A STUDY OF THE FACTORS AFFECTING
THE CHINA TOURIST ARRIVAL IN
THE UNITED STATES

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declaration</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>iv</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>v–vii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>viii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>ix</td>
</tr>
<tr>
<td>Abstract</td>
<td>x</td>
</tr>
</tbody>
</table>

## CHAPTER 1 RESEARCH OVERVIEW

1.0 Introduction 1  
1.1 Background of Study  
1.1.1 Tourist Arrival from China to the United States (Dependent Variable) 4–5  
1.1.2 Exchange Rate (independent variable) 5–7  
1.1.3 Income (independent variable) 7–9  
1.1.4 Terrorism (independent variable) 9–11  
1.1.5 Natural Disasters (independent variable) 11–13  
1.2 Problem Statement 13–16  
1.3 Objective of the Study 17  
1.4 Research Question of the Study 17  
1.5 Significance of the Study 17–18  
1.6 Chapter Layout 18–19  
1.7 Conclusion 19  

## CHAPTER 2 LITERATURE REVIEW

2.0 Introduction 20  
2.1 Exchange Rate and Tourism 20–23
CHAPTER 3 METHODOLOGY

3.0 Introduction 33

3.1 Data Collection Method 33
   3.1.1 Secondary Data 34 – 35
   3.1.2 Dependent Variable Description 35 – 36
   3.1.3 Independent Variable Description 36 – 38

3.2 Data Processing 39

3.3 Model Specification 39 – 40
   3.3.1 Interpretation of Expected Sign 40 – 41

3.4 Method for Analyzing Data 41
   3.4.1 Unit Root Test 41 – 42
   3.4.2 Autoregressive Distributed Lag (ARDL) 42 – 43
   3.4.3 Wald Test 43

3.5 Diagnostic Checking 44
   3.5.1 Multicollinearity 44
   3.5.2 Heteroscedasticity 44 – 45
   3.5.3 Autocorrelation 45 – 46
   3.5.4 Normality Test 47

3.6 Conclusion 47
CHAPTER 4 DATA ANALYSIS

4.0 Introduction 48
4.1 Unit Root Test 49 – 50
4.2 Autoregressive Distributed Lag (ARDL) 50 – 51
4.3 Interpretation of Long Run Elasticity 52 – 53
4.4 Interpretation of Short Run Elasticity 53 – 54
4.5 Diagnostic Checking 54 – 55
4.6 Conclusion 55

CHAPTER 5 CONCLUSION

5.0 Introduction 56
5.1 Summary of Statistical Analyzes 56 – 58
5.2 Discussion of Major Findings 58 – 61
5.3 Implication of the Study 61 – 62
5.4 Limitations and Recommendations of the Study 63
5.5 Conclusion 64

Reference 65 – 74
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 3.1.1: Data Sources (secondary data)</td>
<td>33 – 34</td>
<td></td>
</tr>
<tr>
<td>Table 3.2: Flow Chart – Data Processing</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Table 4.1.1: Result of Unit Root Test (ADF test)</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Table 4.1.2: Result of Unit Root Test (PP test)</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Table 4.2: Result of ARDL</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Table 4.4: Result of Wald Test</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Table 4.5.1: Result of Multicollinearity</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Table 4.5.2: Result of Diagnostic Checking</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Table 5.1.1: Summary of Major Findings</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Table 5.1.2: Summary of Long Run Relationship</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Table 5.1.3: Summary of Short Run Relationship</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Table 5.1.3: Summary of Diagnostic Checking Result</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1</td>
<td>The Number of Tourist Arrival from China to the United States</td>
<td>4</td>
</tr>
<tr>
<td>1.1.2</td>
<td>The Relationship between Exchange Rate between Renminbi (RMB) and United States Dollar (USD) and the Number of Tourist Arrival from China to the United States</td>
<td>6</td>
</tr>
<tr>
<td>1.1.3</td>
<td>The Relationship between GDP Per Capita Growth in China and the Number of Tourist Arrival from China to the United States</td>
<td>8</td>
</tr>
<tr>
<td>1.1.4</td>
<td>The Relationship between the Number of Terrorism Cases Happened in the United States and the Number of Tourist Arrival from China to the United States</td>
<td>10</td>
</tr>
<tr>
<td>1.1.5</td>
<td>The Relationship between the Number of Natural Disaster Cases Happened in the United States and the Number of Tourist Arrival from China to the United States</td>
<td>12</td>
</tr>
<tr>
<td>1.2</td>
<td>Tourist Arrival from China to the United States</td>
<td>15</td>
</tr>
</tbody>
</table>
This study sought to find the relationship between tourist arrival from China to the United States with the economic and non-economic variables such as exchange rate, income (GDP growth per capita), terrorism and natural disaster over the period from year 1990 to year 2014. The present study is based on the published secondary data such as articles, book, journals and others sources of information. Autoregressive Distributed Lag (ARDL) method is applied in the research model in order to investigate the long run relationship between tourist arrival, exchange rate, income, terrorism and natural disaster. In the research result, we find that higher exchange rate, growth in income (GDP growth per capita), increase in number of terrorism and increase in number of natural disaster have a negative impact to the tourist arrival from China to the United States. This study also finds that there is a long run relationship between the tourist arrival, exchange rate and terrorism. These factors play a crucial role in the tourism demand and it should be strategically focused by the government of the United States and related parties.
CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The purpose of this study was mainly to investigate the existence of impacts towards the United States tourist arrivals in terms of different economic and non-economic factors by the China tourists from year 1990 to year 2014. Tourist arrivals to the United States bring contribution to the economic as well as to the whole country as it can help to generate jobs opportunities, prosperity and facilitate to deal with the trades with other countries. There are some factors that affect the tourist arrivals to the United States which are exchange rate, income (GDP growth per capita), terrorism and natural disaster. These economic and non-economic variables are specifically brings the impact to the tourist arrivals to the United States. The country chosen to be invetigated in this study was China. China is one of the fast growing economy countries in Asia, thus the tourist arrivals from China to the United States has become the main focus in this study.

In the past research, there is a negative relationship between the United States tourist arrivals and the exchange rate. Tourists tend to modify the travel planning and the travel destination if the exchange rate of the travel destination is unfavourable. In addition, there is a positive relationship between income and exchange rate. When the income is increased, tourists will incline to set up their travel planning to other countries. For the terrorism variable, it was negatively affect the tourist arrivals. Terrorism brings the negative impact to the country involved. Therefore, in the consideration of the safety in a travel, tourists will choose to travel in a safe country rather than a country that with terrorist incidents.

Moreover, there is a negative relationship between natural disaster and tourist arrivals. If the cases of the natural disaster in the United States increase, the number of tourist arrivals from China will decrease. Throughout this research, we aim to conclude that whether the factors above will bring any influences to the tourist arrivals from China to the United States.
1.1 Background of Study

There is no denying that travel and tourism industry can bring an enormous impact to the economic, financial and social development of a country. The main element is to drive the evolution of economy in most of the countries around the world especially to those well developed countries that are more concerning on the travel and tourism sector of their countries. From the previous studies, most of the countries initiated to give serious advertence to the tourism development where this sector carries the benefits to a broad assortment of sector of the economy (Kusni, Kadir and Nayan, 2013). Travel and tourism sector has direct economic impact, significant indirect and induced impacts to the country; hence, it can increase the capital investment and trade of the country, create jobs for the unemployed citizens and protect heritage as well as the cultural values (Turner, 2015).

The World Travel & Tourism Council (WTTC) is the global authority on the economic and social contribution of Travel & Tourism. According to WTTC (2015), travel and tourism generated USD7.6 trillion (10% of global GDP) and 277 million jobs (1 in 11 jobs) for the global economy in 2014. From the comparison with previous data, it shows that travel and tourism growing at a faster rate as compare with other significant sectors such as financial services, automotive and health care. The direct contribution of travel and tourism to the GDP of the country is calculated to be consistent with the output that deal directly with the tourists in the tourism-characteristic sectors while the total contribution of travel and tourism includes its wider impacts on the economy such as travel and tourism investment spending, government 'collective' spending on behalf of the travel and tourism sector (Turner, 2015).

According to the World Travel & Tourism Council (WTTC)’s report on the travel and tourism sector contribution to the country in the year of 2014, the direct contribution of travel and tourism to the Gross Domestic Product (GDP) in the United States was USD457.9 billion (2.6% of GDP), USD263.0 billion in China and USD145.2 billion in Germany. The direct contribution includes the tourism-
characteristic sectors such as hotels, airports, airlines, leisure, recreation services and travel agents. In the same year, the United States was ranked as number one worldwide that the travel and tourism sector had contributed total USD1402.5 billion to GDP, following by China, total USD943.1 billion and Germany, total USD343.5 billion. For the total contribution of travel and tourism to the employment in 2014, China had a total number of 66,086,200 jobs; the United States had 13,652,300 jobs while Germany had 4,982,000 jobs (WTTC, 2015). On the other hand, travel and tourism capital investment also contributed USD144.3 billion to the United States, following by China, total USD136.8 billion and France, total USD41.2 billion.

In contrast, the travel and tourism sector has a huge contribution to the economy of the country indeed; moreover, the rapid growth of the tourism sector can be attributed to a number of factors. Therefore, in this study, we are trying our best to expose the factors that affecting the number of China tourist arrival in the United States. There are total four determinants we are going to expose in our studies, which are the exchange rate of the home country of the tourist with the foreign country that they are going to travel, the income of the tourists, the terrorism of the country and the natural disaster of the country. Yet, we had generally focused on how the determinants of tourism demand affect China tourists travel to the United States. This is because China has increased its outreach with the other countries globally since the early 1990s and ranked first in the world in total population. Not only that, China surpassing the United States in 2014 for the first time in modern history and has the largest economy in the world due to the largest export in 2010, and the largest trading nation in 2013 (Central Intelligence Agency, 2017).

Therefore, we are interested to further study about how the China tourists contributed to the United States tourism sector by different determinants of tourism demand by exposed the validation of its theoretical constructs within the limitations. Despite the tourism economic strength such as exchange rate of the country and the income of the tourists, terrorism and natural disaster of the country still present major challenges to the tourism industry.
1.1.1 Tourist Arrival from China to the United States (dependent variable)

According to National Informatics Centre (2015), tourist arrival is defined as the number of arrival of foreign visitor and when there is an individual makes multiple trips, it is counted each time as a new arrival to the country. Therefore, the tourist arrival from China to the United States indicates that the number of China tourists had been visited to the United States in a year by assuming an China tourist might had visited the United States multiple times in a year and each visitation was counted as a new arrival. Nevertheless, there are some determinants will affect the decision of China tourists travel to the United States, which are the exchange rate between Renminbi (RMB) and United States Dollar (USD), income of the China tourists, number of terrorism cases happened in the United States and the number of natural disaster cases happened in the United States.

Figure 1.1.1: The Number of Tourist Arrival from China to the United States

As the Figure 1.1.1 shown, it shows the trend of tourist arrival from China to the United States in the past 20 years, which is from year 1995 to year 2014. The number of China tourist arrival in the United States is initially fluctuated between year 1995 and year 2001. In the end of year 2001, the tourist arrival had shown a slightly drop 2.95% from total number of 232,416 to 225,565. It can be explained by the 9/11 incident that happened in 11th September 2001 which had killed a lot of people during this terrorism attack. Baker (2014) stated that the risk perception of the terrorism may bring a negative impact to the tourists by causing travel anxiety towards a destination and will eventually affect their destination choice. However, in year 2003, the number of tourist arrival from China to the United States started to have an upward trend to year 2009 from total number of 157,326 tourists to 524,817 tourists. Not only that, the number of tourists arrival continue to have a dramatic rose from year 2009 until year 2014, which had increased from 524,817 tourists to 2,188,387 tourists, approximately rocketed up to 300.98%. The dramatic rose of number of tourists from 2009 was due to the Travel Promotion Act of 2009 which had signed in March of 2009 with the legislation to authorize funding and marching orders for Corporation for Travel Promotion (White, 2010).

1.1.2 Exchange Rate (independent variable)

According to Ahmed (2015), exchange rate is a variable that used to determine number of unit of a nation’s currency in terms of the number of unit of foreign currency. In short, exchange rate can be defined as the trading terms in both the ratios per unit of the nation’s currency and foreign currency. When the exchange rate of Renminbi (RMB) to United States Dollar (USD) appreciates, it indicates that the RMB is becoming more valuable and China tourists can now exchange more USD compare to previous. Hence, when the tourists can exchange more USD, they will more willing to increase their spending during their travel and vice versa. In contrast, in the report by Dineen (2015), Robertico Croes, Interim Chair of the Department of Tourism, Events & Attractions at the University of Central Florida's Rosen College of Hospitality Management said, “Initially, they will try to lower their spending through hotel rates; instead of spending seven days they
will spend four. That is how the travellers try to adjust to a new situation”. It also indicates that then the exchange rate depreciates, tourists will less willing to travel to due to less money to spend or else they will alter their spending habits.

Figure 1.1.2: The Relationship between Exchange Rate between Renminbi (RMB) and United States Dollar (USD) and the Number of Tourist Arrival from China to the United States

![Graph showing the relationship between exchange rate and tourist arrival from China to the United States](image)


Figure 1.1.2 above shows the trend of exchange rate between Renminbi (RMB) and United States Dollar (USD) from year 1995 to 2014 and the number of tourist arrival from China to the United States. As the graph shown, the RMB was continuously appreciated in the past 20 years. In 1995, the exchange rate between RMB and USD was 8.35. It indicates that the China tourists had to spend RMB8.35 to exchange USD1, which cause the China tourists had to spend more to gain less. Nevertheless, the exchange rate between RMB and USD was strengthened continuously and remain constant at the rate of 8.28 from year 1998
to 2004. In between 2005 and 2007, RMB was strengthened enormously by appreciated 7.08% from exchange rate of 8.19 to 7.61. From 2008 to 2014, RMB continued to appreciate against USD from exchange rate of 6.95 to 6.14, which was approximately 11.65%. It can be explained by before 2008, RMB was pegged to a basket of currencies but it had been heavily pegged again to the dollar since the financial crisis of 2008 (MarketTech Reports, 2012). USD was becoming weaker because China had stronger performance in their industrial and emerging economies relative to the United States. Until now, China is still ranked as the world leader in the gross value of agricultural and industrial output (Central Intelligence Agency, 2017). Therefore, it can be seen that when the exchange rate of RMB/USD decrease, the number of tourist arrival will increase.

1.1.3 Income (independent variable)

According to Amadeo (2017), gross domestic product (GDP) per capita growth defines as a measure of the growth of a country's economic output that accounts for population, which referred to the growth rate of the total GDP of the country divide by its population in order to measure the standard living of the country and each citizen. It indicates that we can use GDP per capita to measure how rich is China as compare to the United States and the higher the GDP per capita growth rate, the richer the country’s citizen. In 2016, China has the largest GDP in the world, which was producing $21.14 trillion and ranked as number one in the world (Central Intelligence Agency, 2017). However, the GDP per capita of China was only $14,600 while the United States was $57,300 (Amadeo, 2017). This is because China was the most populous country in the world with 1.37 billion of population in 2016 which the population was four times the number of people as the United States. In contrast, GDP per capita growth can be referred as the income of the tourist and it plays a vital role in travelling decision (Vencovská, 2014).
As Figure 1.1.3 shown, it shows the relationship between GDP per capita growth in China and the number of tourist arrival from China to the United States from year 1995 to 2014. The bar chart represents the trend of GDP per capita growth in China while the line represents trend of the tourist arrival from China to the United States. As the graph shown, the GDP per capital growth had a positive trend was growing in the past 20 years. The GDP per capita growth in 1995 was 9.7503% and dropped to the lowest point of 6.7393% in 1999. It was then increased dramatically from year 1999 to 2007 which from the lowest point of 6.7393% to the highest point of 13.6363%, which was increased approximately 6.8970% from 1999 to 2007. After 2007, the GDP per capital growth in China keep on fluctuating and declined to a growth rate of 6.7558% in 2014. On the other hand, the trend of the tourist arrival from China to the United States...
increased rapidly within the period. It was obviously showed that when the GDP per capita growth in China had a positive trend, the number of China tourist arrival in the United States will increased as well. Since the two trends was having positive result in the past 20 years; therefore, we can conclude that GDP per capita growth in China is positively related with the number of tourist arrival from China to the United States. Based on Interrante (2014) she stated that tourists’ travel decision is highly correlated with economic factors, such as their income and career; therefore, it is a significant relationship between economic factor and trip making.

1.1.4 Terrorism (independent variable)

Weimann and Winn (1994), suggest that terrorist activities have an enormous impact on a country’ tourism sector and there is a huge economic factor between the relationship of terrorism and foreign tourism. The history of terror attacks in the United States is remarkable with the 9 November attacks which refer to the towers of the World Trade Center in New York City attacked by an Islamic extremist group al-Qaeda that hijacked four airliners and killed over 3000 people during the attacks (History, 2017). These terrorist attacks were mostly aimed for the well-developed countries such as the United States where the tourism industry is bringing an important impact for their economic reasons such as gross domestic product (GDP) of the country (Bysyuk, 2010). This is because of the United States is the world’s leaders in economic as well as the political spheres, therefore it was always become the target of the terrorists (Korolev, 2007). As a result, the tourist will become less willing to travel to the related country; eventually will affect the number of tourist arrival.
Figure 1.1.4: The Relationship between the Number of Terrorism Cases Happened in the United States and the Number of Tourist Arrival from China to the United States

![Graph showing the relationship between terrorism cases and tourist arrivals from China to the United States from 1995 to 2014.]


Figure 1.1.4 shows the trend of number of terrorism cases happened in the United States and the number of China tourist arrival from year 1995 to 2014. As the line graph shows, the trend was considered as fluctuating over the past 20 years. The peak of the graph was in year 1995, had a total number of 62 cases happened. The number of terrorism cases continued to fluctuate until year 2006, and reached the lowest point with only happened 6 cases in the following year. Yet, there was a declined of total number of 56 terrorism cases happened in the United States, approximately 90.32% from year 1995 to 2006. This is because the United States had first published the National Strategy for Combating Terrorism in February 2003 to protect and defend the Homeland and the American people as well as finding and bringing to justice al-Qaida network that executed the terrorist attacks on 11th September, 2001 (U.S. Department of State, 2006). Nevertheless, the
number of cases that happened in the United States after year 2006 continued to stay low which were only average 14 cases happened each year. For example, the intentionally attack case by an Iranian-American on the campus of the University of North Carolina at Chapel Hill that had injured nine people in 3rd March, 2006 and the gun shoot attack at Fort Hood, Texas which had fatally shot 13 people and wounds 30 others in 5th November, 2009 (World Net Daily, 2015). Therefore, based on the comparison of the two trends, it can be concluded that when the number of terrorism happened increase, the number of China tourist arrival in the United States will increase.

1.1.5 Natural Disasters (independent variable)

Based on the global assessment report on the natural disasters in the United Nations recently, it shows that the number of natural disasters that happened globally and the number of people affected by the natural disasters are increasing at a faster rate than the risk reduction and causing a huge economic loss (UNISDR, 2009; Avraham & Ketter, 2008; Pritchard & Morgan, 1998). Nevertheless, natural disasters can seriously affect tourism and bring a negative impact to the country. For example, volcanoes, tsunamis, floods, landslides and tornados are natural disasters that occur regularly. Although humans have tried to reduce the impacts of the destruction that caused by the natural disaster, but were often powerless. Moreover, the process of recovering from a natural disaster has also been complicated by tourism in some cases (The International Ecotourism Society, 2013).
Figure 1.1.5: The Relationship between the Number of Natural Disaster Cases Happened in the United States and the Number of Tourist Arrival from China to the United States


Figure 1.1.5 above shows the number of natural disaster cases happened in the United States from year 1995 to 2014. The trend of number of natural disaster happened in the United States was fluctuated dramatically from year 1995 to 1998, which was from the lowest point of 38 cases rocketed to 158 cases and then declined steeply to 47 cases and rose sharply back to 128 cases in year 1998. From year 1999 to 2010, the natural disaster cases that happened in the United States had a slightly fluctuation with an average of 124 cases every year. According to the National Weather Service and the Insurance Information Institute, the top 10 costliest U.S. natural disasters that happened between year 1980 and 2010 included hurricanes, floods, earthquakes and droughts and it caused more than $501.1 billion in damage and up to 22,240 deaths which impacted most regions of the country (Fulscher, 2012). However, in year 2011, the number of natural disaster cases was suddenly boomed to the peak at 242 cases. In contrast, the
difference of the peak point of 242 cases in 2011 between the lowest points of 38 cases in 1995 was a total number of 204 cases. The number of natural disaster cases happened in 2012 was then declined steeply to 112 cases, which was declined approximately 53.72% from 2011. Not only that, the number of natural disaster cases that happened in the United States were also continued to stay low in 2013 and 2014. Not only that, the number of China tourist arrival continued to increase as well regardless the fluctuating of the number of natural disaster cases as well.

1.2 Problem Statement

In fact, travel and tourism are commonly denominated as a “Cinderella” industry. Although it takes a vital role as a major part of the economic progress for a long period, but then it has not gained the awareness or surveillance it deserved and even been disregarded by many investigators as a research study (Ioannides & Debagge, 1998). Only in recent decade, investigators initiated to certify the potentiality of this field and look into approaches on how its welfare may be maximized.

The fancy to travel has contributed the travel and tourism to become the first ranked industry in numerous countries around the world even the top position in the United States’ service sector. As reported by the Travel Industry Association (TIA), both the international and domestic tourists has an in direct travel expenditure of $740 billion in the tourism accounts, the international tourists to the United States paying out $107.9 billion in each year. Furthermore, the tourism industry is paying out $178 billion in direct travel-related salaries and supplying $7.9 million jobs, it considered as one of the United State’ largest employers. In truth, there are still plenty of confrontations facing by the tourism industry attributable to political realities, current economic and social. Thus, it is crucial to be conscious of the current trends in tourism industry since it contends in a global market.
Tourism industry is continuously attained with further and further competitive due to the extending of globalization in today’s world. Generally, the competitiveness in the tourism industry commonly is to contend with and outwit one another in enticing a better amount of tourists into their specific countries. Due to this motive, determining the principal factors that affect the amount of tourists’ arrival in a specific country accurately could be a key examination of both tourism practitioners and investigators. Song and Li (2008) stated that determining the factors of tourism demand yet considering the importance of their impact on tourism demand are a great concern to decision makers in travellers’ destinations. Be conscious of tourism demand is a beginning point for the investigations of why tourism grows and what implore to the user market (Hall & Page, 2002).

According to the Wang et al. (2008), the international tourist arrivals would be prompt where there is a devaluation of a local currency and it react as a reduction in the local prices. In contrast, both the tourist departures and tourist arrivals of the country will be affected when the local currency is appreciated. Hence, in general, exchange rates are exercised as a representative to evaluate the price levels of varying destinations (Crouch, 1993). United States dollar is often performing a greater strength against to major countries’ currencies. Thus, it will result in a higher travelling cost and expenditure in the United States like accommodation fees, entertainments, foods and beverages and so on. For this reason, the tourists will then change their decision about the travel destination from the high exchange rate to the lower one. According to the International Trade Administration (ITA), China’s tourist has contributed an amount of $23,770 million out of the total tourism expenditure ($235,396) in the United States in year 2014, and shown an increasing trend from year 2003 to 2014, yet it expected to be rise in further year. This has proven that tourists from China are important to the United States’ tourism industry due to their spending power. Therefore, the exchange rate between RMB and USD will be used in this study in order to examine the determinants of the tourism demand in the United States by China tourists.

Nevertheless, tourism industry is persisting infirm and is defenceless to the uncertainty factors like natural disasters, terrorism, and instability of political and so on. Nowadays, the safety of the tourist destination is one of the necessities the
tourist anticipated and this has been supported by the researchers in the tourism industry. Therefore, the tourist destinations that establish an insecure status could be replaced by the other destinations which the tourists consider safer. The influence of these risks on tourism is significant, it will caused an instantly downturn in the affected country’ tourism industry if such incident occurs. This is the reason why the national governments for those countries where tourism takes a key driver in the national economies are attempting to establish correlated safety measure and anti-crisis approaches, in order to be ready and get over the effect of such occurrence.

In fact, the fright of terrorist brutality is no longer a new thing, yet the intensify awareness it has received from the researchers could be track down in the incident of terrorist attacks that happened in the United States in 11th September 2001. There is 2 billion United States dollar loss disclosed by the United States tourism industry in the period of two weeks after the terrorism incident (Blake & Sinclair, 2002). Such terrorism act has inhibiting the likely tourists from choosing the United States as a travel destination for a certain period. Figure 1.2 below illustrates the number of tourist arrivals from China to the United States from year 1995 to 2014.
Figure 1.2 indicates that the tourist arrival in the United States shown a decreased trend from the year 2001 to 2003, it had declined approximately 75 thousands tourists from China. This is due to the safety concerns of tourists come after the incident of 911 in year 2001, as the tourists has considered the risk of it and this lead to a poor image to the country affected. According to Soenmez (1998), an image is explained as a summation of perceptions and beliefs that the people persist with certain incident. If a pessimistic set of beliefs and perceptions are being established in the tourists’ mind, the positive perceptions are tremendously hard to re-build. This may causes the country’ economic and political to be instable, particularly to the country that excessively rely on the tourism sector.

Not only that, there is a significant growth trends in tourist arrival from China to the United States along with the growth cases in terrorism and natural disaster in the United States from year 2011 to year 2014. This has given us an intention to conduct this study in order to identify the factors that contribute to the tourist arrival in the United States and examine the impacts that given by these factors.

1.3 Objective of the Study

The objective of study is as below:

- The objective of this study is to investigate the existence of impacts towards the United States tourist arrivals in terms of different economic and non-economic factors by the China tourists, namely exchange rate, income (GDP growth per capita), terrorism and natural disaster from year 1990 to year 2014.

1.4 Research Question of the Study

The study has established a research question as follow:

- Does the impact exist in the United States tourist arrivals, specifically in terms of different economic and non-economic factors by the China tourists, namely exchange rate, income (GDP growth per capita), terrorism and natural disaster from year 1990 to year 2014?

1.5 Significance of the Study

The topic about the international tourism demand and its contribution to the evolution of country’s economy has been discussed generously over the world. The United States is one of the countries which are associated tremendously in the international tourism. Therefore, the United States will have a better understanding on the significance of the tourism industry to the country’s Gross Domestic Product (GDP), by examining the tourist flow from one of the top ten tourist arrival, which is the China tourist flow into the United States.

This study contributes in the direction of giving knowledge and details on determinants affecting the international tourism demand for the United States. The findings of this study will be useful in helping the private, public and government
to have clearer view in the tendency of causal relationship between the determinants of international tourism demand. Besides that, the information of the factors that significantly give impact to the United States international tourism demand could assists the tourism sector, government and policy makers to conceive a finer policy and yet to come up with a pointers on the selection of corrective or preventive measures, which will contribute to a higher level of country’s tourism. Interpreting the reason why people have the intention to travel and what affects their option of destination are essential in forming a suitable marketing strategies.

Furthermore, this study would enhance and provide a better understanding in determining the tendency of the relationship by presenting the empirical basis to justify the evolution of the public sector. This study would also build on a new viewpoint to the existing researches.

1.6 Chapter Layout

Chapter 1: Research overview

In this current chapter, there were research overviews which propose the reader with insight to the background of the United States, the discussion of the problem statement, the elaborating on the objectives of conducting this study, the significance of this study, and the conclusion of the researchers.

Chapter 2: Literature review

Chapter 2 review the relevant literature from those published journals, which related to the determinants of the international tourism demand. The factors such as exchange rate, income, terrorism and natural disaster that gives influences to the tourism demand has been reviewed in this chapter.
Chapter 3: Methodology

A general description of research methodology that was applied to carry out the study was discussed in chapter 3.

Chapter 4: Data analysis

The diagnostic checking, interpretation of coefficients, unit root test and cointegration test was involved in this chapter. The findings of the study and their interpretation are studied and presented in chapter 4 as well.

Chapter 5: Conclusions

This chapter addresses the study objective by forming the conclusions and recommendations for an appropriate tourism strategy for the United States. The limitations of the study also been discussed in Chapter 5.

1.7 Conclusion

Chapter 1 is a foundation to the study that will be carrying out in further chapter. It begins with the description of the research background, the problems that facing by the United States’ tourism industry nowadays, and the relationship between the tourist arrivals from China to the United States and the factors that give influences to the tourism demand such as exchange rate, income, terrorism and occurrence of natural disaster. Besides that, it carries on to evaluate the objectives and significance of the study. In chapter 1, it provides the direction on the way that the research will be organize and carry out in the further chapter.
CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Tourism is the main element to drive the evolution of economy in most of the countries around the world. From previous studies, most of the countries has initiate to give a serious advertence to the tourism development where this sector carries the benefits to a variety of economy sector (Kusni, Kadir & Nayan, 2013). Mansor and Ishak (2015) state that tourists’ arrival is vital to Malaysia as it would drive up the country’s economy and enhance the value of the lifestyle. It can be either categorized as domestics or international.

According to previous studies, Kim (1988) has conducted various of methods to estimate tourism demand by characterizing the measurement standard into four groups, which are performer criterion (the number of tourist arrivals and the amount of traveller visit rate), financial criterion (the level of traveller expenses and share of disbursement in earnings), time-depleted criterion (tourist daytimes and tourist night-time) and distance-journeyed criterion (the course travelled in miles or kilometres). Most of the international tourism demand studies allocate with the performer criterion and pecuniary criterion. Tourism demand can be affected by determinants such as exchange rate, income of tourist, terrorism and the natural disasters of the tourism destinations.

2.1 Exchange Rate and Tourism

Crouch (1993) states that changes in exchange rates will affect the price of international travel and tourism, where there is a slightly difference among the cost of living (cost of transportation and other services). Thus, it will directly give the influences to the tourist’s travel decision and the selection of the travel destination (Lean, Chong & Hooy, 2014). Hence, it will give a huge impact to the number of tourist arrival in most of the countries. In Yusup, Kanyan, Kasuma,
Kamaruddin and Adlin (2016), researchers state that unfavourable changes in exchange rate would give a numerous of consequences such as the reduction of the number to travel, visit to other less expensive countries, shorten the vacation period and reduction of the expenses during the vacation, thus it will lead to the decrease in the number of tourist arrivals.

In the study of Kah and Lee (2013), the researchers also claim that a successful tourism in a country will become an important factor in terms of economic that many businesses and government will be more concentrate and interest in the progressively favourable influence such as the production of foreign exchange rate. According to the Agiomirgianakis, Serenis and Tsounis (2015), a high exchange rate fluctuation will affect the travel performance of a country and thus will lead to a change in their business from a country with high exchange rate fluctuation into a country with low exchange rate fluctuation. It was revealed that the relative price ratio which is related to the exchange rate has a negative outcome on the tourist arrival given the intense competition around the world among the substitutive destination. The result from the co-integration integration analysis and autoregressive approach further revealed that up to 40% of the travellers decided to give up their travel planning to some of the countries due to the changes of the exchange rate between the two countries’ currencies (Agiomirgianakis, Serenis & Tsounis, 2015).

These kinds of travellers are more price-sensitivity and they will always collect relevant information especially the expenses regarding to their travel destination. Most of the time, travellers will ignore whether the individual goods and services are cheap or expensive in the country they are considering to travel to and they are actually more aware of the volatility between the exchange rate of their origin country and the country they are thinking of want to travel (Quadri & Zheng, 2011). Thus, the travellers will shift their decision of the travel destination from the high exchange rate to the lower one (Wang, Chen, Lu, Hwang & Tseng, 2008). This situation has thus led to an uncertainty for the tourism of the specific countries in terms of the number of tourist arrivals.
According to the past studies, many researchers proved that there is a negative relationship between exchange rate and tourism (Wang, Chen, Lu, Hwang & Tseng, 2008; Agiomirgianakis, Serenis & Tsounis, 2015; Corgel, Lane & Walls, 2013; Ruane, 2014). Given an example of the United States and Japan, if the US dollar gains strength against the Japanese Yen, Japanese will have a tendency to reduce their frequency of travels in US (Kah & Lee, 2013). The lower exchange rate of US dollar to Japanese Yen is caused by the depreciation in the value of the Japanese Yen currency. Thus, it will result in a higher travelling cost and expenditure in US such as accommodation fees, entertainments, foods and beverages and so on.

Hanafiah and Harun (2010) examined regarding the tourism demand based on a few of economic determinants included exchange rate as one of their key determinants and the focused country was in Malaysia. The study has found that exchange rate was as hypothesized negatively correlated with the tourist arrival in Malaysia. As a result from the Gravity Model, the tourist arrival in Malaysia will fall by 0.156% when there is a growth of 1% of the exchange rate of Malaysia. However, the researchers also claimed that the outcome from the indices of the exchange rate can be both positive and negative. This is all relying on whether the relative value of the based country has comparatively raised or drop. In other words, travellers from the richer countries will be more likely to choose to travel to a country which is less wealthy due to the lower exchange rate of the money currency of the country the travellers decided to travel (Lean, Chong & Hooy, 2014).

Webber (2001) studied the impact of the exchange rate volatility on the number of tourist arrivals in Turkey for 18 years by using the quarterly data. The data of the tourist arrivals from this study is examined by the nature of the tourists which are categorized into two groups, namely risk lovers and risk adverse. It was resulted that the risk adverse travellers will have a negative impact and relationship between the exchange rate volatility and the number of tourist arrivals in Turkey as this kind of travellers will tend to modify their travel plans. On the contrary, risk lovers will incline to establish chances for the greater of profits and thus in turn to a greater number of tourist arrivals in Turkey. Generally, risk adverse
tourists will grow substantially than the risk seeking tourist. In addition, the travel agent specializing in package vacations will shift their travel destinations to prevent exchange rate volatility.

Peace, Izuchukwu and Shenu (2016) examined the relationship between real effective exchange rate fluctuation and the dedication of the tourism sector outcome in Nigeria by using the share of tourism sector as the data for 20 years. In the result of the vector error correction model (VECM), there is a significant and negative relationship between the real effective exchange rate fluctuation and the dedication of the tourism sector outcome in Nigeria. In other words, when there is a decrease in the exchange rate fluctuation, it will in turn to decrease the dedication of the tourism sector outcome in Nigeria and vice versa. This result also indicates that the decision of the prospective travellers, tour agents and tour operators are regularly been influenced by the selection of the travel countries by the volatility of the exchange rate.

2.2 Income and Tourism

According to the study of Vencovská (2014), income plays a vital role in travelling decision. Many researchers find that income is the most common used independent variable for tourism demand. This statement is supported by Lim (1997), which discover that out of 118 surveys of tourism modelling, about 83 studies on tourism demand has applied income as one of the explanatory variables in their research. And this result is corresponding to another survey done by Lim (2004), which stated that income is the most popular variable, at about 81 percent.

Mohd Salleh, Othman and Ramachandran (2007), Sookmark (2011) and Vencovská (2014) specify that income is the most frequently used variable. Similar result are gained that corresponding to income is the most important variable to determine the demand of tourism (Lim & McAleer, 2002; Dritsakis, 2004; Munoz, 2006; Chaovanapoonphol, Lim, McAleer & Wiboonpongse, 2010; Ahmad Kosnan & Kaniappan, 2012; Lan, Lin & Lin, 2015; Nonthapot & Lean,
income has been discovered as significant variable for the demand of tourism (Hui & Yuen, 1996; Lee, 1996; Webber, 2001).

In the research of Crouch (1994), the estimated income elasticity of tourism demand is usually in positive sign and it is more than one. Many researchers such as Wilkerson (2003), Song, Li, Witt and Fitt (2010), Sookmark (2011), Vencovská (2014), Ahmed (2015) and Untong, Ramos, Mingsarn and Javier (2015) agree with this finding and conclude that tourism is a luxury good; where income increases, demand of luxury good will increase more than proportionally. Smeral (2003) generates the similar result meanwhile the researcher also states that tourism will lose its luxurious status from time to time because tourists will lose their interest to travel if they continuously travelling. Therefore, tourism demand increases as income increases, but at a decreasing rate. On the other hand, Hui and Yuen (1996), Lee (1996) and Webber (2001) find that tourism is a normal good meanwhile Chadee and Mieczkowski (1987) obtain a result that show tourism is an inferior good. However, Vogt and Wittayakorn (1998) and Crouch (2000) find that income is not a significant variable for the tourism demand.

According to the Sookmark (2011) who studies the international tourist arrivals to Thailand, he suggests that the international demand of tourism for Thailand from the region of America, Europe, South East Asia, East Asia, South Asia and Oceania are luxury good, income elasticity in positive sign and more than one. American region and European region have the highest income elasticity among these region which are 3.40 and 4.31 respectively. This results showed that the gross domestic product (GDP) growth have positive effect on international tourist arrivals to Thailand. This result is corresponding to the Chaiboomsri, Chaitip and Rangaswamy (2009) which shows that the GDP growth is positively related with the international visitor arrivals to Thailand in the long run (Lim & McAleer, 2003; Kafono & Gounder, 2004; Narayan, 2004). While in short-run, China, England, German, France, America and Canada have a positive relationship with visitors travelling to Thailand except Malaysia which has an inverse impact.
In the study of Lim and McAleer (2002), the result shows that real income per capita of Singapore has significant relationship on inbound tourism from Singapore to Australia and states that income and price is inelastic. However based on co-integration model, in long-run, income elasticity is in positive sign. Based on the Vencovská (2014), in both short and long run, the estimated coefficients of income is 0.39 and 0.56 respectively, both indicate that the tourism demand in Czech Republic is income elasticity. The low value of coefficient in short-run income indicates that travelling is not a luxury good for this country. This is corresponding to the Smeral (2003) finding which stated above. The researcher mentions that tourism no longer a luxury product as it becomes less attractive to the tourists.

Lan, Lin and Lin (2015) investigates the impact on tourism industry when Chinese tourists were allowed in Taiwan in 2001. In long-run, the result shows that the income of Chinese tourists is positively related with the number of China tourists in Taiwan. Chinese tourists will first concern about their income before travelling. Other than that, Chinese tourists consider travel to Thailand is luxury good as it income elasticity is 1.37 (Untong, Ramos, Mingsarn & Javier, 2015). Song, Li, Witt and Fei (2010) find that tourists’ incomes mainly affect tourist arrivals in Hong Kong.

According to Mohd Salleh, Law, Ramachandran, Shuib and Mohd Noor (2008), one of the main factors of tourist arrival to Malaysia in both short-run and long-run is income. The result shows that the income of tourist from Japan, Thailand and Hong Kong, and the number of tourist arrivals to Malaysia is positively related. Meanwhile, there is an inverse relationship between income of tourists and the number of tourist arrival to Malaysia for the tourists from Singapore, Brunei and China. This is due to the reason of they prefer travel to other countries with higher income. This result occur simultaneously with the finding of Mohd Salleh (2009), the researcher finds that Malaysia is considered an inferior travel destination for tourist from Singapore, Brunei and China because of the negative income elasticity. In the study of Habibi, Rahim, Ramchandran, and Chin (2009), the researchers find that the income is insignificant to the demand of Malaysia tourism, meanwhile in the study of Hanafiah and Harun (2010) find that the
income is positive related to the tourism demand in Malaysia. Moreover, Ooi et al. (2013) has state that the positive impact of income is only significant related to ASEAN tourism demand in Malaysia, but not a significant relationship for Non-ASEAN tourism demand in Malaysia.

2.3 Terrorism and Tourism

Based on the study of Gallego, Nadal and Fourie (2016), terrorism is defined as “the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation”. The World Travel and Tourism Council (WTTC) has calculated that there is over 10 million travel industry jobs were lost globally. Not only that, they also stated that the terrorist attacks that happened on 11th September, 2001 has decreased the global travel and tourism by 7.4% (Lennon & O’Leary, 2005). This is because safety is one of the concerns of the tourist before they travel to other countries. The safer the country, the higher the willingness the tourists would travel to. In this case, it absolutely linked with the Maslow theory of ‘Hierarchy of needs’ which illustrates that safety needs is the second important need by human before they are going to pursue for the self-fulfilment (Boeree, 1998).

Baker (2014) has stated that the risk perception that caused by the terrorism may cause the tourists having travel anxiety towards a destination. In this case, different levels of risk perception will determine a tourist’s motivation to travel, the level of concern given to safety and terrorism threat and their destination choice. Therefore, terrorism and tourism demand of a country is definitely negatively related to each other. This relationship is first gained from the sharp decline for the total number of tourist arrival in London after the Irish Republican Army (IRA) bombing campaign in England. Not only that, the terrorist attacks of 11th September, 2001 in the United States had also experienced an immediate and huge drop in number of international tourists arrivals in the aftermath of 9/11 (Baker, 2014). Hence, it indicates that the risk perception and safety concerns that
stated by Baker (2014) is similar to the Maslow theory of ‘Hierarchy of needs’ (Boeree, 1998).

According to Gallego, Nadal and Fourie (2016), terrorism is negatively affects the tourism sector and the negative effect can still be seen in the future years, although the effect is not as serious as the immediate effect. It indicates that after a terrorist attack, tourists will facing anxiety and might choose a safer destination to replace their first travel destination. Otherwise, they might stop travelling if the purpose of the trip is not that important and only for personal reasons. Therefore, it shows that the statement of Gallego, Nadal and Fourie (2016) is actually agree with the aftermath of 9/11 attack by Baker (2014).

In 1986, there were over 28 million of the United States tourists travelled abroad and 162 people were found that killed in an innumerable terror acts. Eventually, these circumstances had brought impact to two million Americans by changing their travel plans to other safer destinations and this had eventually caused the number of tourist arrival in Europe decreased approximately 30% in 1986 (Boger, Varghese & Rittapirom, 2005). After the 9/11 attack happened on the “Twin Towers” of the World Trade Center in New York, the negative impact of the 9/11 terrorist attacks toward the tourism industry had emphasizes long and short-term timelines. In short-term effect, the world tourism industry had suffered a downturn of over 10% globally in the first few months after the attacks (Belau, 2003). The United States was no denying had the worst downturn in the number of tourist arrivals which with a loss of 6.8% in year 2002 (Belau, 2003). The domestic tourism industry in the United States experienced a radical decrease and losses in their economy industry such as travel, hospitality, leisure and restaurant. Unfortunately, this negative impact had lasted for around two years depending on the industry (Bysyuk, 2010). Besides that, other countries such as Canada, Austria, Germany, Mexico, Egypt, the United Kingdom, the Dominican Republic and Australia also reported severe losses in tourist arrivals (Blake & Sinclair, 2002).

Apart from western countries, Middle East countries will also having an inverse relationship between terrorism and tourism. According to Basu and Marg (2013), tourism in the Middle East plays a vital role in bringing an enormous impact for the overall development of the country of Middle East, such as Lebanon, Egypt
and Jordan; however, the political instability and terrorism activities have bring negative impact to the tourism industry. This is because the number of tourist arrivals in the Middle East is intrinsically conditioned by different context such as geopolitical, stability of the political, and the safety considerations. Hazbun (2006) also stated that in the 1970s and 1980s, whenever there is a terrorist attacks or political violence happened in the country, it would causing a sizeable negative impact on the number of tourist arrival of the country such as Middle East and North Africa. This is because when there is a terrorist attack happened, the Western tourists will reconsidered their travel plans. Following by the terrorist attacks at Luxor in year 1997, Egyptian tourism revenues had discovered dropped by 50% and only recovered two years later from the crisis. Similarly, Dahab bombing that happened in Dahab, Egypt had also caused the number of foreign tourist arrival in 2006 had a total loss of 8%. Therefore, it concludes that terrorism cases and political instability will cause damage and negative impact to the tourism sector of the county by reducing the number of foreign tourist arrivals immediately (Basu & Marg, 2013). It indicates that the statement of them is totally agreed with Gallego, Nadal and Fourie (2016), Baker (2014) and Bysyuk (2010).

According to Sonmez (1998), they stated that risk perception of the tourists during their travel is actually associated with their self-safety in their travel. This results in an impact on the tourist’s travel decision and their final destination choice which is exactly similar to the statement of Baker (2014). It shows that the terrorist attack is an important aspect that will influences the tourists’ decision making process before they travel to a specific destination. In 26th November 2008, the terrorism attack on Taj was led to an enormous impact on tourism industry and affects those sectors of economy that are having directly or indirectly relationship to the tourism industry (Misra, 2013). Large countries are able to absorb the losses to the economy that caused by the terrorism but the small countries may collapse due to the negative impact of terrorism to tourism industry.

However, there are also some tourists will be arrival up despite the terrorism because of the significant positive changes in the interpersonal area as well as the concerning of the philosophy of life (Ranga & Pradhan, 2014). In this case, the
Mumbai terror attack that happened in 26th November 2008 that had killed a total number of 173 people had surprisingly caused the number of tourist arrivals went up slightly in December as compared to November. Not only that, the terrorist attacks that happened in year 2012 also did not showed huge effect on the tourism industry of India. Misra (2013) also state that terrorism may bring positive impact to the tourism industry because tourists nowadays like to visit those locations that happened terrorism attack before to explore their curiosity. And now, many travel agencies conduct similar tours by taking the tourists around Mumbai to visit those places that happened terrorist attacks before. Therefore, the result that showed by Ranga and Pradhan (2014) and Misra (2013) have shown a slightly different with the results from other researchers.

2.4 Natural Disaster and Tourism

According to FEMA (1990), natural disaster is defined as a phenomenon that has triggered in the property destruction, injuries to community, or demise. Also, Centre for Research on the Epidemiology of Disasters (CRED) describes disaster is “an event or incident which trounces the local capacity, resulting in request for external assistance from the national or international degree; an unanticipated and sudden incident that leads to substantial harm, devastation and human distress.” Among the natural disasters, a massive degree of tsunamis and earthquake can be reckoned to be exceptional disasters (the time may only be a minutes between the identification and striking an occupy region). In the circumstances that is impractical to inform or aware the potential tourist about the appropriate planned escape or fail to offered the tourist a safe protection if a disaster happens, and one is in an opposite situation which is escapable from the disaster (Huan, Beaman & Shelby, 2004).

The influences of natural disasters on tourism can be categorized into two corresponding aspects which are the effect on tourism demand (e.g., number of the domestic and international tourist arrivals) and the effect on tourism supply (e.g., tourism authorities, tourism enterprises and tourism destination) (Wu &
Hayashi, 2013). Due to the occurrence of natural disaster has increased significantly, and this has created a global awareness about the natural disasters and its impact to all dimensions. The literature on natural disaster in the tourism industry has multiply remarkably from the last few decades. Despite that, the studies or research on natural disaster in the tourism industry persist in being restricted (Faulkner, 2001).

In previous, there are many studies have examined that the tourism demand is influence by various type of natural disasters which consist of tsunamis (Carlsen & Hughes, 2008; Birkland et al., 2004), earthquakes (Yang et al., 2008; Mazzocchi & Montini, 2001; Huang & Min, 2012) and climate extreme (Bigano et al., 2005; Breiling & Charamza, 1999).

Carlsen and Hughes (2008) identify the Maldives’ source markets recovery rates with the occurrence of tsunami incident (2004 Indian Ocean tsunami). Also, Birkland et al. (2004) examine the impacts of the same incident (2004 Indian Ocean tsunami) on tourism in Thailand. The researchers find that tourist were the greater portion of tsunami victims over in other nations that affected. The researchers has pinpoint that when the natural disasters strike in the internationally well know tourism places; the rapidly spreading of the disaster issues globally would have an extensive consequence on the rate for those tourists whose utilize such news and subsequently affects the consumer behaviour at the speed of light.

Yang et al. (2008) confer about the impacts on the tourism in Sichuan, China that resulting from the occurrence of 2008 WenChuan Earthquake. The result has indicates that the earthquake is positively related to the tourism demand. Also, Mazzocchi and Montini (2001) have examined the influences of the earthquake incident on tourist arrival that strike in the Umbria region, Central Italy. The result shows that the earthquake incident had given a significant impact to the tourist arrival in Umbria area especially in Assisi, which is the area nearest to the earthquake epicentre. In fact, the Assisi suffered the greatest losses of missing tourist arrival with the number of 199,000 during the earthquake periods.

Not only that, Huang and Min (2012) analyse the influences of the Earthquake on inbound tourist arrival that occurred in Taiwan yet the research result had
indicated that the inbound tourism demand are not rebounded from the day that earthquake incident happened till 11 months of it. This has also mention in Orchiston (2010), which explored the physical consequences of serious earthquake (Alpine Fault) on tourism demand in New Zealand, yet the outcome revealed the visitation to the disaster occurred country or post-disaster recovery would be anticipated to take about one year to one and the half year, rely on the date or time that the earthquake happened. Wang (2009) has also review the influences on the tourism demand in Taiwan that lead by natural disaster, the 921 Earthquake. The researcher discovers that the number of tourist arrival had undergone the extraordinary decline at the time of 921 Earthquake. Wang (2009) has brought about that any effects on safety regardless of internationally or domestically, are negatively relationship to the tourism demand.

According to Bigano et al. (2005), the researchers evaluate the influences of the extreme climate on tourism by manipulating the statistics data from the national and econometric models for the past three decades. The study result has propose that tourism demand appear to be relatively responsive to the climate factors, yet the extreme seasons leads to a critically effect on the tourism demand. Breiling and Charamza (1999) analyse the entire regions in Austria with the influences of a 2°C climate alter on seasonal snow-cover depth. Researchers has consider that the usage of ski equipment and ski season range will be reduce due to these changes, resulting in giving a huge impact on the ski tourist visitors. This also has mention in Fukuskima et al. (2003), which the researchers carried out an evaluation of the ski industry in Japan and approximate that the skier tourist appearance would decrease by 30% with the 3°C differences in the winter temperature. There are similar review has been conduct in varying area around the World (Scott, et al. 2006; Elsasser & Messerli, 2001; Harrison, et al. 1999).

2.5 Conclusion

In that sense, exchange rate, income, terrorism and natural disasters of the tourism destinations are principally give influences on the tourist’ decision whether that
the particular destination is chosen or not. Therefore, this study attempts to analyse the factors mentioned in above which determine the demand for the international tourism in the United States.
CHAPTER 3: METHODOLOGY

3.0 Introduction

Research methodology is essential in order to come up with a dependable and valid research study. In Chapter 3, it will confer and provide related to the method that applied to acquire the relevant information for our research study. This chapter consists of five segments which are the description of data collection method, data process procedure, model specification, data analysis and a summary for this whole chapter.

The aim of this research study is to examine the relationship between the tourist arrivals (from China to the United States) and exchange rate, income, terrorism and natural disaster. Autoregressive Distributed Lag (ARDL) is the methodology applied in this study, with the purpose of investigates the long run and short run effect between the dependent variable (tourist arrival) and independent variables (exchange rate, income (GDP per capita growth), terrorism, natural disaster).

3.1 Data Collection Method

Data collection method is crucial for research study and it is effectively in helping the researchers to be success in their exploration (“Researchers have studied,” 2009). Other than that, the information gathered by the researchers is necessary to be reliable and logical to the research study, this is because the study result would be affected by an inaccurate data and eventually causes to invalid outcome (“Data Collection Method,” 2012). In short, only the secondary data is employed all over this research study.
3.1.1 Secondary Data

Secondary data is recognized as the data that has been gathered by former researchers and easily obtainable. By collecting the secondary data, it enables the researchers to finds out what are the insufficiencies and any further information that required to be gathered for the study ("Secondary Data," 2012). In this research study, we choose secondary data over primary data, and this is due to several reasons which included it is costly to conduct, time consuming, and the possibility of irrelevant findings.

Our secondary data is obtained from variety sources such as the U.S. Department of Commerce, International Trade Association (ITA), National Travel and Tourism Office, World Bank Data, Global Terrorism Database (GTD) and U.S Department of Homeland Security (FEMA). These sources are commonly used due to the time saving, effortlessly accessibility, and costless. In details, tourist arrival (TA), exchange rate (EXR), income (INC), terrorism (TER), and natural disaster (ND) are all historical data. Yet, these data are annually data in the time series form from year 1990 to year 2014.

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Abbreviation</th>
<th>Elaboration</th>
<th>Measurement</th>
<th>Origin of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourist Arrival</td>
<td>TA</td>
<td>Tourist arrival from China to the United States</td>
<td>Number of tourist arrival from China to the United States</td>
<td>U.S. Department of Commerce, ITA, National Travel and Tourism Office</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>EXR</td>
<td>Exchange rate of RMB/USD</td>
<td>RMB per USD</td>
<td>World Bank</td>
</tr>
</tbody>
</table>
### 3.1.2 Dependent Variable Description

#### 3.1.2.1 Tourist arrival

The tourist arrival is the more desired and regularly exercised indicator comparative to the tourist receipt or tourist expenditure. Thus, in our research study, the overall number of tourist arrivals per annum from China to the United States will be used as dependant variable in order to evaluate the tourism demand to the United States. Besides, the major reason for choosing tourist arrival data is due to the deficiency of tourism expenditures data and the troubles of keep under observation since the industry is formulated of various sub sectors (Sheldon 1993). In the same research of Sheldon (1993), the researcher states that using international tourist arrival as a measurement of tourism demand deliver a

<table>
<thead>
<tr>
<th>Income</th>
<th>INC</th>
<th>GDP per capita growth</th>
<th>GDP growth of per capita of the tourists’ origin country (China)</th>
<th>World Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrorism</td>
<td>TER</td>
<td>Terrorism case occurred in the United States</td>
<td>In the number of cases</td>
<td>Global Terrorism Database (GTD)</td>
</tr>
<tr>
<td>Natural Disaster</td>
<td>ND</td>
<td>Natural disaster occurred in the United States</td>
<td>In the number of cases</td>
<td>Department of Homeland Security (FEMA)</td>
</tr>
</tbody>
</table>

Source: Developed for the research
significant intention to the suppliers of services and products. The suppliers could alter their supply volume (such as purchase an additional aircraft and invest in new hotel to expand their supply) in accordance with the proportion of indicated arrivals.

### 3.1.3 Independent Variables Description

#### 3.1.3.1 Exchange Rate

According to Ahmed (2013), exchange rate is a variable that used to determine the number of unit of a nation’s currency in terms of the number of unit of foreign currency. In this study, the exchange rate between RMB and USD (RMB/USD) is used in order to examine the relationship of tourist arrival and exchange rate. The exchange rate plays a significant role in the country’s economic performance. In general, exchange rates fluctuate frequently over time and this has given an impact to the number of tourist arrivals in a specific country. The variation in exchange rates can influence the tourists’ choices in various contrasting ways and the changes can be either unfavourable or favourable. According to the Gerakis (1966), the researchers mentions that the tourist arrival would be increase when the changes of the exchange rate is in favour to the tourist and it also encouraged the tourist to have more spending in that specific country. In contrast, the people will change their ultimate destination, less travel to overseas and shorten the vacation period in the specific country when there are an unfavourable change in exchange rates.

The hypothesis should be as follow:

H₀: There is no relationship between tourist arrival and exchange rate.
H₁: There is a relationship between tourist arrival and exchange rate.

If the statistical theory rejects H₀, then the tourist arrival and exchange rate have significant relationship.
3.1.3.2 Income (GDP per capita growth)

GDP per capita growth which referred to the growth rate of the total gross domestic product shared out by the total population of the country. Income takes a significant part when it comes to travelling. In this recent decade, income has sustained to be selected by numerous researchers as a determinant of tourism demand. Moreover, there are a number of researchers advised and preferred the use of measurement of GDP per capita growth since it will be more suitable and reliable compared to the other measurements (Park et al., 2011,; Song et al, 2010). As exposed by Crouch (1994), who also considered that income is the most significant explanatory variable, the involvement in the international tourism is deemed as a luxury good. In short, with the higher income, the tourism demand will be increase.

The hypothesis should be as follow:

$H_0$: There is no relationship between tourist arrival and income.

$H_1$: There is a relationship between tourist arrival and income.

If the statistical theory rejects $H_0$, then the tourist arrival and income have significant relationship

3.1.3.3 Terrorism

Terrorism incidents will lead to the changes of the tourists’ decision making and negatively affects the tourism sector. The consequences of the terrorism incident included the reduction of tourist arrival to the affected country which is due to the triggered fear and a bad reputation or images that resulted by the spread of words. Safety is always the major concerns to the tourist in their travel planning. In general, the safer the country, the higher the willingness the tourists would travel to. The consequence bring up by the incident 911 in the United States on the capacity of tourism has been regularly examined, and it showed a remarkable effect on the tourism demand for that particular country. Therefore, the terrorism will be used as independent variable in this study.
The hypothesis should be as follow:

$H_0$: There is no relationship between tourist arrival and terrorism.

$H_1$: There is a relationship between tourist arrival and terrorism.

If the statistical theory rejects $H_0$, then the tourist arrival and terrorism have significant relationship

### 3.1.3.4 Natural Disaster

Natural disaster is referred to as an unanticipated and sudden incident that leads to substantial harm, devastation and human distress. The event of natural disaster has brings an impact to various sector including the tourism sector, specifically in reducing the number of tourist arrival to the affected country. Hence, in this research study, the yearly number cases of natural disaster in the country are selected as the independent variable.

The hypothesis should be as follow:

$H_0$: There is no relationship between tourist arrival and natural disaster.

$H_1$: There is a relationship between tourist arrival and natural disaster.

If the statistical theory rejects $H_0$, then the tourist arrival and natural disaster have significant relationship

### 3.2 Data Processing

**Table 3.2 Flow Chart – Data Processing**

<table>
<thead>
<tr>
<th>Collection of Secondary Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making Choices of Data (Yearly)</td>
</tr>
<tr>
<td>Data Analysis by Using E-views</td>
</tr>
<tr>
<td>Result Interpretation</td>
</tr>
</tbody>
</table>

Undergraduate Research Project  
Page 38  
Faculty of Business and Finance
Data processing consists of four important steps as shown in the flow chart above. Data processing process begins by collecting secondary data from U.S. Department of Commerce, International Trade Association (ITA), National Travel and Tourism Office, World Bank Data, Global Terrorism Database (GTD) and U.S Department of Homeland Security (FEMA). After the collection and gathering of all the data, we choose the relevant data that is perfectly match with our research topic. The process is then following by the data analysis by using E-views system to conduct a several type of tests. Lastly, the result interpretation will be the final step of data processing to explain the results and outcome.

3.3 Model Specification

Model specification represents the identification in which the independent variables used in the model should be included or excluded from our regression model (Allen, 1997). The main issues of the research are exchange rate, income, terrorism and natural disaster as independent variables that will influence our dependent variable, number of China tourist arrivals in the United States. An error term has been included in our regression model. However, error term is not the main concern in our research as it is actually use to replace other variables that will affect our dependent variable.

Due to the difference in the unit of measurement in every dependent and independent variables, all the unit of measurement of the variables have been standardized and transform into logarithm form to ensure the accuracy of our results. Logarithm transformation results in a simple linear regression model by simplifying the parameter estimation (Lai, Yang, Lin, Kerkoff & Ma, 2013).
Regression model:

\[ \text{LNTA}_T = \beta_0 + \beta_1 \text{LEXR}_T + \beta_2 \text{LINC}_T + \beta_3 \text{LTER}_T + \beta_4 \text{LND}_T + \epsilon_t \]

Where,

LNTA = Natural logarithm of number of China’s tourist arrivals in the United States.
LEXR = Natural logarithm of the United States’ exchange rate.
LINC = Natural logarithm of China’s income.
LTER = Natural logarithm of the United States’ terrorism.
LND = Natural logarithm of the United States’ natural disaster.

### 3.3.1 Interpretation of Expected Sign

Relationship of LNTA and LEXR:
There is negative relationship between these two variables. It indicates that when the exchange rate increases, on average, the number of tourist arrivals in the United States will decrease, holding other variables constant.

Relationship of LNTA and LINC:
There is positive relationship between these two variables. It indicates that when the income increases, on average, the number of tourist arrivals in the United States will increase, holding other variables constant.

Relationship of LNTA and LTER:
There is negative relationship between these two variables. It indicates that when the terrorism cases increases, on average, the number of tourist arrivals in the United States will decrease, holding other variables constant.
Relationship of LNTA and LND:
There is negative relationship between these two variables. It indicates that when the natural disaster cases increases, on average, the number of tourist arrivals in the United States will decrease, holding other variables constant.

3.4 Method for Analyzing Data

This study has used Autoregressive Distributed Lag (ARDL) model and Wald test to examine the relationship between dependent variable (tourist arrival from China to the United States) and independent variables (exchange rate, income, terrorism and natural disaster). Other than that, Unit Root test also used to determine the stationary of the variables in a set of time series data.

3.4.1 Unit Root Test

Unit root test is used to identify an unexpected change in a variable in a set of time series data. According to Iordanova (2017), non-stationary data, for example time-series data are uncertain and cannot be predicted. Using of these data in statistical model provide untrustworthy results and cause inaccurate predictions.

One of the popular methods in unit root test is augmented Dickey-Fuller (ADF) test. ADF test is a version of Dickey-Fuller test for larger sample size of a set of time series data. ADF test analyses the null hypothesis that a time series data is I(1) against I(0) (Zivot & Wang, 2005).

In this study, the null hypothesis for ADF test is $H_0$: the set of data is non-stationary data. The alternative hypothesis is $H_1$: the set of data is stationary data. The decision rule of ADF test is to reject $H_0$ when t-statistic is greater than critical value. Otherwise, do not reject $H_0$. 
Another frequently used method in unit root test is Phillips-Perron (PP) test. According to Zivot and Wang (2006), role of PP test is used to determine serial correlation and heteroscedasticity in the errors which is different from ADF test. To explain this, ADF test uses autoregressive process to approximate the autoregressive moving average model (ARMA) of the errors in the test regression, while PP test ignores any serial correlation in the test regression.

In this study, the null hypothesis for PP test is $H_0$: the set of data is not stagnant. Another possible hypothesis is $H_1$: the set of data is stagnant. The decision rule of PP test is when t-statistic is greater than value of critical, reject null hypothesis, $H_0$; t-statistic is lesser than value of critical, do not reject null hypothesis, $H_0$.

3.4.2 Autoregressive Distributed Lag (ARDL)

Autoregressive distributed lag (ARDL) model is used to test cointegration, determine long-run and short-run dynamics, as well as to calculate the variables in composition of stationary and non-stationary time-series data (Giles, 2013). Besides that, based on the study by Nkoro and Uko (2016), they mentioned that ADRL cointegration technique is recommended when calculate the variables that are contained of different order, I(0), I(1) or combination of both I(0) and I(1). However, Arshed (2014) found that if the variables are stationary I(0), ordinary least squares (OLS) estimation will be preferable; if the variables are non-stationary I(1), Johansen cointegration vector error correction model (VECM) model is more appropriate.

Other than that, Nkoro and Uko (2016) stated that ARDL model also used to deal with single long-run relationship between the fundamental variables in a small sample size. Nevertheless, when there is a multiple long-run relationship model, Johansen and Juselius (1990) approach is more suitable instead of ARDL model.

In this study, the null hypothesis is $H_0$: the explanatory variables (exchange rate, income, terrorism and natural disaster) do not have long-run relationship with
explained variable (tourist arrival from China to the United States). The alternative hypothesis is \( H_1: \) the explanatory variables (exchange rate, income, terrorism and natural disaster) have long-run relationship with explained variable (tourist arrival from China to the United States). The decision rule of ARDL model is to reject \( H_0 \) when p-value is less than significant level. Otherwise, do not reject \( H_0 \).

### 3.4.3 Wald Test

Wald test, also known as Wald Chi-Squared test, used to identify the significance of independent variables in a model (Statistic How To, 2017). The word ‘significant’ in Wald test is that an independent variable can be removed because the particular variable is not relevant with the model. According to Ali Shah, Kouser, Aamir & Saba (2012), the function of Wald test is to distinguish the long-run relationship between explained variable and explanatory variables. Wald test can be calculated by applying restrictions on the estimated long-run coefficients.

In this study, the null hypothesis is \( H_0: \) the regressors (exchange rate, income, terrorism and natural disaster) do not have long-run relationship with explained variable (tourist arrival from China to the United States). Another possible hypothesis is \( H_1: \) the regressand (exchange rate, income, terrorism and natural disaster) have long-run relationship with explained variable (tourist arrival from China to the United States). The decision rule of Wald test is, when level of significance is greater than p-value, reject null hypothesis, \( H_0 \); when level of significance is lesser than p-value, do not reject null hypothesis, \( H_0 \).

### 3.5 Diagnostic Checking

There are few diagnostic checking have been conducted in this research such as Centred VIF, Heteroscedasticity (ARCH) test, Breusch-Godfrey Serial Correlation LM Test, Jarque-bera test, Ramsey RESET test. These diagnostic checking are to
avoid the result from being biased, inconsistent and inefficient. As there are problem may need to be concern in Econometric such as multicollinearity, heteroscedasticity (ARCH) test, autocorrelation and normality test. All tests are performed by E-view 7.

3.5.1 Multicollinearity

Multicollinearity occurs when there are two or more of the explanatory variables in a regression model are highly correlated with one another. A moderate multicollinearity may not become a controversial. However, a serious multicollinearity will covey difficulty to identify which explanatory variables are influencing the dependent variable as multicollinearity will increase the variance of the coefficient estimates and causes the estimation are highly sensitive to a minor changes in the model. Hence, it will become difficult to interpret since the coefficient estimates are inconstant. Therefore, we will be using Centred VIF to test the problem of multicollinearity.

The formula of testing multicollinearity is shown below:

$$VIF = \frac{1}{(1-R^2)} < 10$$

According to the Centred VIF, as a rule of thumb, if the Centred VIF of an explanatory variable exceeds 10, it indicates that the variables are highly collinear.

3.5.2 Heteroscedasticity

Homoscedasticity exists when there is constant variance of the errors across the observations which also explain that the error terms are having the equivalent scatter regardless of the value of independent variable. In contrast, heteroscedasticity occurs when the size of the error terms varies across values of an explanatory variable as it will bring few consequences towards to the
estimators which are unbiased and consistent due to none of the independent variables are interrelated with the error term. Heteroscedasticity may causes estimators inefficient due to the variances of the distributions increasing as it will violates the minimum variance property. Hence, the value of the t-statistic and f-statistic will no longer become reliable as hypothesis testing will lead us to reject null hypothesis too often. There are several tests have been design to detect the existences of heteroscedasticity such as Park test, Glesjer test, Breusch-Pegan-Godfrey test, White’s test or Autoregressive Conditional Heteroscedasticity (ARCH) test.

The steps of detecting the heteroscedasticity are shown below:

Step 1: $H_0 =$ Homoscedasticity

$H_1 =$ Heteroscedasticity

Step 2: Level of significant which is $\alpha=0.05$.

Step 3: Decision rule: Reject $H_0$ when p-value is less than $\alpha$, otherwise do not reject $H_0$.

Step 4: State the p-value by referring the regression model result.

Step 5: Decision making: Reject or do not reject $H_0$ and state the reason.

Step 6: Conclusion.

3.5.3 Autocorrelation

The problem of autocorrelation will usually appear in time series data where it can be referred as a lagged form of model over successive time intervals or a serial correlation which use statistic to measure the correlation between the same variables of the observation over a specific periods of time for instance, current year budget will based on the budget of last year. Autocorrelation exists when the observation of the error term is correlated with the error term of other observation where this may causes a mistakes bring to another mistakes. It can divide into two types of autocorrelation which is pure serial correlation and impure serial correlation where pure serial correlation arises when the Classical Assumption IV
has been disrupted. In other hand, it mean that when any two of the observation’s error term of the regression model does not equivalent to zero, which mean that the error term are serially correlated where impure serial correlation happen when there is a specification error, omitted variables, human error or problem with the functional form. The differences between pure serial correlation and impure serial correlation is that the problem of pure serial correlation cannot be immovable due to problem is caused by the distribution of error term whereas impure serial correlation can be fixed by adding on the variables or remodel the functional form. As there will be few consequences which are the estimator will no longer become efficient and biased hence no long become BLUE. There are several test have been design in order to detect autocorrelation such as Durbin-Watson test where it can only able to detect for the first order of autocorrelation, Durbin’s h test and Breusch-Godfrey LM test are uses to test for higher order of autocorrelation.

The steps of detecting the autocorrelation are shown below:

Step 1: \( H_0 = \) No autocorrelation
\[
H_1 = \text{Autocorrelation}
\]
Step 2: Level of significant which is \( \alpha=0.01 \).
Step 3: Decision rule: Reject \( H_0 \) when p-value is less than \( \alpha \), otherwise do not reject \( H_0 \).
Step 4: State the p-value by referring the regression model result.
Step 5: Decision making: Reject or do not reject \( H_0 \) and state the reason.
Step 6: Conclusion.

### 3.5.4 Normality Test

Normality test is use to determine the regression model of the error term are whether normally distributed as it can divided into two type of methods which are visual inspection or statistical test that is known as Jarque-Bera test where it can assist in making judgement on the respective regression model by reject or do not
reject on the null hypothesis. The estimators of the normality test are consistency and unbiased.

The steps of detecting the normally distribution is shown below:

Step 1: $H_0 =$ Error term is normally distributed.
            $H_1 =$ Error term is not normally distributed.
Step 2: Level of significant which is $\alpha=0.05$.
Step 3: Decision rule: Reject $H_0$ when p-value is less than $\alpha$, otherwise do not reject $H_0$.
Step 4: State the p-value by referring the regression model result.
Step 5: Decision making: Reject or do not reject $H_0$ and state the reason.
Step 6: Conclusion.

3.6 Conclusion

The both independent and dependent variables data are collected from the sources of U.S. Department of Commerce, ITA, National Travel and Tourism Office, World Bank, Global Terrorism Database (GTD) and Department of Homeland Security (FEMA). The data are collected from the year of 1990 to 2014, with a total of 25 years, and these collected data are used in the tests above. By interpreting the results, it can assist us to have a better understanding of the relationship between each variable. There will be a further data analysing and discussion on the respective test in Chapter 4.
CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this Chapter, it will present the empirical results of data; and continue with the interpretation of findings that generalized from the methodology discussed in Chapter 3. The empirical findings involve the outcome from the unit root test and diagnostic checking. These findings will be recapitulating into table form which allows us to be more systematized and explain it in-depth.

4.1 Unit Root Test

In order to determining both the dependent and independent variables whether are stationary or not, the unit root test which included the Augmented Dickey Fuller Test and the Philips Perron Test has been applied to verify the stationary status. It is crucial to ensure that the series to be stationary for the model, and this is because it will led to the possibility of inaccurate outcome when the series is not stationary.
Table 4.1.1: Result of Unit Root Test (ADF test)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant no trend</th>
<th>Constant trend</th>
<th>Constant no trend</th>
<th>Constant trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA</td>
<td>0.5691</td>
<td>-0.5729</td>
<td>-3.7183**</td>
<td>-3.8724**</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>EXR</td>
<td>-2.4502</td>
<td>-2.3991</td>
<td>-4.2636***</td>
<td>-5.1600***</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>INC</td>
<td>-5.9420***</td>
<td>-5.7790***</td>
<td>-6.5405**</td>
<td>-5.8339***</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>ND</td>
<td>-3.3458**</td>
<td>-4.4837***</td>
<td>-10.6425***</td>
<td>-6.3741***</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Note: ***, ** and * denotes significant at 1%, 5% and 10% significance levels, respectively.
Source: Developed for the research

Augmented Dickey Fuller (ADF)

From the table 4.1.1 above, it shows the figures of T-statistic for each of the variables in the unit root test. Based on the outcome above, it explained that income, natural disaster and terrorism are at integrated level form meanwhile tourist arrivals and exchange rate are stationary at first difference form at $\alpha = 5\%$ and $1\%$ respectively.
Table 4.1.2: Result of Unit Root test (PP test)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant no trend</th>
<th>Constant trend</th>
<th>Constant no trend</th>
<th>Constant trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA</td>
<td>0.4343</td>
<td>-0.8913</td>
<td>-3.7183**</td>
<td>-3.8277**</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(0)</td>
<td>(2)</td>
</tr>
<tr>
<td>EXR</td>
<td>-2.4437</td>
<td>-3.5383</td>
<td>-4.2596***</td>
<td>-5.2373***</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(11)</td>
<td>(1)</td>
<td>(3)</td>
</tr>
<tr>
<td>INC</td>
<td>-5.1211***</td>
<td>-4.8602***</td>
<td>-7.9317***</td>
<td>-6.9727***</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(3)</td>
<td>(8)</td>
<td>(8)</td>
</tr>
<tr>
<td>ND</td>
<td>-3.2866**</td>
<td>-4.5433***</td>
<td>-12.2915***</td>
<td>-29.2812***</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(2)</td>
<td>(10)</td>
<td>(14)</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(2)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Note: ***, ** and * denotes significant at 1%, 5% and 10% significance levels, respectively.

Source: Developed for the research

**Phillips-Perron (PP)**

Based on the table 4.1.2, it shows that PP test’s result are similar to ADF test result where tourist arrivals and exchange rate are stationary at first difference level at $\alpha=5\%$ and 1% respectively; income, natural disaster and terrorism are at integrated level form at $\alpha=5\%$ and 1%.

### 4.2 Autoregressive Distributed Lag (ARDL)

Autoregressive Distributed Lag (ARDL) has been carry out in order to verify the long run relationship between tourist arrivals from China to the United States and exchange rate in RMB/USD, income in China (GDP growth), natural disaster and terrorism. The ARDL approach is being selected in this study due to the reason of
certain explanatory variables are integrated at level form whereas other is integrated at first difference.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>15.55490</td>
<td>0.0189**</td>
</tr>
<tr>
<td>LNTA(-1)</td>
<td>-0.518660</td>
<td>0.0295**</td>
</tr>
<tr>
<td>LNEXR(-1)</td>
<td>-2.367489</td>
<td>0.0261**</td>
</tr>
<tr>
<td>LNINC(-1)</td>
<td>-0.935961</td>
<td>0.1351</td>
</tr>
<tr>
<td>LINTER(-1)</td>
<td>-0.610254</td>
<td>0.0590*</td>
</tr>
<tr>
<td>LNND(-1)</td>
<td>-0.023196</td>
<td>0.9310</td>
</tr>
<tr>
<td>D(LNEXR)</td>
<td>-0.940719</td>
<td>0.2227</td>
</tr>
<tr>
<td>D(LNEXR(-1))</td>
<td>0.987971</td>
<td>0.1968</td>
</tr>
<tr>
<td>D(LNEXR(-2))</td>
<td>1.348128</td>
<td>0.1050</td>
</tr>
<tr>
<td>D(LNINC)</td>
<td>-0.546877</td>
<td>0.2371</td>
</tr>
<tr>
<td>D(LNINC(-1))</td>
<td>0.277760</td>
<td>0.4017</td>
</tr>
<tr>
<td>D(LNINC(-2))</td>
<td>-0.570690</td>
<td>0.0636*</td>
</tr>
<tr>
<td>D(LINTER)</td>
<td>-0.237474</td>
<td>0.0803*</td>
</tr>
<tr>
<td>D(LINTER(-1))</td>
<td>0.082161</td>
<td>0.5261</td>
</tr>
<tr>
<td>D(LNND)</td>
<td>-0.066625</td>
<td>0.7037</td>
</tr>
<tr>
<td>R-square</td>
<td>0.778187</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-square</td>
<td>0.334562</td>
<td></td>
</tr>
<tr>
<td>Probability (F-stat)</td>
<td>0.231368</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***, ** and * denotes significant at 1%, 5% and 10% significance levels, respectively.
Source: Developed for the research
4.3 Interpretation of Long Run Elasticity

\[ LNTA_t = 15.5549 - 4.5646LNEXR_t - 1.8046LNINC_t - 1.1766LINTER_t - 0.0447LNND_t \]

Where,
LNTA = Natural logarithm of tourist arrivals from China to the United States
LNEXR = Natural logarithm of exchange rate in RMB/USD
LNINC = Natural logarithm of income GDP growth per capita in China
LINTER = Natural logarithm of terrorism in the United States
LNND = Natural logarithm of natural disaster in the United States

\( \beta_0 = 15.5549 \)
It indicates that a minimum of 15.5549% of the tourist arrivals from China to the United States will not be influence by all the independent variables.

\( \beta_1 = -4.5646 \)
It indicates that when there is an increase 1% on the exchange rate in RMB/USD, on average, tourist arrivals from China to the United States will decrease by 4.5646%, holding other variables constant. It is significant in long run relationship at \( \alpha = 5\% \).

\( \beta_2 = -1.8046 \)
It indicates that when there is an increase 1% on the income of GDP growth in China, on average, tourist arrivals from China to the United States will decrease by 1.8046%, holding other variables constant.

\( \beta_3 = -1.1766 \)
It indicates that when there is an increase 1% on the terrorism in the United States, on average, tourist arrivals from China to the United States will decrease by 1.1766%, holding other variables constant. It is significant in long run relationship at \( \alpha = 10\% \).
\[ \beta_4 = -0.0447 \]

It indicates that when there is an increase 1% on the natural disaster in the United States, on average, tourist arrivals from China to the United States will decrease by 0.0447%, holding other variables constant.

\[ R^2 = 0.7782 \]

There are 77.82% of variation in predicted tourist arrivals is explained by the variation in the exchange rate in RMB/USD, income of GDP growth in China, terrorism in the United States and natural disaster in the United States.

### 4.4 Interpretation of Short Run Elasticity

\[
\Delta Y_{t} = 15.5549 - 18.1375DLNEXR + 1.9049DLNEXR(-1) \\
+ 2.5993DLNEXR(-2) - 1.0544DLNINC \\
+ 0.5355DLNINC(-1) - 1.1003DLNINC(-2) \\
* -0.4579DLNTER * +0.1584DLNTER(-1) - 0.1285LNND
\]

It indicates that income GDP growth per capita in China (at lag 2) and terrorism in the United States shown a significant short run relationship at \( \alpha = 10\% \).

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>3.528271</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>14.11308</td>
</tr>
<tr>
<td>Probability</td>
<td>0.0701*</td>
</tr>
</tbody>
</table>

Note: ***, ** and * denotes significant at 1%, 5% and 10% significance levels, respectively.

Source: Developed for the research

The probability at 0.0701 is more than the significant level of 1% and 5%, whereas it is lower than the significant level of 10%. Hence, the null hypothesis
will be reject at the significant level of 10% where this conclude that exchange rate, income, terrorism and natural disaster are having a long run relationship with tourist arrivals from China to the United States at 10% significant level.

### 4.5 Diagnostic Checking

In order to ensure that the model is free from econometric problems, there are several diagnostic checking have been taking place. To test for multicollinearity, Centred VIF has been conducted; to test on the heteroscedasticity, ARCH have been took place; to test on the autocorrelation, Breusch-Godfrey Serial Correlation LM Test have been carried out; and finally to test on the normality, Jarque-Bera test have been applied.

**Table 4.5.1: Result of Multicollinearity**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Centred VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exchange Rate</td>
<td>1.7174</td>
</tr>
<tr>
<td>Income</td>
<td>1.2460</td>
</tr>
<tr>
<td>Terrorism</td>
<td>2.0387</td>
</tr>
<tr>
<td>Natural Disaster</td>
<td>2.1830</td>
</tr>
</tbody>
</table>

Source: Developed for the research

**Table 4.5.2: Result of Diagnostic Checking**

<table>
<thead>
<tr>
<th>Diagnostic Checking</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteroscedasticity: ARCH Test</td>
<td>0.2887</td>
</tr>
<tr>
<td>Autocorrelation: Breusch-Godfrey Serial Correlation LM Test</td>
<td>0.0116</td>
</tr>
<tr>
<td>Normality Test: Jarque-Bera Test</td>
<td>0.1216</td>
</tr>
</tbody>
</table>

Note: ***, ** and * denotes significant at 1%, 5% and 10% significance levels, respectively.

Source: Developed for the research
Based on the results shown on the table 4.4.1, it shows that the result of multicollinearity which is conducted by using Centred VIF, and it appears that each of the independent variables figures does not exceed more than 10. In other words, it means that there is no multicollinearity between each of the independent variables. From the table 4.4.2, it shows both the ARCH test and Jarque-Bera test show that there are no problem of heteroscedasticity and normality meanwhile Breusch-Godfrey Serial Correlation LM test indicates no autocorrelation at $\alpha= 1\%$. In short, concludes that the model is normally distributed, it does not contain the problem of multicollinearity, heteroscedasticity and autocorrelation.

### 4.5 Conclusion

In Chapter 4, the relationship between independent variables and dependent variable are studied and the empirical results are presented in the table forms. Eventually, the summary of this entire research paper will be discuss and present in later chapter.
CHAPTER 5: CONCLUSION

5.0 Introduction

This paper mainly focus in the study of the relationship between the United States tourist arrivals and the four independent variables which are exchange rate, income, terrorism and natural disaster from year 1990 to 2014. This chapter will cover a few subtopics and some tables are included for the better understanding for the results. In the beginning of this chapter, the summary of statistical analyses will be discussed along with a summary table. Afterward, there will be the discussion of the major findings regarding all the tests that have been carried out in Chapter 4. The major findings will thus continue by the implication of the study for future improvement in the specified areas. Besides, the limitation of the study and recommendation for the future studies will be thoroughly discussed. Finally, the conclusion for the overall study will be discussed as the ending part of this study.

5.1 Summary of Statistical Analyzes

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent Variable</th>
<th>Unit Root Test</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA</td>
<td>EXR</td>
<td>I(0)</td>
<td>Significant at 5%</td>
</tr>
<tr>
<td>TA</td>
<td>INC</td>
<td>I(1)</td>
<td>Insignificant</td>
</tr>
<tr>
<td>TA</td>
<td>TER</td>
<td>I(1)</td>
<td>Significant at 10%</td>
</tr>
<tr>
<td>TA</td>
<td>ND</td>
<td>I(1)</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

Source: Developed for the research

Table 5.1.1 shows the relationship between the United States tourist arrivals and the four independent variables which are exchange rate, income, terrorism and
natural disaster. The long run relationship between the United States tourist arrivals and two of the independent variables which are exchange rate and terrorism are significant at 5% and 10% respectively while income and natural disaster show an insignificant relationship in the result of ARDL. The unit root test shows that only exchange rate is stationary at level form. The variables income, terrorism and natural disaster are stationary at first difference.

Table 5.1.2: Summary of Long Run Relationship

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>Expected Sign</th>
<th>Actual Sign</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourist Arrivals</td>
<td>Exchange Rate</td>
<td>Negative</td>
<td>Negative</td>
<td>Consistent</td>
</tr>
<tr>
<td>Tourist Arrivals</td>
<td>Income</td>
<td>Positive</td>
<td>Negative</td>
<td>Inconsistent</td>
</tr>
<tr>
<td>Tourist Arrivals</td>
<td>Terrorism</td>
<td>Negative</td>
<td>Negative</td>
<td>Consistent</td>
</tr>
<tr>
<td>Tourist Arrivals</td>
<td>Natural Disaster</td>
<td>Negative</td>
<td>Negative</td>
<td>Consistent</td>
</tr>
</tbody>
</table>

Source: Developed for the research

Table 5.1.2 shows that all the independent variables are consistent with the expected sign except the income variable (INC). Income variable is expected to be positively related to the tourist arrivals. However, income is inconsistent with the expected sign. Initially, the expected sign for income is positive but the actual sign for the income is negative. Lastly, the model is valid and free from econometric problems.

Table 5.1.3: Summary of Short Run Relationship

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent Variable</th>
<th>Autoregressive Distributed Lag (ARDL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA</td>
<td>EXR</td>
<td>Insignificant</td>
</tr>
<tr>
<td>TA</td>
<td>INC</td>
<td>Significant at 10%</td>
</tr>
<tr>
<td>TA</td>
<td>TER</td>
<td>Significant at 10%</td>
</tr>
<tr>
<td>TA</td>
<td>ND</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

Source: Developed for the research
Table 5.1.3 shows that there is a short run relationship between the United States tourist arrivals and two of the independent variables which are income and terrorism. Both the independent variables are significant at 10% while exchange rate and natural disaster show an insignificant short run relationship in the result of ARDL.

Table 5.1.4: Summary of Diagnostic Checking Result

<table>
<thead>
<tr>
<th>Econometric Problems</th>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicollinearity</td>
<td>Variance Inflation Factor (VIF)</td>
<td>No multicollinearity</td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>ARCH Test</td>
<td>No heteroscedasticity</td>
</tr>
<tr>
<td>Autocorrelation</td>
<td>Breusch-Godfrey Serial Correlation LM Test</td>
<td>No autocorrelation at 1% significant level</td>
</tr>
<tr>
<td>Normality Test</td>
<td>Jarque-Bera (JB) Test</td>
<td>Model is normally distributed</td>
</tr>
</tbody>
</table>

Source: Developed for the research

5.2 Discussion of Major Findings

In chapter 4, we have conducted Wald test to study the long run association between the tourist arrival from China in the United States (dependent variable) and four independent variables, which are exchange rate in RMB/USD, income (GDP per capita growth in China), terrorism in the United States and natural disaster in the United States. The result concluded that all independent variables have a long run relationship with tourist arrivals from China to the United States at the significant level of 10%. Other than that, we have also conducted variance inflation factor (VIF), ARCH Test, Breusch-Godfrey Serial Correlation LM Test and Jarque-Bera (JB) Test to detect the econometric problems. Eventually, the results showed that our model is normally distributed and free from multicollinearity, heteroscedasticity and autocorrelation problem.

On the other hand, based on the autoregressive distributor lag (ARDL) model result, it shows that the number of tourist arrival from China in the United States
A Study of the Factors Affecting the China Tourist Arrival in the United States

(dependent variable) is having a short run relationship with income variable and terrorism variable at the significance level of 10%. It implies that exchange rate and natural disaster are showing insignificant impact to the dependent variable in the short run relationship. For long run, exchange rate variable and the terrorism variable are significantly affecting the dependent variable in the long run relationship at significance level of 5% and 10% respectively. However, the dependent variable is insignificantly affected by the income (GDP per capita growth in China) and the natural disaster cases that happened in the United States based on the autoregressive distributor lag (ARDL) model result. It indicates that these two independent variables are bringing impact to the dependent variable insignificantly in the long run relationship and the result had helped us to achieve the research objective in the previous chapter, which is Chapter 1.

Furthermore, we have also looked into the relationship between the dependent variable and independent variables and we have found out there is a variable showing inconsistent result. The first independent variable, exchange rate in RMB/USD has showed a consistent result which the expected sign and actual sign are both showing a negative sign. It means that when the exchange rate in RMB/USD decrease, the number of tourist arrival from China in the United States will increase. This result is supported by Yusup, Kanyan, Kasuma, Kamaruddin and Adlin (2016), which they stated unfavourable changes in exchange rate to tourists, will lead to reduction of the number to travel and resulting in decreasing the number of tourist arrival. This is because when the USD appreciates, the China tourists have to spend more RMB to exchange USD and it may cause a burden to the China tourists. Hence, the China tourists will shift their decision of the travel destination from the high exchange rate to the lower one (Wang, Chen, Lu, Hwang & Tseng, 2008).

However, for the second independent variable, income (GDP per capita growth) in China, the actual sign is not consistent with its expected sign. The expected sign of the relationship between the income (GDP per capita growth) and the tourist arrival from China in the United States is positive but the actual sign from the result of our study is negative. The negative relationship between the variables
indicates that when the income (GDP per capita growth) in China increases, the number of tourist arrival from China in the United States will decrease and vice versa. In this case, we have found out the reason why the actual sign is surprisingly inconsistent with the expected sign. According to Mohd Salleh, Law, Ramachandran, Shuib and Mohd Noor (2008), they stated that rich tourists are preferable to travel to a better place when their income increases. In this case, according to the study from HSBC, they surveyed of more than 2000 wealthy Chinese in major cities with annual household income above RMB120,000 in the age range of 18 to 34 years old for their new lifestyle (He, 2016). The result shows that the top three most favourable destinations for the respondents are Hong Kong, South Korea and Macau while Australia and France were positioned in 4th and 5th. This is because China tourists have common cultures and language with most of the Asia countries such as Hong Kong and Macau (Gentlemen Marketing Agency, 2014). Therefore, most of the wealthy and young Chinese tourists are preferable to Asia countries to avoid miscommunications when they are travelling.

Besides that, for the third independent variable, terrorism in the United States, the actual sign is consistent with its expected sign. The expected sign and actual sign of the relationship between the terrorism in the United States and the tourist arrival from China in the United States are negative. It indicates that when the terrorism cases that happened in the United States decreases, the number of tourist arrival from China in the United States will increase. The expected and actual sign of our result are supported by Gallego, Nadal and Fourie (2016), which they stated that terrorism is having an inverse relationship with the tourism sector and the effect can still be seen in the future years. This is because safety and security was rated as the most important factor in selecting a travel destination by 54% of tourists in the worldwide (Ironside, 2016). Baker (2014) has also stated that terrorism may cause the tourists to have anxiety towards the destination which eventually cause the tourists change their travel destination. Therefore, the safer the country, the higher the number of tourists arrival.

Lastly, for the fourth independent variable, natural disaster in the United States is also showing a consistent result between the actual sign and its expected sign, which are both showing a negative sign. It means that when the natural disaster
cases that happened in the United States decreases, the number of tourist arrival from China in the United States will increase. The result of our study is supported by Wang (2009), he stated that when there is any effects on safety regardless of internationally or domestically, are negatively relationship to the tourism demand. This statement is similar to the Maslow theory of ‘Hierarchy of needs’ which illustrates that safety needs is an important need by human before they are going to pursue for the self-fulfillment (Boeree, 1998). Since natural disasters may cause risk and threaten to the tourists, therefore, they will prefer to travel to a safer country and lead to a negative relationship to the number of tourist arrival.

5.3 Implication of the Study

Short run implication

Short run implication for the independent variable income, in order to increase the number of tourist arrival to the United States, China government should applies stabilization policy to stabilize their GDP growth. According to Investopedia (2017), stabilization policy refers to a macroeconomic policy introduced by government and central bank to stabilize economic growth of a country, by controlling the price level and unemployment rate. The strategy of stabilization policy consists of keep the business cycle stable and regulate benchmark interest rates to control aggregate demand in the economy. Hence, keep the GDP growth of China stable may help to increase the number of tourist arrival to the United States.

For the short run implication in terrorism variable, the latest president of the United States, Mr. Trump also proposed a new policy to control the Muslim terrorist attack in the United States which is the new ban on passengers that carrying electronics on flights to the United States from certain eight Muslim-majority countries such as Middle Eastern and African countries and this ‘Muslim Travel Ban’ policy has been partially approved by Supreme Court Judges (Devlin & Lockett, 2017). Despite the challenges, the United States government and
Americans are always combating the terrorism to build a safe and sound homeland so the tourists will more willing to visit their homeland.

**Long run implication**

For the long run, in order to stabilize the exchange rate of the United States and at the same time, to improve the tourist arrivals to the United States, the United States government should emphasize in enhancing the exchange rate regimes. Exchange rate regime is a kind of system that will be adopted by the central bank of the particular country in order to control and stabilize the exchange rate to avoid the fluctuation. The most commonly used of the type of the exchange rate regimes are monetary policy and fiscal policy. However, vulnerability still exist in these kind of policy such as the future revenue can be the unforeseen reason that cannot be exactly determined thus the policies cannot be effectively applied in all the situations. Thus, a more appropriate policy is suggested to be implemented by the government and central bank could help to stabilize the exchange rate and thus improve the number of tourist arrivals to the United States.

For the implication of terrorism variable in long run, the United States government had formulated a national strategy to overcome the terrorism of the country before it causes a worse impact to the tourism sector. Despite the challenges, The United States was first published National Strategy for Combating Terrorism in February 2003 to protect and defend the home country, the American people, and their living (U.S Department of State, 2006). Their strategy is to pinpoint that ‘War on Terror’ is a different kind of war for them and they will set the course to win the ‘War on Terror’ by extend their defences and disrupt terrorist operations. Until now, the United States has put so much effort in degrade al-Qaida network that executed the terrorist attacks on 11th September, 2001 and to weaken the perceived legitimacy of terrorism. Not only that, the United States also liberated 50 million Afghans and Iraqis from terrorism and helped their countries to build a democratic government. U.S Department of State (2006) also stated that they will continue to improve their strategy to meet the hazard, attack the terrorism and its principle, as well as to bring hope and freedom to the people globally to will win the War on Terror along with their partners.
5.4 Limitations and Recommendations of the Study

While conducting this research, there are several limitations been encountered and found in this research study.

First of foremost, the uses of the predictor variable (terrorism) is too general in form. In this study, the terrorism was only included the overall number of cases that occurred in the whole country of the United States. It does not specific the places or region that the terrorism incident occurred which this information also takes an important role in determining the impact of terrorism to the tourist arrival. For example, it will give a significant impact to the tourist arrival if the terrorism incident is occurred in the city of the country like New York Square, rather than it happened in the rural area. Thus, we propose that future researchers to carry on examining the topic with a more narrow uses of the terrorism variable information, for instance, using the terrorism cases occurred in the urban area or rural area to determine its impact to the tourist arrival.

The second limitation of the research is similar to the first but in the other variable which is the natural disaster. In this study, the natural disaster is also only included the overall number of cases that occurred in the United States. It does not specific the types of the natural disaster or the places that the natural disaster triggered at which this information are also crucial in determining its impact to the tourist arrival. Different type of natural disaster would give a different impact to the tourist arrival. For instance, earthquake could give serious impact to the tourist arrival meanwhile for the volcano eruption incident, it could give negative impact as well as a positive impact, which it could turn up as another attractive point for tourist to visit for instead of reducing the tourist arrival. Due to this limitation, we propose that future researchers to carry on investigating the topic subject with a more narrow natural disaster variable information, such as using a specific type of natural disaster to determine the its impact to the tourist arrival.
5.5 Conclusion

As a summary, this study aims to investigate the existence of impacts towards the United States tourist arrivals in terms of different economic and non-economic factors by the China tourists from year 1990 to year 2014. According to the results, among the four independent variables we had used in this study, there are three out of four variables are negatively related to the tourist arrivals which are exchange rate, terrorism and natural disaster. Another variable which is the income, it shows a negative relationship with the tourist arrivals.

Throughout the study, there are some of the appropriate tests have been conducted for the analyzation purposes. From the Wald test that we have carried out, we can know that all the independent variables, exchange rate, income, terrorism and natural disaster have a long run relationship with tourist arrivals from China to the United States. Other than that, there are four tests have been included for the diagnostic checking to check for the existence of the econometric problems. Variance Inflation Factor (VIF) to test for multicollinearity, ARCH test to test for the heteroscedasticity, Breusch-Godfrey Serial Correlation LM test to test for the autocorrelation and Jarque-Bera (JB) Test to check for the normality of the model.

The limitations and recommendations are both have been included in this study so that it may be useful for future researchers who are interested to do a research in this area. Besides, businessmen and policymakers may find this research is meaningful and beneficial for them for a better understanding regarding whether the specified independent variables will have any impacts to the number of tourist arrivals to the United States. Lastly, we can conclude that all the independent variables that we discussed in this study which are exchange rate, income, terrorism and natural disaster will bring impacts towards the number of the United States tourist arrival.
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A Study of the Factors Affecting the China Tourist Arrival in the United States


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