out to determine the stationarity of series and to avoid the possibilities of spurious regressions problem. Therefore, we applied LLC, IPS and ADF-Fisher Chi Square test. The empirical result indicated that all the series are stationary in the first difference and follow I(1) process. Hence, we proceed to Pedroni and Kao co-

integration test to examine whether there is long run relationship exists between each explanatory variable. According to the empirical result, the variables are co-integrated and proving the long run relationship among all the explanatory variables. In other words, it means that the GDP, exchange rate, trade and relative price are move together in the long run. Besides, the variables have a stable long run relationship among each other.

Furthermore, the FMOLS test has been applied to generate long run estimate including the interpretation of coefficients. The empirical results in FMOLS show that all the explanatory variables are significant to explain our dependent variable, tourism arrival. GDP, trade and CPI have a positive relationship with tourism arrival whereas exchange rate has a negative relationship. For the interpretation of R-squared, there is 94.99% of the variation in the number of tourism arrivals is explained by the variation in GDP, trade, exchange rate and CPI.

In conclusion, it is important to know the determinants and their impact towards tourism demand, especially for the government, policy makers and investors. The certain past studies and journals have been reviewed in order to capture a clear picture of the factors affecting tourism.

Besides of examine the relationship between gross domestic product (GDP), trade, exchange rate and CPI and tourism demand in these 8 ASEAN countries, this study also identified the stationarity of series and long run equilibrium relationship among variables. All of the methodologies of this panel data analysis are widely discussed in this paper.

Lastly, based on the empirical results and major findings, this research can be conclude that the gross domestic product (GDP), trade, exchange rate and CPI are significant determinants of tourism demand in the 8 ASEAN countries. The policy implication, limitation and recommendation for future studies are widely discussed in the following subsections.

## 5.3 Policy Implications

Tourism contributes large impact to economy, it is one of the main income source for a country. On the other hand, tourism also creates job opportunity for that country. So, it was interest to examine the determinants of tourism demand. Based on our findings, we have some suggestion for policy makers that may improve in tourism demand and booth up the economy.

First of all, our findings showed there is positive relationship between tourism demand and GDP. In other words, a country with good income will attract more tourists. The first reasons is it represents local government has more available capital to improve tourist destination and facilities. Government which had their efforts on tourism industry proved that they appreciate all the travelers and wanted them to enjoy their trips at it best. Also, GDP give an overall figure for the tourists, a country with high GDP tend to show the country having a higher standard and living and also the higher education. High standard of living included safe and secure, with higher education, they will be lesser uneducated people who cannot find their work place and at the end turn into a criminal for survival. It will be great if the government could always put effort into industry like tourism who could bring a lot of benefits to the local and also foreigner.

Second, from our empirical results proved the negative relationship was exists in tourism demand and exchange rate. The high exchange rate means tourists have less purchasing power in tourist destinations. The higher foreign exchange rate, the lesser tourists will get foreign currency, tourists will need more home currency to exchange foreign currency. Tourist will prefer to choose the country with stable and lower exchange rate as destinations. Next, weak currency will reduce trade deficit due to cheaper local goods, so demand for export will increases. But as weak know, if the government continue to let the currency to stay week, by the time pass, the import of the country will be reduced, thus it might affect the relationship with other countries as a trading partner. Government should not be holding on the currency rate all the time but tactically to achieve their goals.

Next, our results showed consumer price index (CPI) is positively related with tourism demand. This result was different from our expectation, in common CPI will have positive relationship with tourism demand because CPI is represent relative price, if relative price in that country is high means the cost of living is high. Tourists need to pay more for accommodation, transportation and food when travel. In contrast, CPI high represent the country have higher standard of living, tourist will more enjoy when travel. Also, it represent government was spent much money on improve standard living and encourage tourists inbound so it made CPI increases. So, government should focus on increasing CPI but not too much.

Last but not least, from our empirical results show tourism demand and trade is positive relationship. More trade with other countries will stimulate higher tourism demand. In the sense that, more trades also mean more business travel will be needed. On the other hand, consumer could be attracted by the imported product and wish to visit the country to explore more products. There is also possible that the researcher will interested into others development and wish to learn from it and bring back to their homeland with own improvement on it. Increase in trade openness also means increase in revenue for the economy, it is a good deal for government to work on.

## 5.4 Limitations

Through our study, we found out some limitations which could obstruct us to get the correct result in the previous chapter and unable to obtain the perfect model in our study. But we must know, it is impossible to get a perfect result or research because there are some limitations exist in studies.

First of all, the first limitation in our study is there are limited information or data can be collect from World Development Indicator. In our study, we use only year 1995 to year 2015 as our time period to examine our research. Due to the lack of information or data, we are unable to collect a long period of sufficient

data to estimate our result perfectly. For instance, we could out find the data of consumer price index (CPI) the year before 1995 in Vietnam. Besides that, some of the countries do not have data after year 2016. Thus, this will negatively affect our result in our research. Basically, our sample size is deemed to be small. Most of the previous, the researchers usually collect a larger data or simple size to run their test in order to obtain a good result in their researches. But in this case, we could not capture the result that we expected in the previous. For example, we could not get a perfect result which we expected in the Fully Modified Ordinary Least Square test. Besides that, most of the previous studies are discussed more about developed and developing countries. Yet the information about ASEAN countries are limited and this will seriously affect our research as well.

Secondly, inadequate theories of several variable is one of the biggest problem in our research. In general, majority of theories of the tourism demand are more follow by primary data instead of secondary data. Therefore, this is a challenges for us to find appropriate theories for our study. Through to this matter, this study is hard to conduct a sufficient review of relevant theoretical models to sustain the selected variable.

## 5.5 Recommendations for Future Research

After finding out the limitations in our study, there are some recommendations that we suggested for future researchers in order to improve their results in this area. Firstly, we recommend that future researchers can obtain bigger pool of data from other reliable data sources as bigger data produces more accurate result. Our limitation states that due to the lack of time period for certain countries, we decided to involve only 8 ASEAN countries in our study. Hence, it is recommended that future researchers can involve more countries when they are using panel data method in their research. When the number of cross observations is larger than the number of years, they can perform dynamic panel model to estimate their result. Furthermore, latest data is encouraged to be included so that the entire research is more efficient and the result obtained is more reliable.

Second, future researchers are recommended to apply different approach of data collection such as primary research in their study. Most of the studies using secondary data and including Eview test in the estimation of result. However, the results from data may not fully explain the factors that affect tourism arrivals as they neglect the information from each individual. Researchers may collect primary data through interview, survey questionnaire, and observations. Interview sessions can be carried out on a personal one-to-one basis or in a small group. For survey questionnaire, it involves bigger group of people and the average result will be calculated. Lastly, observation provides clearer understanding about the behaviour of people with a fair judgement on different individual. Thus, primary data collection method may well explain how tourism arrival is affected by producing a better result.

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# Appendices

## Appendix A

### 1.1 Panel Unit Root Test at Level Form

1.1.1 Tourism demand

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: TA
Date: 04/14/18 Time: 23:05
Sample: 1995 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -0.97948 | 0.1637 | 8 | 157 |
| Breitung t-stat | -0.93356 | 0.1753 | 8 | 149 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -0.58591 | 0.2790 | 8 | 157 |
| ADF - Fisher Chi-square | 21.1339 | 0.1734 | 8 | 157 |
| PP - Fisher Chi-square | 12.1066 | 0.7366 | 8 | 160 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.1.2 GDP

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: Y
Date: 04/14/18 Time: 23:07
Sample: 1995 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -1.12378 | 0.1306 | 8 | 155 |
| Breitung t-stat | 1.52444 | 0.9363 | 8 | 147 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -0.05384 | 0.4785 | 8 | 155 |
| ADF - Fisher Chi-square | 14.6502 | 0.5504 | 8 | 155 |
| PP - Fisher Chi-square | 22.7592 | 0.1203 | 8 | 160 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.1.3 Trade

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: TR
Date: 04/14/18 Time: 23:08
Sample: 1995 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -2.35954 | 0.0091 | 8 | 151 |
| Breitung t-stat | 0.57798 | 0.7184 | 8 | 143 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -3.39053 | 0.0003 | 8 | 151 |
| ADF - Fisher Chi-square | 44.7087 | 0.0002 | 8 | 151 |
| PP - Fisher Chi-square | 28.0441 | 0.0312 | 8 | 160 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.1.4 Exchange rate

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: ER
Date: 04/14/18 Time: 23:10
Sample: 1995 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | 4.20475 | 1.0000 | 8 | 146 |
| Breitung t-stat | 0.45833 | 0.6766 | 8 | 138 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -0.14201 | 0.4435 | 8 | 146 |
| ADF - Fisher Chi-square | 19.9654 | 0.2218 | 8 | 146 |
| PP - Fisher Chi-square | 46.5483 | 0.0001 | 8 | 160 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.1.5 CPI

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: CPI
Date: 04/14/18 Time: 23:11
Sample: 1995 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -21.0038 | 0.0000 | 8 | 148 |
| Breitung t-stat | 1.42041 | 0.9223 | 8 | 140 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -11.2626 | 0.0000 | 8 | 148 |
| ADF - Fisher Chi-square | 58.7895 | 0.0000 | 8 | 148 |
| PP - Fisher Chi-square | 8.90188 | 0.9174 | 8 | 160 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

## 1.2 Panel Unit Root Test at First Different form

1.2.1 Tourism demand

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: D(TA)
Date: 04/14/18 Time: 23:16
Sample: 1995 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -7.96766 | 0.0000 | 8 | 146 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -8.86317 | 0.0000 | 8 | 146 |
| ADF - Fisher Chi-square | 95.2418 | 0.0000 | 8 | 146 |
| PP - Fisher Chi-square | 103.122 | 0.0000 | 8 | 152 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

1.2.2 GDP

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: D(Y)
Date: 04/14/18 Time: 23:17
Sample: 1995 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -7.23862 | 0.0000 | 8 | 152 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -5.56977 | 0.0000 | 8 | 152 |
| ADF - Fisher Chi-square | 58.4261 | 0.0000 | 8 | 152 |
| PP - Fisher Chi-square | 57.9728 | 0.0000 | 8 | 152 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.2.3 Trade

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: D(TR)
Date: 04/14/18 Time: 23:22
Sample: 1995 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -5.34564 | 0.0000 | 8 | 143 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -8.89550 | 0.0000 | 8 | 143 |
| ADF - Fisher Chi-square | 96.0276 | 0.0000 | 8 | 143 |
| PP - Fisher Chi-square | 175.305 | 0.0000 | 8 | 152 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.2.4 Exchange rate

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: D(ER)
Date: 04/14/18 Time: 23:24
Sample: 1995 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -6.31340 | 0.0000 | 8 | 147 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -4.68463 | 0.0000 | 8 | 147 |
| ADF - Fisher Chi-square | 50.3107 | 0.0000 | 8 | 147 |
| PP - Fisher Chi-square | 46.8964 | 0.0001 | 8 | 152 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

### 1.2.5 CPI

Null hypothesis: Panel data has unit root

Alt hypothesis: Panel data has not unit root

Panel unit root test: Summary
Series: D(CPI)
Date: 04/14/18 Time: 23:25
Sample: 1995 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -7.66508 | 0.0000 | 8 | 146 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -7.40229 | 0.0000 | 8 | 146 |
| ADF - Fisher Chi-square | 78.3345 | 0.0000 | 8 | 146 |
| PP - Fisher Chi-square | 54.6396 | 0.0000 | 8 | 152 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Appendix B**

## 2.1 Panel Co-integration Test

### 2.1.1 Predoni Residual Co-integration Test

Pedroni Residual Cointegration Test
Series: TA Y TR ER CPI
Date: 04/14/18 Time: 23:27
Sample: 1995 2015
Included observations: 168
Cross-sections included: 8
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Automatic lag length selection based on SIC with a max lag of 3
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

| | Statistic | Prob. | Weighted Statistic | Prob. |
|---|---|---|---|---|
| Panel v-Statistic | 0.868716 | 0.1925 | 0.672542 | 0.2506 |
| Panel rho-Statistic | 0.322432 | 0.6264 | 0.342455 | 0.6340 |
| Panel PP-Statistic | -2.357663 | 0.0092 | -2.348811 | 0.0094 |
| Panel ADF-Statistic | -2.430844 | 0.0075 | -2.614237 | 0.0045 |

Alternative hypothesis: individual AR coefs. (between-dimension)

| | Statistic | Prob. |
|---|---|---|
| Group rho-Statistic | 1.452268 | 0.9268 |
| Group PP-Statistic | -2.250356 | 0.0122 |
| Group ADF-Statistic | -2.508638 | 0.0061 |

### 2.1.2 Kao Residual Co-integration Test

Kao Residual Cointegration Test
Series: TA Y TR ER CPI
Date: 04/14/18 Time: 23:32
Sample: 1995 2015
Included observations: 168
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
Automatic lag length selection based on SIC with a max lag of 4
Newey-West automatic bandwidth selection and Bartlett kernel

| | t-Statistic | Prob. |
|---|---|---|
| ADF | -2.486157 | 0.0065 |
| Residual variance | 0.018958 | |
| HAC variance | 0.021150 | |

**Appendix C**

**Panel Fully Modified Least Squares (FMOLS)**

Dependent Variable: TA
Method: Panel Fully Modified Least Squares (FMOLS)
Date: 08/28/17 Time: 14:39
Sample (adjusted): 1996 2015
Periods included: 20
Cross-sections included: 8
Total panel (balanced) observations: 160
Panel method: Weighted estimation
Cointegrating equation deterministics: C
Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| Y | 0.691981 | 0.021325 | 32.44972 | 0.0000 |
| TR | 0.780566 | 0.045057 | 17.32381 | 0.0000 |
| ER | -0.082648 | 0.010103 | -8.180695 | 0.0000 |
| CPI | 0.409462 | 0.015211 | 26.91967 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.949939 | Mean dependent var | 15.20732 |
| Adjusted R-squared | 0.946219 | S.D. dependent var | 1.227480 |
| S.E. of regression | 0.284663 | Sum squared resid | 11.99287 |
| Long-run variance | 0.049490 | | |