

Tourism and Macroeconomic variables: effects on
developed and developing country

BY

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DECLARATION

We hereby declare that:

- (1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to All sources of information be they printed, electronic, or personal.
- (2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
- (3) Equal contribution has been made by each group member in completing the research project.
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LIST OF ABBREVIATIONS

UNWTO	World Trade Organization
GDP	Gross Domestic Product
CPI	Consumer Price Index
WTTC	World Travel & Tourism Council
TOUR	Tourist receipts
CR	Crime Rate
POLS	Pooled Ordinary Least Square
FEM	Fixed Effect Model
REM	Random Effect Model

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Appendix 2.0 E-view result for developed countries

Abstract

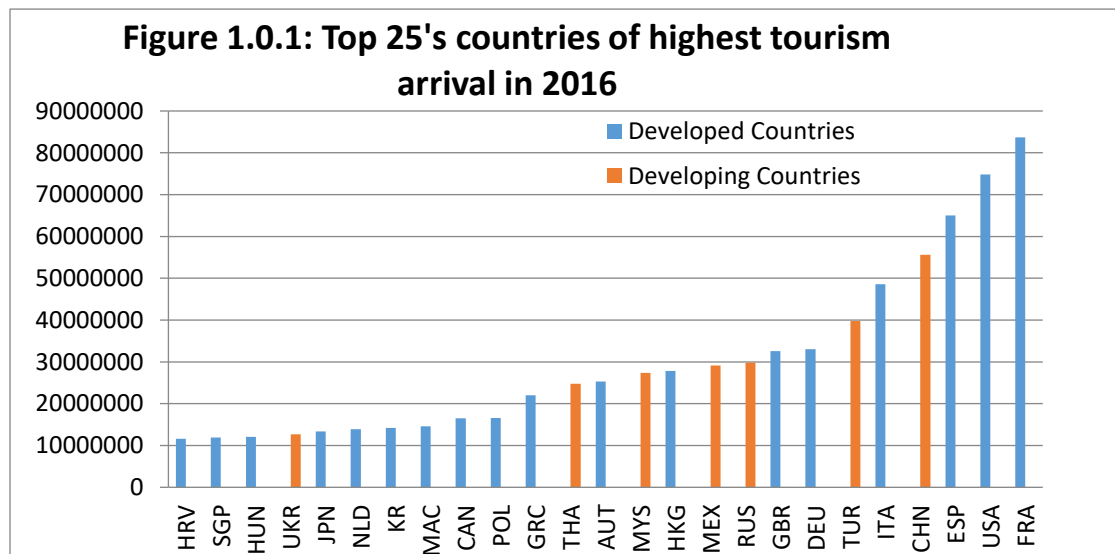
This research is to investigate the relationship between tourist receipts and the independent variables such like crime rate, co2 emmision, GDP and also inflation. We using the time period of data is from year 2001-2010. Besides that, we will identify the effects of the independent variable to the tourist receipts in both developed and developing countries. We have chosen Italy, France, United State, Germany, and Spain as our developed countries and Mexico, China, Malaysia, Russia and Turkey as our developing countries. Besides that, we are using panel data, pooled ordinary least square. We are using E-view and Stata as our statistical testing. The result of E-view shows that there is a different results showing that the independent variable relate to the tourist receipts in developed and developing countries. The empirical results of this study shows the effects of GDP and CPI towards the tourism receipts is positive and significant in both developing and developed countries. This indicates the importance of these variables towards tourism receipts. Crime rates and CO2 emission differ in their signs in developing and developed countries respectively. Crime rates is positive in developing countries and negative in developed countries. CO2 is negative in developing countries and positive in developed countries. Both crime rates and CO2 emission are insignificant in developing and developed countries.

1.0 Introduction

Tourism significantly affects the economy of a country and is also one of the fastest growing sector in the economic world. Furthermore, some small countries are very dependent on tourism as the income derived from the tourism industry surpasses the exports of goods. The World Tourism Organization define tourism as “beyond the common perception of tourism as being limited to holiday activity only” (Why tourism, 2015). Tourism includes people who for business, leisure or other purposes, travel and residing in places outside their home environment.

In the year 2008 to 2009, tourism has suffered from global economic slowdown due to the global financial crisis. The international tourism receipt has grew by 740 billion in year 2011 compared to year 2010 with a 3.8% increment while international tourist arrival has exceeded 1 billion of tourists globally for the very first time in year 2012, emerging markets such as China had their tourism receipt growing significantly compared to the last decade.

During the year 2014, the international tourist arrivals once again broke the worldwide record with 1133 million in comparison with the 1087 million achieved in year 2013. Although there is ongoing geopolitical, economic and health challenges, the demand is still being strong in sources markets and destinations. Since the financial crisis in year 2009, 2014 is the fifth greatest growth with the number of 46 million tourist arrival (UNWTO).



Sources: World Tourism Organization

Figure 1.0.1 is showing the 25 most visited countries in the world. The blue line represents the developed countries and the red line represents the developing countries as shown in the diagram. In our study, we select 10 countries of which 5 is developed countries and another 5 is developing countries. They are selected based on UNWTO top 10 highest ranked countries in tourist arrival for the year 2016. These 10 countries are the most attractive countries to visit. France, United States, Spain, Italy and Germany will represent developed countries while developing countries are represented by China, Turkey, Russian, Mexico and Malaysia. Eiffel Tower is one of the main attractiveness for developed countries are located in Paris, France. It is also among the top 10 “Proposal Destination”. The Great Wall of China which was built during the time of the first emperor of China is an example of attractions in developing countries. It is important to be attractive as a tourist destination to encourage tourist to arrive and spend their money. In this study, we will evaluate the attractiveness of a country by using the variables, GDP, crime rates, co2 emission and CPI.

Moreover, the total tourist arrival for the 5 developed countries is around 305 million greater than the 5 developing countries which the figure is around 182 million. One of the reasons is that many developing countries like India, Mexico, Thailand and Turkey have a strong government that centralise their decision making and practice administrative tutelage on local government. This strong control of the central government has prevented an emergence of a responsive and autonomous tourism institutions at the local level. Ultimately, this caused the non-participation of local people in tourism development of the locale. (Gupta, 1995) (Jones, 1990) (Koker, 1995).

1.1 Research Background of Ten Selected Country

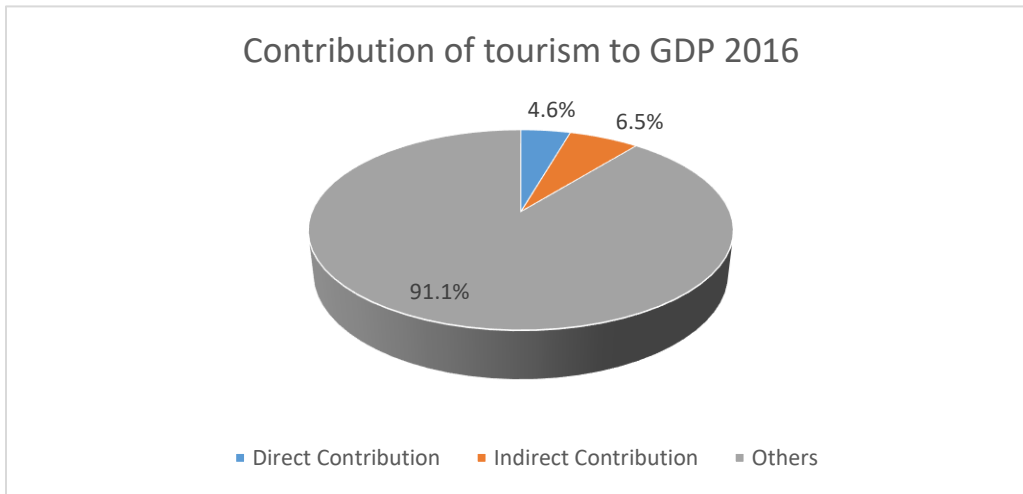
1.1.1 Background of Italy

Italian Republic, commonly known as Italy is a unitary parliamentary republic in Europe that shares open land borders with Austria, Vatican City, San Marino, France, Switzerland and Slovenia. Italy is located in the centre of the Mediterranean Sea and it is often referred as Io Stivale, the Boot in Italian language due to the shape. Tourism industry in Italy has been the fastest growing and most profitable sector with 48.6 million tourists and revenue of 189 billion euros in 2014. The pie chart below shows that the Italy tourism industry has direct contribution of 4.6% to total GDP whereas the indirect contribution is 6.5%.

In ancient time, the Latins, an Italic tribe formed the Roman Kingdom and conquer the nearby civilizations. Their dominant powers eventually lead them becoming the epicentre in culture, religious centre and politics in Western civilization during that time. However, the Roman Empire had collapsed during the middle ages due to the barbarian invasion and Black Death Pandemic had taken the lives of one third from the population. The Renaissance hence began following the end of the plague and started the bloom of interest in humanism, science, art and exploration. Famous artists and scholars such as Leonardo Da Vinci, Michelangelo and Galileo had flourished the Italian culture in that era (Burkhardt, n.d.).

These histories are one of the main factors that make Italy one of the most visited countries in the world as well as the home to fifty one UNESCO World Heritage Sites that even including the whole city such as Pompei. The legacies of the Roman Empire, middle ages and renaissance are the rich culture, arts, fashion and cuisine. Coliseum, Pantheon, Milan Cathedral, Leaning Tower of Pisa and many more that are left since ancient are now the main tourist attractions in Italy.

Figure 1.1 Contribution of tourism in Italy to GDP 2016



Source: Travel & Tourism Council (WTTC) Italy 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Italy

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	39.563	26916
2002	39.799	28192
2003	39.604	32591
2004	37.071	37870
2005	36.513	38374
2006	41.058	41644
2007	43.654	46144
2008	42.734	46191
2009	43.239	40375
2010	43.626	38438
2011	46.119	43241
2012	46.360	40960
2013	47.704	43829

2014	48.576	45547
2015	50.732	39420

In year 2001 to 2008, tourist arrival having a serious fluctuation and started from year 2009 is having a rapidly increased until 2015 while tourist receipts is increasing from year 2001 to 2008 and started fluctuation in between year 2009 to 2012 and back to increase slowly at year 2013.

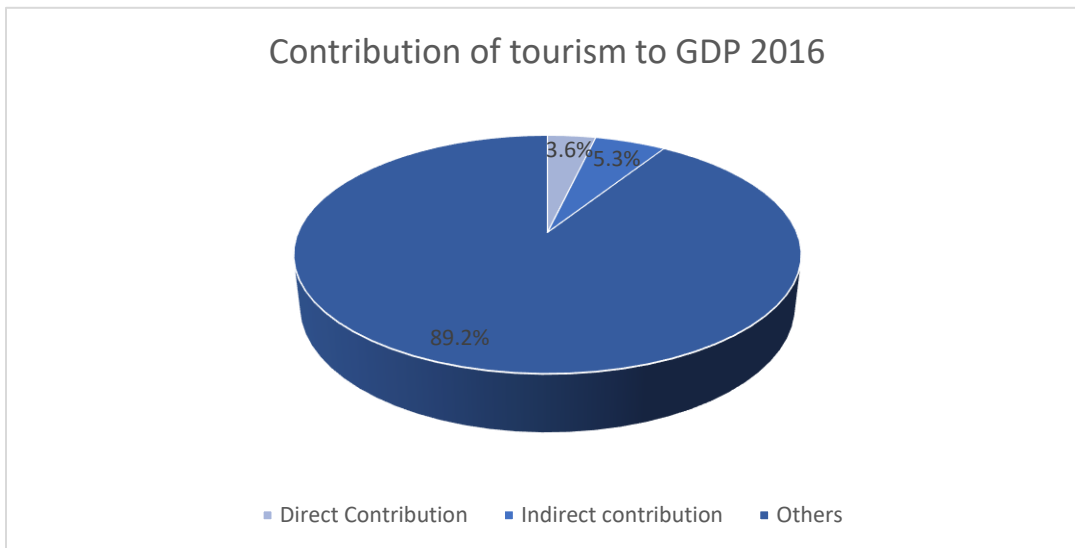
1.1.2 Background of France

French Republic, commonly referred as France, is a country located in Western Europe and also overseas regions including French Guiana and few islands in the Atlantic, Indian and Pacific oceans. It had a total population of 67millions and ranked as the first tourist destination in the world in 2012 with approximately 83 million of visitors in that year and ahead of China and United States of America. The country has also been listed with 37 UNESCO’s World Heritage sites.

The capital of France is Paris, which also serves as main cultural and commercial centre. Besides that, Paris is the world third most visited city with the main tourist attraction including of world most visited art museum, Louvre and the renowned landmark, Eiffel Tower. Besides the high culture features in cities, the beautiful French villages such as Collonges-La-Rouge, ski and seaside resorts and even the rural regions would also attract the visitors that enjoy the beauty of tranquillity

In fact, tourism industry is not the most profitable income due to the duration of visits is usually brief and short. The chart below shows that in 2016, tourism industry had only contributed 8.9% to France’s GDP. However, tourism is still significant to France as in the contributions to the balance of international payments, which is the record of all economic transactions between the citizens of the nation and the other foreign countries in a given period (“France, the world’s leading tourist destination”, 2013).

Figure 1.2 Contribution of tourism in France to GDP 2016



Source: Travel & Tourism Council (WTTC) France 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in France

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	75.202	38385
2002	77.012	40537
2003	75.048	45990
2004	74.433	52108
2005	74.988	52139
2006	77.916	54587
2007	80.853	63902
2008	79.218	68001

2009	76.764	58858
2010	76.647	56187
2011	80.499	66087
2012	81.980	64001
2013	83.634	66049
2014	83.767	66803
2015	84.452	54003

Tourist arrival having a serious fluctuation in between year 2001 to 2010 and started increasing at 2011 until year 2015 while tourist receipt increased in year 2001 to 2008 and it is started to fluctuate from year 2009 to 2015.

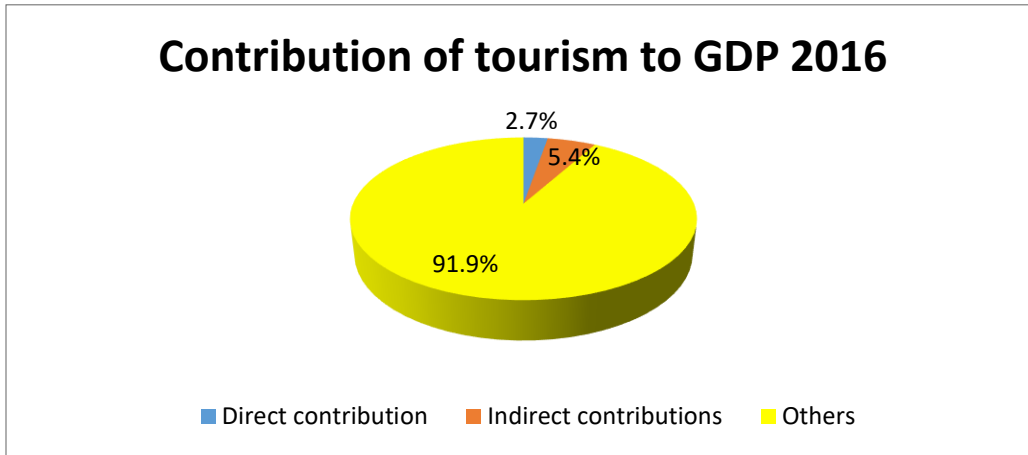
1.1.3 Background of United States

The United States of America, commonly known as United States or America is the world's fourth largest country by total area and one of the most populous countries. The United States is a highly developed country which has the world's largest economy by nominal GDP. Every year, millions of foreign and domestic tourists visit United States to see the cities, natural wonders, theme parks, landmarks and historical buildings. Orlando in the state of Florida is the highest visited city with over 100 million visitors that broke the records in United States in 2015. Even in the world, with the attraction of world's most visited theme park, the Walt Disney World's Magic Kingdom, Florida is the most visited city. Others popular destination included Grand Canyon in Arizona, casinos in Las Vegas, Hollywood in Los Angeles and many more.

The travel and tourism industry is forecasted to contribute more than 2.5 trillion U.S dollars by 2025, making it one of the largest industries in the country. The pie chart below shows that the direct contribution of United States tourism industry to total GDP in 2016 is 2.7% whereas the indirect contribution is 5.4%. In 2014, the former president Barack Obama held campaigns to promote the tourist industry that had resulted increase in international

tourist spending and more employment for the country’s residents. Visitors from Canada, China and Mexico contributed the highest tourist spending at around 26 billion U.S dollars in 2015. However, the domestic tourism is still remaining the largest component of tourist spending in the country.

Figure 1.3 Contribution of tourism in United State to GDP 2016



Source: Travel & Tourism Council (WTTC) United State 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in United State

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	46.927	109103
2002	43.581	104427
2003	41.218	101535
2004	46.086	115689
2005	49.206	122077
2006	50.977	126778
2007	56.135	144223
2008	58.007	164721
2009	55.103	146002

2010	60.010	167996
2011	62.821	187629
2012	66.657	200997
2013	69.995	214542
2014	75.011	220757
2015	77.510	246229

Tourist arrival having a serious fluctuation in between year 2001 to 2010 and started from year 2011 have rapidly increasing until 2015 while tourist receipt increased in year 2001 to 2008 and it has a slightly drop at year 2009. After that, the following year started to increase until the latest year.

1.1.4 Background of Mexico

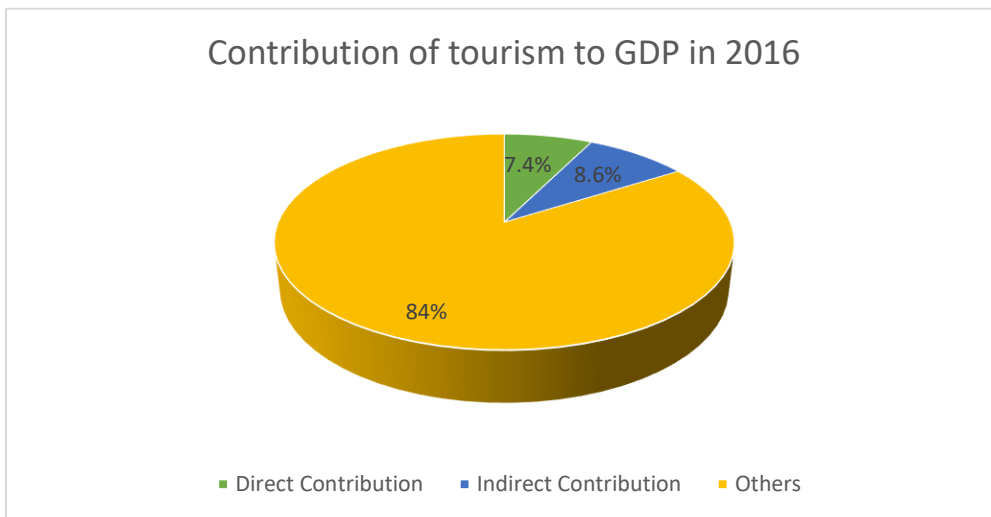
Tourism is one of the largest industries in Mexico and played a very important role to Mexico's economy. Tourism is ranked as fourth largest source of foreign exchange for the country. Based on the World Travel & Tourism Council (WTTC), it showed that tourism had contributed 7.0% of the total GDP in year 2015 and forecast to be rise by 4.0% in year 2016. Without tourism, Mexico could suffer a drastic lost to its income as well as unemployment.

Mexico is named as the second-most visited country in the Americas, the first is United States. Besides, Mexico also granted by the New York Times named Mexico City as the number one place to go in the year 2016. Lots of Mexico's city also granted award by some famous travel websites. For example, San Miguel de Allende named third in annual "World's Best Cities" list 2016 by Travel + Leisure and Guadalajara was ranked number two as Best Places to Travel by Travel + Leisure as well. Mexico is famous of its climate temperature and unique culture which contain a fusion of European and the Meso-American.

Based on the figure below, we can observe that there is a significant rose on the tourists receipt by Mexico. However, there is a serious drop in year 2008 to year 2009 and

remained low to year 2012. A report in the Journal of Travel Research (2010), it stated that the Americas were experiencing the financial crisis and this financial crisis directly affected the Mexico. Due to the Mexico tourism is targeting to the American, so the tourists receipt could be reduced heavily. The international tourism of Mexico also dropped dramatically. Therefore, after the economic crisis and the virus spread, the government could recover the tourism industry back to the top and named as top 24 country by World Tourism Organization (UNWTO).

Figure 1.4 Contribution of tourism in Mexico to GDP in 2016



Source: Travel & Tourism Council (WTTC) Mexico 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Mexico

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	19.810	9190
2002	19.667	9547
2003	18.665	10058

2004	20.618	11610
2005	21.915	12801
2006	21.353	13329
2007	21.606	14055
2008	22.931	14726
2009	22.346	12542
2010	23.290	12628
2011	23.403	12458
2012	23.403	13320
2013	24.151	14311
2014	29.346	16607
2015	32.093	18729

Tourist arrival of Mexico is having a slowly increased from year 2001 to 2015 except the year 2003 is having a slightly decrease while tourist receipt of Mexico is increased from 2001 to 2015 except having slightly decrease in year 2009 and 2011.

1.1.5 Background of Germany

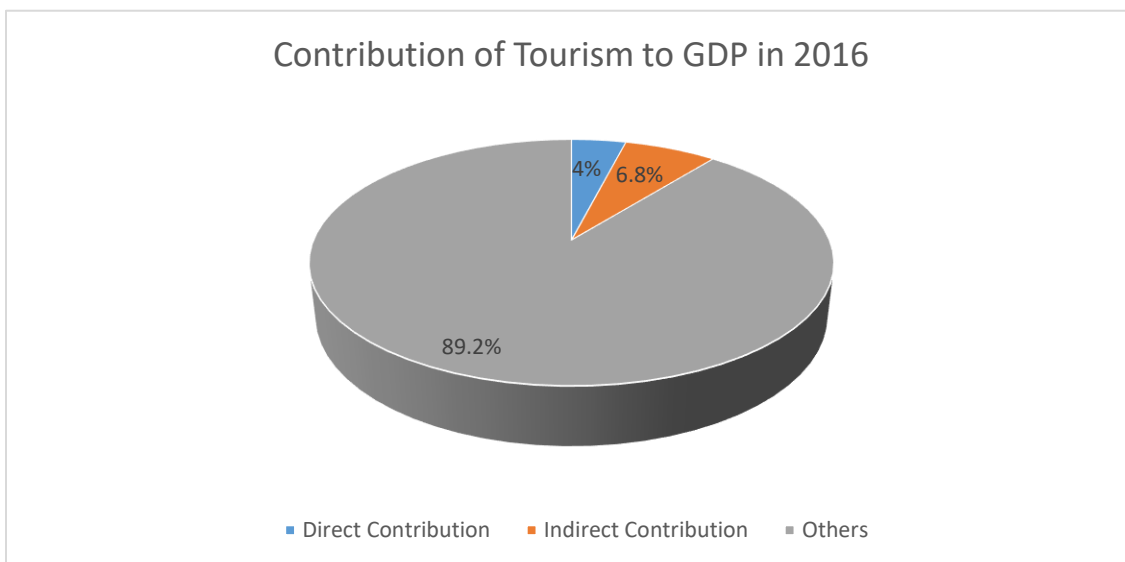
Germany is the seventh most visited country in the world, that amount to a total of 407.26 million overnights during 2012. Out of this, 68.83 million nights were recorded by foreign visitors. The majority of foreign tourists comes from the Netherlands, the United States, and Switzerland. Moreover, over 30% of Germans spent their holiday in the country. According to Travel and Tourism Competitiveness Reports, Germany is regarded as one of the safest travel destinations worldwide.

Regarded as one of the safest tourist destinations in the world, Germany receives a high number of tourists from all across the globe as well as from within the country. As the research showed that there were over 30% of the Germans loved to vacation within their own country. Foreigners also love to visit the country as evident from the fact that in 2014,

33 million foreign tourists toured Germany. In 2012, international tourism generated tourism revenue of over \$38 billion USD. The tourism industry in Germany is estimated to contribute 4.5% towards the national GDP and 2 million employment opportunities are created here based on travel and tourism related job requirements. Cultural tourism is most popular in the country with Berlin, Munich, and Hamburg being the most visited cities here. Visitations to the country for educational and business purpose were also quite common. Several protected areas within Germany, such as the Saxon Switzerland National Park, the Western Pomerania Lagoon Area National Park, and the Jasmund National Park, also attract millions of tourists every year.

Based on the World Travel & Tourism Council (WTTC), the total contribution of Tourism to GDP was USD 376.7 billion, which are 10.8% of the GDP in year 2016. It ranked number 3 out of the 185 countries in the reports of WTTC.

Figure 1.5 Contribution of tourism in Germany to GDP 2016



Source: Travel & Tourism Council (WTTC) Germany 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Germany

Year	Tourist Arrivals (Million)	Tourist Receipts (Million)
2001	17.861	24175
2002	17.969	26690
2003	18.399	30104
2004	20.137	36390
2005	21.500	40531
2006	23.569	45537
2007	24.421	49333
2008	24.884	53400
2009	24.220	47462
2010	26.875	49128
2011	28.374	53430
2012	30.411	51646
2013	31.545	55312
2014	32.999	55924
2015	34.970	47393

Tourist arrival of Germany is having a rapidly increased from year 2001 to 2015 except the year 2009 is having a slightly decrease while tourist receipt of Mexico is also having a rapidly increased from 2001 to 2008 and having a little fluctuated in year 2009 to 2015.

1.1.6 Background of Spain

Tourism is one of the major industries in Spain, contributing roughly 11% to the national GDP of the country. In 2014, there are 65 million tourists toured Spain with the largest volume of tourists coming from the European countries of United Kingdom, Italy,

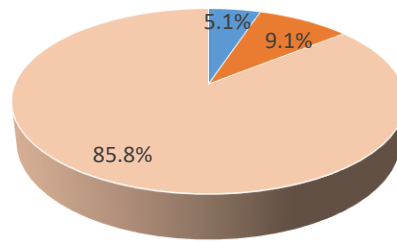
France and Germany. Spain is popular due to few reasons: Historical cities of the country like Barcelona and Madrid, the world-class resorts at the Mediterranean and Atlantic coasts of the country, the popular festivals like the Carnival and the Running of the Bulls, 15 national parks, well-developed winter tourism facilities, and a bustling nightlife and a popular football league (La Liga). Besides, there are 13 Spanish cities also named as UNESCO World Heritage Sites which attracting foreign visitors with their unique charm and significance.

It also named as the third most visited country in the world, with approximately 60.6 million arrivals, a figure that continues to increase thanks primarily to a surge in visitors from emerging markets such as China, Brazil and Mexico. It successfully boasts top marks for its cultural resources, and also scores highly for business travelers with a significant number of international conferences with the beautiful heritage sites throughout the country,

Furthermore, based on the World Travel & Tourism Council (WTTC), the total contribution of Tourism to GDP at year 2016 was USD177.2 billons, which consist of 14.2% of the GDP. This amount of contribution was ranked number 9 out of 185 countries and forecast to rise a 3.8% in year 2017.

Figure 1.6 Contributions of Tourism in Spain to GDP in 2016

Contribution of Tourism to GDP in 2016



■ Tourism direct contribution ■ Tourism indirect contribution ■ others

Source:

Travel & Tourism Council (WTTC) Spain 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Spain

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	48.565	33829
2002	50.331	35468
2003	50.854	43863
2004	52.430	49996
2005	55.914	49565
2006	58.004	53160
2007	58.666	59910
2008	57.192	64422
2009	52.178	55748
2010	52.677	54305
2011	56.177	62447
2012	57.464	57877
2013	60.675	62584

2014	64.995	65100
2015	68.215	56426

In year 2001 to 2007, tourist arrival of Spain increased and decrease started from 2008 but recovered in year 2010 until 2015 while tourist receipt having a rapidly increased from 2001 to 2008 and started a serious fluctuation in year 2009 to 2015.

1.1.7 Background of Turkey

Turkey is ranked at 6th in UNWTO tourist arrival ranking 2015 and 11th in WTTC visitor export ranking 2015. The tourist arrival to Turkey has grown tremendously year on year since 2007. According to the data by Ministry of Culture and Tourism of Turkey, the tourist arrival to Turkey in 2015 was 36.2 million, while the revenue of the tourism industry was recorded at USD 31.464 billion (“Turkey received most tourists”, 2016).

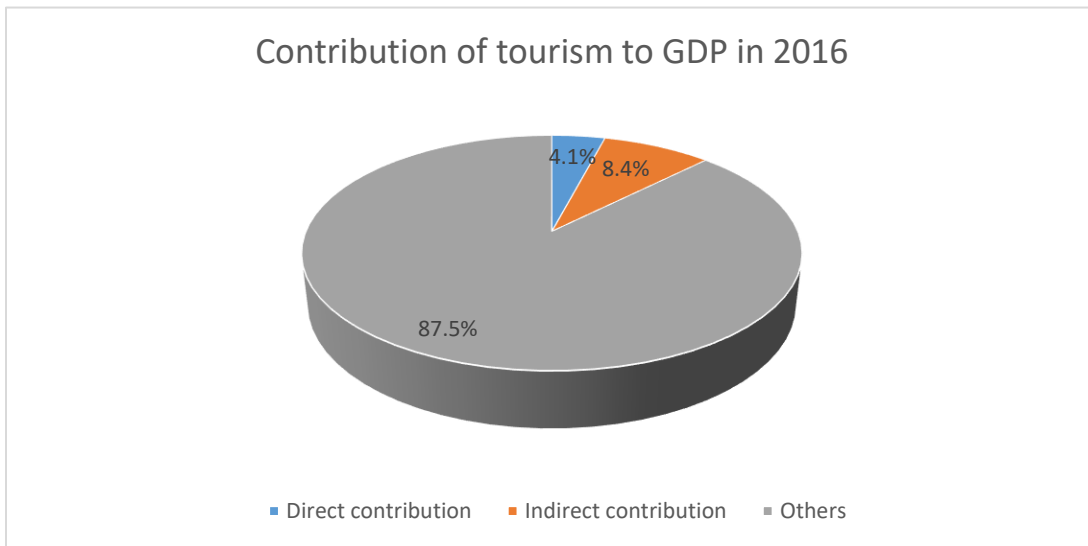
Antalya remains the most popular destination in Turkey for foreign visitors. It was visited by 34 percent of the foreign tourists to Turkey in 2014. Being a famous resort city that is located in the Turkish Riviera, Antalya has more than 500 4-star and 5-star hotels to cater for the huge tourist demands. Based on a report from Euro monitor International, Antalya ranked in 10th place in world top 100 city destination with 11.1 million foreign visitors in 2013. Besides Antalya, Istanbul is another international city renowned for its tourist attractions. In 2015, Istanbul placed at number 8 among the world most visited city with 12.4 million tourist arrival. According to the MasterCard 2015 Global Destination Cities Index, Istanbul is the fifth fastest growing destination city with a 10.1% compound annual growth rate (CAGR). Istanbul has firmly held a top 10 position in global congress destination since 2010. The International Congress and Convention Association’s (ICCA) statistics for 2014 put Istanbul as number 8th in the world in being the host of international congresses with 130 meetings. Turkey has over 7,200 km of coastline and it has the 2nd most blue-flagged beaches in the world according to Foundation for Environmental Education.

Turkey has also a huge geothermal tourism potential. Turkey has nearly 1,500 thermal springs throughout the country and ranked among the top seven countries in the

world in terms of geothermal resources. The bed capacity in thermal spa resorts in Turkey has reached a total of 55,140.

In recent years, due to foreign policies and conflicts with neighbouring countries especially Russia, the tourist arrival to Turkey fell. The tourism receipts in Turkey also declined due to falling value of Turkey Lira to Dollar and Euro. Turkey’s tension with Russia also contributes to the latter imposing a travel ban of its citizen to Turkey. This led to an 80% decrease in tourist from Russia in 2016. According to the data from WTTC, the total contribution of tourism sector to Turkey GDP is 12.5%, with 4.1% being the direct contribution.

Figure 1.7 Contribution of tourism in Turkey to GDP in 2016



Source: Travel & Tourism Council (WTTC) Turkey 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Turkey

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	10.783	10067
2002	12.790	11901
2003	13.341	13203
2004	16.826	15888
2005	20.273	20760

2006	18.916	19137
2007	26.122	21662
2008	29.792	26446
2009	30.187	26331
2010	31.364	26318
2011	34.654	30302
2012	35.698	31566
2013	37.795	35037
2014	39.811	38766
2015	39.478	35413

Tourist arrival of Turkey is having a rapidly increased from year 2001 to 2015 except in year 2006 and 2015 having a slightly decreased while tourist receipts of Turkey is increased started from year 2001 to 2008 and started to have a little fluctuation in year 2009 to 2015.

1.1.8 Background of China

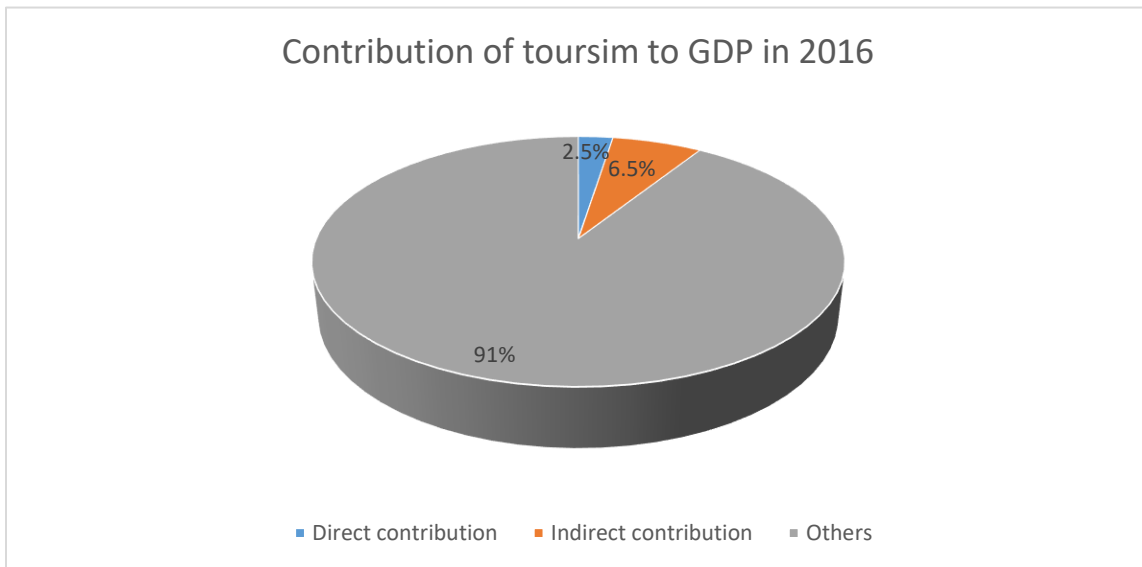
China is the world's third largest country in land area and with its large landscape, it boasts many diverse tourist attraction from natural wonder such as the Three Gorges of Yangtze River and the Five Sacred Mountains, to Historical sites, such as the Great Wall and Forbidden Palace and to Cultural sites, such as Lijiang and Lhasa.

Since the Reform and Opening-up policy in 1978, the tourism industry in China had started to develop and grow at a steady pace. During the 2000s decade, China has seen an extraordinary growth in their tourism sector. This is especially noticeable during the year 2004, where the tourist arrival growth rate spike to an all-time high of 18.96%. Although in years after 2005, the trend start to fluctuate, still China's tourism sector has shown that it has the strength to withstand the uncertain global economic condition. With the government support in the form of prioritization of travel and tourism in government

policy, China’s tourism industry is poised to flourish in coming years. In fact, the World Tourism Organization (UNWTO) had predicted that China will constitute a total of 8.6% of the world’s tourism market share to become the world’s largest tourism industry.

In 2015, China ranked as the no. 2 country in UNWTO international tourism receipts ranking. Something notable to this fact is the data for China exclude Hong Kong and Macao, both Special Administrative Region of China, of which both are within the top 10 of UNWTO international tourism receipts ranking. According to the data from WTTC, the total contribution of tourism sector to China GDP is 9%, with 2.5% being the direct contribution.

Figure 1.8 Contribution of tourism in China to GDP in 2016



Source: Travel & Tourism Council (WTTC) China 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in China

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	33.167	19006

2002	36.803	21742
2003	32.970	18707
2004	41.761	27755
2005	46.809	29296
2006	49.913	33949
2007	54.720	37233
2008	53.049	40843
2009	50.875	39675
2010	55.664	45814
2011	57.581	48464
2012	57.725	50028
2013	55.686	51664
2014	55.622	105380
2015	56.886	114109

Tourist arrival of China is having a serious fluctuation in year 2001 to 2015 while Tourist receipts of China is also having a serious fluctuation in year 2001 to 2009 but started to increase at 2010.

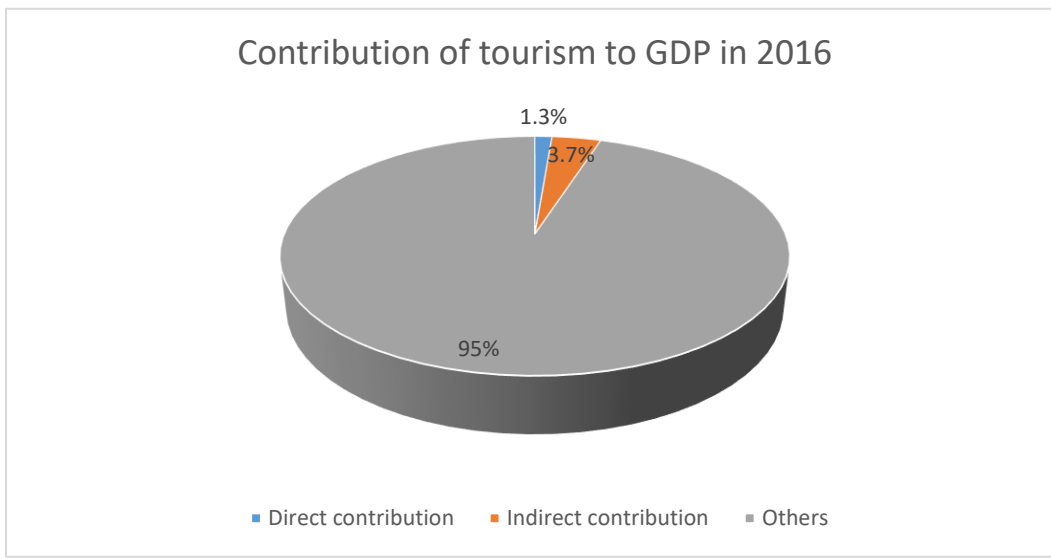
1.1.9 Background of Russia

Russia is one of the most popular tourist destination in the world. In 2015, Russian ranked at no. 10 in tourist arrival and no. 34 in tourism receipts. Russia has 26 UNESCO World Heritage Sites, 16 of the sites are cultural while 10 are natural. Despite this, the most popular destination in Russia remain as St. Petersburg and Moscow. St. Petersburg in particular was one of the top visited cities of Europe in 2010.

In recent years, the Russian military intervention in Ukraine has negatively affected its trade ties to the West. Many countries in the West such as the United States, Australia and countries in the European Union had introduced sanctions against Russia. However, it did not affect Russian tourism industry seriously as the Russian Tourism Industry Union

reported that the number of foreign tourists increased by 13% in the first nine months of 2015. Chinese tourists, up by 63% from 2014, has also replace Germans as the most numerous international tourist to Russia. It is also said that the weaker Rubble has an effect on boosting the international tourist’s arrival to Russia. According to the data from WTTC, the total contribution of tourism sector to Russia GDP is 5%, with 1.3% being the direct contribution.

Figure 1.9 Contribution of tourism in Russia to GDP in 2016



Source: Travel & Tourism Council (WTTC) Russian Federation 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Russian Federation

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	21.595	4726
2002	23.309	5278
2003	22.521	5879
2004	22.064	7262
2005	22.201	7805
2006	22.486	9720
2007	22.909	12426

2008	23.676	15821
2009	21.339	12369
2010	22.281	13239
2011	24.942	16961
2012	28.177	17876
2013	30.792	20198
2014	32.421	19451
2015	33.729	13249

Tourist arrival of Russian Federation having a serious fluctuation started from year 2001 to 2015 while tourist receipts of Russian Federation is having a rapidly increased started from year 2001 to 2013 except in year 2009 having a little drop and started decreasing from year 2014.

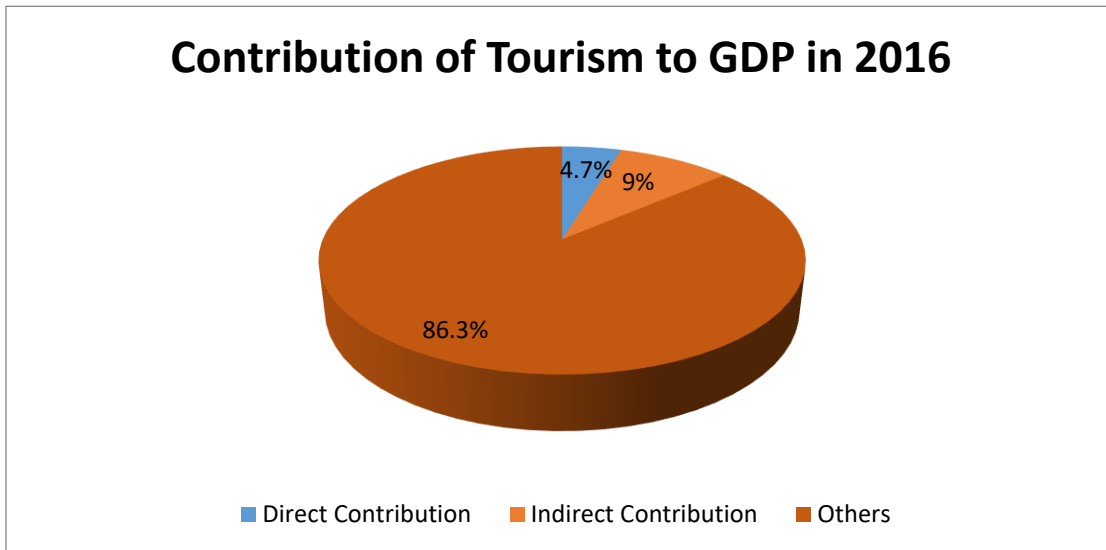
1.1.10 Background of Malaysia

Tourism is playing an important economy activity to Malaysia. Malaysia is located in the Southeast Asia which is divided into 13 states and 3 federal territories. There are 11 states and 2 federal territories separated with 2 states and 1 federal territory in East Malaysia by the South China Sea. Tourism of Malaysia is ranked as 12th place in the world ranking with number around 27.4 million of tourist arrival. Malaysia is also one of the most economically-prosperous countries in the world, having achieved an average annual growth rate of 6.5% for nearly 50 years.

In year 2014, tourists have spent RM21.6 billion in Malaysia and have increased 9.3% compared with year 2013 RM19.8 billion. In 2014, tourism of Malaysia is the second largest foreign exchange earn because of RM 72billion of tourist receipt have made. The Ministry of Tourism and Culture and the Ministry's agency Tourism Malaysia have put a lot of effort on it and now Malaysia is one of the dynamic industry in the retail sector.

Furthermore, According to World Travel& Tourism Council (2017), the total contribution is RM 167.5billion with 13.7% of GDP in 2016. Refer to the pie chart below, the direct contribution is RM 58 billion with 4.7% of GDP and the indirect contribution is RM 109.5 billion with 9.0% of GDP.

Figure 1.10 Contribution of tourism in Malaysia to GDP in 2016



Sources: Travel & Tourism Council (WTTC) Malaysia 2017

Title: The relationship between Tourist Arrival and Tourist Receipts in Malaysia

Year	Tourist Arrival (Million)	Tourist Receipts (Million)
2001	12.775	7627
2002	13.292	8084
2003	10.577	6799
2004	15.703	9183

2005	16.431	10389
2006	17.547	12280
2007	20.973	17948
2008	22.052	18553
2009	23.646	17231
2010	24.577	18152
2011	24.714	19649
2012	25.033	20251
2013	25.715	21500
2014	27.437	22600
2015	25.721	17614

Tourist arrival of Malaysia having little fluctuation in between year 2001 to 2003 and started to recover in year 2004 but decrease again in year 2015 while tourist receipts of Malaysia having a serious fluctuation started from year 2001 to 2015.

1.2 Problem statement

Tourism is a very important industry to all countries and may influence their economy performance in the future. In recent years, tourism had become a rapid growing sector in this economic world. The growth of tourism sector will help a country achieve high economic performance. According to the United Nation World Tourism Organization (UNWTO), they stated that the total revenue of tourism earned was same or even more than the oil exports, food products as well as automobile. Tourism had definitely become the main income of some countries. During year 2014, the international tourism receipt had broken the records which was 1083 million achieved in year 2013 to a total amount of 1133 million. The receipts from tourism industry is forecasted to grow more and more in the future.

Although tourism is a fastest growing sector, not every country is able to adapt economic policies which can encourage the growth of the tourism sector. For example, of the top 25 countries of highest tourist arrival in year 2016 only 7 of them are developing countries while the others are developed countries. This begs the question whether the developing countries governments did not focus their resources on the right factor to attract more tourist or whether there is structural difference between developing and developed countries in the tourism sector.

Researchers said that tourism has a positively significant relationship to GDP. According to Balaguer, Cantavella-Jorda (2010), the rise in tourism receipt will lead to the increment in GDP of the countries in the long run but there is no evidence that GDP is affecting the tourism. However, Samimi, Sadeghi and Sadehgi(2011) argue that, GDP is positively significant with tourism which mean an increase in GDP will also lead to an increase in tourism receipts. Due to these contradicting findings, we are interested in examining the relationship between these two variables.

In addition, many researchers have conducted studies to show the effect of inflation rate on the tourism. However, there have been different results produced by different studies. Finding in researches show that inflation have a significant impact on the tourism where high inflation rate will reduce the tourism receipt substantially (Agarwal, 2008). Meanwhile, according to Gareth (2016), the higher the tourism receipts will only increase the inflation rate but inflation rate will barely affect the tourism receipts. Therefore, the difference in findings make the relationship between inflation and tourism questionable. Thus, we would like to find out the exact relationship between the inflation rate and tourism.

Furthermore, researchers also indicate that tourism could be influenced directly by the crime rate of the country. According to Brás (2015), crime rate will negatively affect the destination image and lead to decrease in tourist receipt. For example, the developed countries like France, Spain, Germany and United States are all famed for their security and safety environment. The tourists need not to worry about crimes and this will enhance their interest to travel more in such places. However, developing countries like, Mexico, China and Malaysia, have no good security system as the developed countries, yet they are able to reach to top 10 of tourist arrival in year 2016. This shown that crime rate is not the main problem that will deter tourists from coming. Therefore, due to lack of studies that have conducted empirical test to identify the effect of socioeconomic variables towards tourism, it perks our interest to look deeper into the indirect and direct effect of different variables on tourism with different countries which we will categorize into developing and developed countries.

Apart from that, some researchers believe that carbon dioxide (CO₂) emission will significantly affect in tourism. According to Ubaidillah (n.d), carbon dioxide emission has a negative relationship with tourism receipt because nowadays global warming is one the factors that tourist arrival concern and how they are going to plan their holidays on tourism. For example, tourists like to enjoy something different from their daily life in city, therefore they will prefer clean and natural environment as their destination. They like to spend their

time and money on developing country with fresh air rather than the developed country with serious air pollution because the pollutants may cause some discomfort like irritation to the nose, throat, eyes, or skin and for the worst may cause heart disease and lung cancer. However, the top 20 countries in tourist arrival have more developed countries compare to developing countries. This provided an interesting case for us to study.

To conclude, it is important to find out the relationships between tourist receipt and the macroeconomic variables in different countries because macroeconomic variables have a large impact on tourism receipt. Furthermore, all our variables are important social and economic issues right now. It will therefore provide the policy makers the scope to prioritise the most important variables in order to maximize their tourism earnings. Our study wish to highlight the difference effects of the variables between developing countries and developed countries. The finding could also help some of the governments to identify the important points which could be improved further compared to other countries. As such, the developing countries could refer to the developed countries' policies and develop their tourism sector.

1.3 Research Objective

1.3.1 General Objective

To study how tourism receipts in selected developing and developed countries based on tourist arrivals can be affected by macroeconomics and socioeconomics variables. Tourism receipts is selected as the dependent variable over tourist arrivals as it is better quantified to represent the total economic impact of the tourism industry.

1.3.2 Specific Objective

1. To determine the effect of Carbon Dioxide Emission (Co₂) on the tourism receipts in developed countries versus developing countries.
2. To estimate the effect of inflation on the tourism receipts of developed countries versus developing countries.
3. To study the effects of GDP and the tourism receipts in developed countries versus developing countries.
4. To determine the relationship between crimes rates in a country and tourism receipts in developed countries versus developing countries

1.4 Research Question

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

- i. Does the GDP significantly affect Tourism?
- ii. Does the Crime Rate significantly affect Tourism?
- iii. Does the Carbon Dioxide Emission (Co₂) significantly affect Tourism?
- iv. Does the Inflation significantly affect Tourism?

1.5 Significance of studies

Much research had been done in order to examine the relationship of tourism development and others macroeconomics variable such as exchange rate, government expenditure and crime rate. Some of the researchers have found that there is positive relationship between tourism development and other variables. However some of them have negative relationship with tourism development. The important part of this research is we are conducting a study on 10 different countries and we are going to identified what are the different characteristics of tourism development between different countries and also how tourism development makes contribution towards the welfare of the society. The benefit of using panel data to estimate this model is because panel data analysis is a tool that analysis the data which is over the time and also the same individual. For example, we are going to estimate the effect of tourism development in 10 different countries over the time, so panel data analysis is suit into this model.

However, this research is significant because we have a contribution on how different country's tourism development might affect their country's economic condition. Moreover, to investigate on what's the difference of developing country and advanced country's tourism development. Due to the different stages of economic condition, there will be different effects on tourism development. Our study is also going to show how crime rate can affect a country's tourism development

After we get the result in the research, it can be as a benefit or references for other country which is not well develop on tourism sector. This may increase the awareness of the importance of tourism development and may help them to improve.

Besides that, this research can benefit some different parties in the society. First of all, this research can benefit the government in the ways of helping the government to understand the main factor that influence tourism development. Thus, government can get rid on how to improve the tourism development. Furthermore, this research also can benefit other researchers to get their attention on tourism development. Tourism development is become more important to build the country's economy. Thus, other researchers might start doing more research on this field and contribute more to the entire society.

1.6 Chapter Outlay

In this study, it consists of total 5 chapters. Chapter 1 is discuss about the research overview which is generally briefing about the introduction of the study, countries background, problem statement and research objective. Then, chapter 2 is reviewing the finding of previous studies and the previous researcher's studies. Next, chapter 3 is the outlines of data used in this research and difference types of methodologies that applied to achieve the aims of this paper. Chapter 4 is a series of empirical testing and analyses the result from the estimated model. Lastly, Chapter 5 will be the conclusion of this study and explain the overall finding. Besides, in this chapter will also provide policy implications and recommendations for future researcher

1.7 Conclusion

This paper purpose is to study the determinants of tourism receipts in developing and developed countries by incorporating Co2 emission, CPI, GDP, crime rate in the model. There is a lack of literature regarding the impact of the socioeconomic factor such as crime rates towards the tourism industry in developing countries. In recent years, due to the expansion of the tourism industry, it is important for policy makers of countries to pay attention to societal problems such as crime rate and macroeconomic variable such as GDP to maximize the revenue from the tourism industry. There is also a lack of literature studying the impact on tourism receipts rather than tourist arrival. Therefore, this study will contribute towards the research of determinants of tourism receipts in both developed and developing countries.

Chapter 2: Literature Review

2.0 Introduction

This chapter is organized as follows section 2.1 reviews about literatures regarding the relationship between tourism, gross domestic product (GDP), Consumer Price Index (CPI), crime rate and CO2 emission. Section 2.2 provide the reviews of theoretical models which are used by previous researches to examine the relationship between tourism, GDP, CPI, crime rate and air pollution. Section 2.3 shows the theoretical framework that we will use to proceed with the research. Next, section 2.4 is the summary of literatures in table form. Lastly, in section 2.5, we summarized all the tools and findings from previous research as a guideline for the next chapter.

2.1 Review of Literature

In brief, this segment will discuss the relationship between tourism, gross domestic product (GDP), Consumer Price Index (CPI), crime rate and CO2 emission by reviewing the past studies of researchers.

2.1.1 The relationship between Tourism development and Gross Domestic Product (GDP)

Based on the findings from Caglyan, Sak and Karymshakov (n.d.), GDP and tourist arrivals are integrated at level (1) in certain countries such like Latin America, Caribbean. In the group of countries in South Asia and East Asia, GDP have a positive relationship with tourist arrivals. It means that when there is an increase in GDP, tourist arrival will also increase.

Lee, Fu and Peng (2015) found that economic growth (GDP) can positively affect the tourism receipts in the majority of countries. Only South Korea reported a negative coefficient for GDP. It might be because neighbouring countries are also experiencing economic growth, therefore taking away South Korea tourist's market share. The results

for other 21 countries are not significant due to the slow economic growth and low tourist arrival growth.

Samimi, Somave Sadeghi, Soraya, Sadehgi(2011) observed that there is bilateral causality between GDP and tourist arrivals. GDP and tourist arrivals also have a co-integrated relationship. Jackman (2012) also reported the same findings as unit root test shows all series integrated in order (1). The Granger causality analysis also shows that there is a long run relationship between GDP and tourist arrivals.

Oh (2005) however found that GDP and tourist arrivals do not have long run equilibrium. His result only shows one way Granger causality between GDP and tourist arrivals which signaling GDP has a positive impact on Tourist arrival. Li (2011) findings contradict Oh (2005) study, as he found that there is positive two way causality between GDP and tourist arrivals.

Tugcu and Topcu(2016) claim that countries with higher GDP are more able to protect their tourist attractions than countries that have lower GDP. Countries with higher GDP are also able to provide better transportation, catering and accommodation service due to the ease of availability of capital.

2.1.2 The relationship between Tourism development and Crime rate

Alleyne and Boxille (2003) stated that economists believes that crime rate is an important factor that affects the tourist arrivals within the country. Besides that, they found out that others factors such as increased advertising and promotions of hotels, will diminish the effects of crime rates on tourist arrival. Due to this, the tourist arrivals will increase sometimes even while the crime rate is increasing. They have conducted a series of Dickey Fuller tests and Granger causality test to determine the relationship of crime rate and tourist arrivals in Jamaica during the time period of 1962 to 1999 in this study. The test showed a result of the crime rate having a negative impact on tourist arrival. Consequently, a reduction in tourist arrival will weaken the tourism industry.

Levantis and Gani (2000) investigate the negative impact of crime on tourism industries in developing countries of the South Pacific and Caribbean from the time period of 1970 to 1993. This is because many developing countries will be having some problems

of law enforcement and the crime rate will tend to be higher. Thus, it leads to the increase in doubts about safety among tourists and make the tourism industry become unsuccessful. In this research, a simple OLS regression is used to analyse the test.

In the journal of Tang (2011), he examined the dynamic relationship between the tourist arrivals and crime rate in Malaysia by using time series analysis for the time period 1970 to 2008. Since 1990, the crime rate of Malaysia has been increasing tremendously. The economist believes that the tourism industry will help to alleviate the crime rate problem because when the tourism industry is developed perfectly, the security of a country will also be increased or boosted. He tested the relationship between crime rate and tourism and results show that the tourism is significant. Furthermore, it also shows that the crime rate and tourist arrival is correlated and in the long-run, tourist arrivals will be having a positive relationship with crime rate.

Mehmood, Ahmad and Khan (2016) stated that tourism industry plays a crucial part in economic growth especially in American countries. Their research aims to discover the linkage between tourist arrivals, immigrants, and crimes in the United States. The study concluded that crime rate has a significantly negative impact on tourist arrivals.

2.1.3 The relationship between Tourism and CO₂ Emission

Carbon dioxide (CO₂) is emitted by many human activities and as such is one of the most notorious greenhouse gas. For a case in point, CO₂ account to about 82.2% of the U.S. greenhouse gas emissions from human activities in 2015 (“Overview of Greenhouse Gases”, n.d.). According to Nademi and Najibi (2011), CO₂ emissions will influence international tourism in some developed countries negatively. This means that a rise in CO₂ emission will lead to a shrinkage in tourism sector. CO₂ is known as a major problem for global warming by most of the scientists and this might affect number of tourist arrival due to the changes in weather.

According to Ubaidillah (n.d), she believes that CO₂ Emission is an important variable affecting tourist arrival in the country because they are having a negative

relationship between them. By using Vector Error-Correlation Model (VECM), there are cointegrating vector of tourism which is significant with speed of adjustment 25.80% and this indicates that CO₂ has granger causality with tourism in long run and take around 4 years to reach the long run equilibrium.

Tugcu and Topcu (2016) had acknowledged the fact that CO₂ emissions will affect tourism receipts negatively in highly attractive tourism destinations. They explained that CO₂ emission level is an indicator of environmental degradation as it can cause climate change and air pollution. The lack of regulation of fossil fuels combustion wastes can produce an excess amount of CO₂ emission.

Last but not least, foreign tourists are more sensitive with the air quality compare to the local. Carbon dioxide is the majority causes for air pollution. CBSNEWS (2013) reported that for each one per-cent reduction in good air days, inbound tourists will effectively shrink by about 443,550 people. The visitors from China have decreased by 15% in the first half year time to 1.9 million which include business travels and residents due to the smog level have risen to a new level. They call this event as “Airpocalypse”.

2.1.4 The relationship between Tourism and Inflation

Inflation is defined as the rate of increase in the general price of goods and services at a specific period of time. Inflation can also represent a decrease in the purchasing power of a currency. According to Uyzal and Crompton (1984), the coefficient of relative price variable is generally negative to the expenditure of tourist in Turkey. This proves that demand for tourism is very price elastic for a country, as tourists can travel to other countries as a substitute. Martin and Witt (1987) found that Consumer Price Index (CPI), generally a proxy used to measure inflation, perform reasonably as the proxy for tourist prices. Inflation along with exchange rate can drive the tourist price to increase. When the tourists price increase, the demand for tourism will decrease according to the law of demand and supply.

Durbarry and Sinclair (2003) which based their research on French tourists' expenditure, found that high rate of inflation will increase tourist price and subsequently

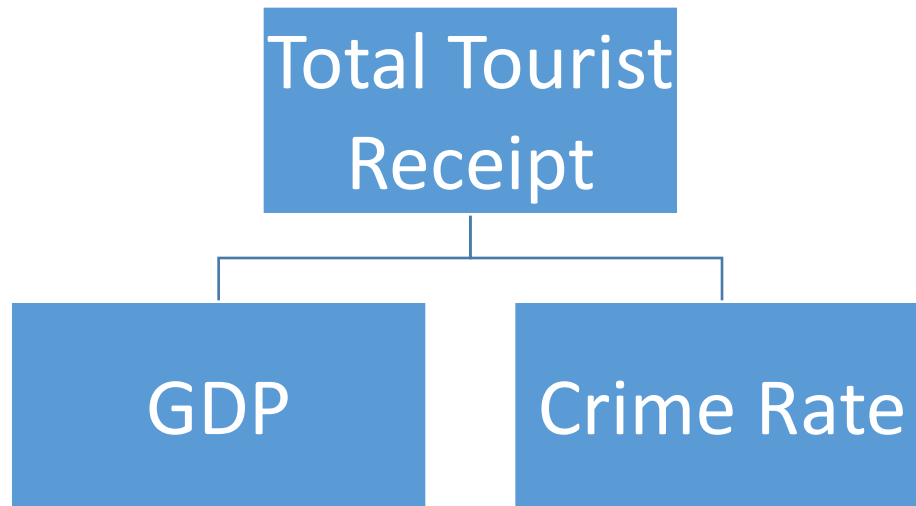
affect the country tourism demands. Changes in relative prices of destination country and tourist origin country, rather than tourists own expenditure budget is the more important factor in French tourist destinations choice. The competition for tourism market is affected by changes in relative prices and exchange rate. The price sensitivity for tourists differs in different tourist destination, but the relationship between relative prices and tourists' expenditure is generally significant and negative. Lax control of inflation in a country will result in negative changes in tourism demands.

Yong (2014) propose that innovation has a positive effect on tourism although inflation has a longer, greater and negative effect. Hanafiah and Harun (2010) states that lower inflation will influence more tourists to come to Malaysia. On average, 1% increase in the Consumer Price Index ratio for price will cause a drop of 5.16% tourist arrivals in Malaysia holding other variable constant. A lower cost of living, cheaper food and transportation cost are described as the pulling factor of tourist arrival to Malaysia. However, on average, 1% increase in the Consumer Price Index ratio for Income will cause 5.366% tourist arrivals in Malaysia holding other variable constant.

Martins, Gan and Lopes (2017) claim that relative price is the most important factor for tourist expenditure. Consumer will compare prices of tourist destination and its goods and service. Relative price is especially important in low and middle income country to increase their tourism demand. It is important for those countries to have low inflation in an attempt to increase their tourism revenue. Gul, Asik and Gurbuz (2014) however found that demand of tourism in Turkey increases even after inflation due to the rise in the value of US Dollars. The lower exchange rate of Turkey also plays a huge part along with inflation rate in determining the relative prices of Turkey.

2.2 Review of Relevant Theoretical Framework and Models

Figure 2.1: Review of Theoretical Framework



(Theoretical Model 2.1)

Source: Levantis and Gani (2000)

The figure above (figure 2.1) shows the theoretical model studied by Levantis and Gani (2000). The author studied about the determining factors that directly contributed to the Tourism sectors in eight developing country for a time period of 1989 to 2007. This study had employed GDP and crime rate as their independent variables in order to determine the tourism demand in these eight developing country.

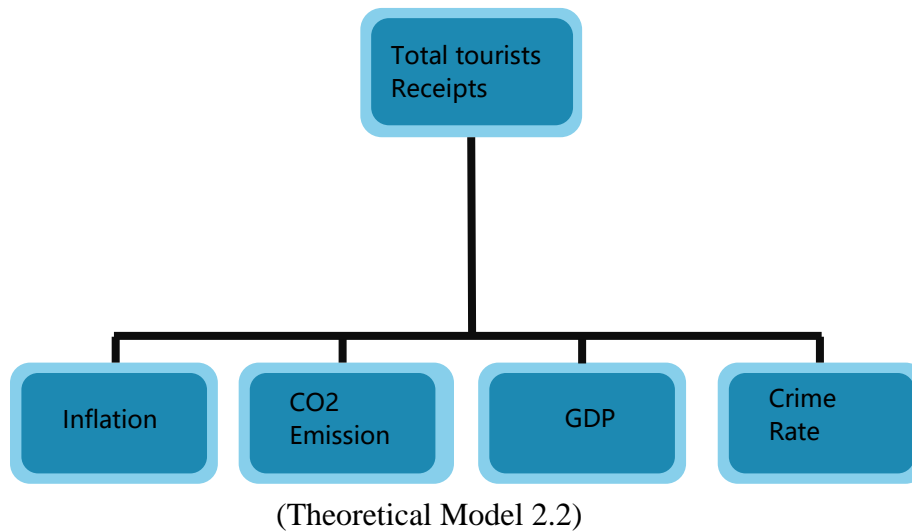
Reviewing to the model above (model 2.1), TOUR indicates the tourists receipts for the eight developing countries and year t . Next, GDP represented as the GDP per capital and year t as percentage of GDP. Cr is the crime rate on the selected eight countries.

The study of Levantis and Gani (2000) found that there is a different relationship when come across different countries. Some countries such like Fiji, Tonga shows there is positive relationship but some countries such like Caribbean, Jamaica shows negative relationship between tourist demand and crime rate. This also indicates that poor nations having positive relationship between crime rate and tourism while higher income having negative relationship.

2.3 Proposed Theoretical Framework and Model

By reviewing the study of Levantis and Gani (2000), this paper had proposed a theoretical framework by employing tourism as the dependent variable while GDP, and crime rate as the independent variables. Therefore, by reviewing from the previous literature reviews of Tang (2011) and Tugcu and Topcu (2016), this theoretical framework is adding two more independent variables which are co2 emission, and inflation in order to strengthen the model. The inclusion of co2 emission is important because in recent years, more and more citizens aware and concern about the natural environment. Co2 emission is an indicator of air quality in a destination country. According to a report by CBS news (2013), each one per-cent reduction in good air days will bring about a decrease of 443,550 tourist arrival. The reduction in tourist arrival will surely decrease the tourism receipt. Inflation are also vital in our model because the increase in inflation will drive up tourism price which subsequently affect the tourism demand (Durberry and Sinclair, 2003). The proposed theoretical framework and model are shown in figure 2.2 and model 2.2 respectively

Figure 2.2 Proposed Theoretical Framework



In case, a new regression model had formed as shown above, $TOUR_{i,t}$ indicates the total tourists arrivals with country i and period t ; GDP is the GDP per capita per year; INF represents the inflation rate (CPI) of country i ; $CO2\ emission_{i,t}$ refers to the pollution for the country i ; $CR_{i,t}$ means the intentional homicides (per 100,000 people) for the country;

2.4 Conclusion

The literature reviews show that inflation, co2 emmision, crime rate and GDP have found to be the important factors that will influence the tourism sectors. Nevertheless, the actual methodology and the actual results of this research are yet to be found and it will be continued discovered in the following chapters. Besides that, we also identified a literature gap in our research project because most of the previous researchers are using tourist arrival instead of using tourist receipts. This has increase the difficulties in the journal findings.

2.5 Summary of Literatures in Table Form

Authors Name (Year)	Data	Model/Methodology	Findings
Alleyne and Boxille (2003)	<p>Variables:</p> <ul style="list-style-type: none"> • Annual growth rates of major tourism indicators • Annual growth rates of crime indicators • Major crime against tourists <p>Time period(TP):</p> <ul style="list-style-type: none"> • Annual data from year 1962 to 1999 <p>Source of data:</p> <ul style="list-style-type: none"> • Economic and Social Survey of Jamaica • Tourism Liaison Office, Jamaica Constabulary Force 	<ul style="list-style-type: none"> • Dickey-Fuller test • Granger causality • Johansen test • Akaike information criteria(AIC) • Schwartz Baysean criteria(SBC) • 	<ul style="list-style-type: none"> • There is a negative relationship between crime and tourist arrivals • The impact of crime toward tourism could reduce by others implications

<p>Çaglayan, Sak & Karymshakov (1998).</p>	<ul style="list-style-type: none"> • GDP • Tourist arrivals • Time Period: 1995-2008 • Sources: World Development Indicator 	<ul style="list-style-type: none"> • panel co-integration techniques • Granger causality analysis • Panel Unit Root Test 	<ul style="list-style-type: none"> • GDP and tourist arrivals are integrated of level (1) in certain countries such like Latin America, Caribbean. • According to three different group of countries, the causality result show three kinds of relationship in these three groups which is bidirectional relationship, unidirectional relation and unidirectional relationship with reverse form • In the group of South Asia and East Asia shows that GDP having a positive relationship with tourist arrivals, which the increase in GDP will cause tourist arrival to increase.
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<p>Durbarry & Sinclair (2003)</p>	<ul style="list-style-type: none"> • French tourist expenditure • exchange rate • price level • income • Transport cost • TP: 1968-1999 • Source: Organization for Economic Cooperation and Development, World Tourism Organization 	<ul style="list-style-type: none"> • Almost Ideal Demand System (AIDS) model • Multivariate Regression Analysis 	<ul style="list-style-type: none"> • High rates of inflation increase tourism prices, with adverse effects on demand of tourism.
<p>Gul, Asik & Gurbuz (2014)</p>	<ul style="list-style-type: none"> • Foreign active tourism demand • external passive tourism demand • Domestic tourism demand • interest rate • exchange rate • inflation • TP:2003-1023 • Source: World Bank, Turkish Statistics Institute, Turkstat 	<ul style="list-style-type: none"> • Correlation analysis 	<ul style="list-style-type: none"> • Turkish tourism sector grew rapidly in the pre-crisis period, despite decrease in exchange rate and increase in inflation. • -The rise in the dollar exchange rate (despite inflation) helped Turkey tourism demand increase.

<p>Hanafiah & Harun (2010)</p>	<ul style="list-style-type: none"> • Tourist arrival • Gross National Income • Consumer Price Index • Exchange Rate • TP:1993-2007 <p>Source: Tourism Malaysia</p>	<ul style="list-style-type: none"> • modified Gravity model 	<ul style="list-style-type: none"> • High gross national income, lower inflation, • high population rates and short haul destination influenced international tourist to visit Malaysia
<p>He & Zheng(2011)</p>	<ul style="list-style-type: none"> • GDP • Tourist arrivals • Time Period: 1990-2009 • Sources: World Bank Indicator 	<ul style="list-style-type: none"> • Granger Causality Analysis • Stability Test • VAR models • VAR lag order selection • Impulse Response 	<ul style="list-style-type: none"> • According to the first lag term in the VAR model, it shows there is a positive effect on each other. • There are positive two way causality between GDP and tourist arrivals • During the short run, GDP positively affect tourist arrival, while in the long run tourist arrivals affect GDP.
<p>Jackman & Lorde(2012)</p>	<ul style="list-style-type: none"> • GDP • Tourist arrivals • Time Period: 1993-2002 	<ul style="list-style-type: none"> • Phillips-Perron unit root test • Granger Causality Test • Maximum eigenvalue test • Trace test • Impulse response function 	<ul style="list-style-type: none"> • Unit root test shows all series integrated in order (1) • Trace and maximum eigenvalue shows GDP and tourist arrivals having long run relationship.

			<ul style="list-style-type: none"> • Granger causality analysis show there is a long run relationship between GDP and tourist arrivals. • GDP is having a positive effect on tourist arrivals.
Levantis and Gani (2000)	<p>Variables:</p> <ul style="list-style-type: none"> • Crime rate growth • Tourists arrivals growth • GDP per Capita <p>Time period(TP):</p> <ul style="list-style-type: none"> • Annual data from year 1970 to 1993 <p>Source of data:</p> <ul style="list-style-type: none"> • United Nations Crime and Justice Information Network (UNCJIN) database 	<ul style="list-style-type: none"> • Ordinary Least Square(OLS) method 	<ul style="list-style-type: none"> • The result shows that different regions that have a different relationship between crime rate and tourism. • Poor nations will have a positive relationship between crime rate and tourism while higher income will not.

<p>Martin & Witt (1987)</p>	<ul style="list-style-type: none"> • Outward Tourism • Exchange rates • Consumer Price Index • Income • Price of Substitute • TP: 1965-1980 <p>Source: Insee France, US Department of Commerce, International Monetary Fund, OPEC</p>	<ul style="list-style-type: none"> • Ordinary Least Square (OLS) • Cochrane-Orrcutt (CO) procedure 	<ul style="list-style-type: none"> • Consumer Price Index can best represent tourism cost
<p>Martins, Gan & Lopes (2017)</p>	<ul style="list-style-type: none"> • Tourist arrival • Tourist expenditure • World income per capita • relative price • nominal exchange rate • TP: 1995-2002 • Source : World Tourism Organization, International Monetary Fund 	<ul style="list-style-type: none"> • Poisson regression model • Maximum Likelihood method 	<ul style="list-style-type: none"> • World income per capita is the most important independent variable when the dependent variable is tourist arrival. • Relative price is the most important factor when the dependent variable is tourism expenditure. • World income is important for the tourism sector in high income country. • For low and middle income country, relative prices is important to increase tourism demand.

<p>Mehmood, Ahmad and Khan (2016)</p>	<p>Variables:</p> <ul style="list-style-type: none"> • Crime rate • Tourists arrivals • Immigrants <p>Time period(TP):</p> <ul style="list-style-type: none"> • Annual data from year 1984 to 2013 <p>Source of data:</p> <ul style="list-style-type: none"> • UNWTO • U.S. Department of Commerce • Uniform FBI crime reports • Immigration statistics of Homeland Security 	<ul style="list-style-type: none"> • Autoregressive Distributed Lag (ARDL) approach • Ordinary Least Square(OLS) method 	<ul style="list-style-type: none"> • The result shows that crime rate has a negative and significant effect on tourist arrivals
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<p>Nademi & Najibi (2011)</p>	<ul style="list-style-type: none"> • CO₂ Emission • International Tourism • Develop Countries 	<ul style="list-style-type: none"> • Model Specification 	<ul style="list-style-type: none"> • The effect of CO₂ emissions on International tourism in some Developed Countries is significantly negative
<p>Oh (2005).</p>	<ul style="list-style-type: none"> • GDP • Tourist arrivals • Time Period: 1975-2001 • sources: world development indicator 	<ul style="list-style-type: none"> • Granger causality analysis • VAR model • Dickey fuller test • Augmented dickey fuller test 	<ul style="list-style-type: none"> • GDP and tourist arrivals do not have long run equilibrium • The result of Granger Causality shows one way causality between GDP and tourist arrivals which is GDP have a positive impact on Tourist arrival.

<p>Samimi, Sadeghi & Sadeghi(2011)</p>	<ul style="list-style-type: none"> • GDP • Tourist arrivals • Time Period: 1995-2009 • Sources: World tourism organization 	<ul style="list-style-type: none"> • P-VAR approach • Granger Causality • IPS test • Johansen Test • Unit root Test • Maximum likelihood method 	<ul style="list-style-type: none"> • GDP and tourist arrivals are having an co-integrated relationship • There is bilateral causality between GDP and tourist arrivals • There is a long run relationship between GDP and tourist arrivals.
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Tang(2011)	<p>Variables:</p> <ul style="list-style-type: none"> • Crime rate • Tourists arrivals • Inflation rate • Unemployment rate <p>Time period(TP):</p> <ul style="list-style-type: none"> • Annual data from year 1970 to 2008 <p>Source of data:</p> <ul style="list-style-type: none"> • International Monetary Fund (IMF) • International Financial Statistics (IFS) • United Nation Crime and Justice Information Network (UNCJIN), • Euromonitor International, the RMP report • Malaysia Economic Reports • Yearbook of Statistics Malaysia 	<ul style="list-style-type: none"> • Multivariate Johansen-Juselius cointegration test • Granger causality test • Unit root tests • Variance decompositions and impulse response functions analyses 	<ul style="list-style-type: none"> • The result shows that the crime rate and tourist arrival is correlated. • In the long-run, tourists arrival having a positive relationship with crime rate
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<p>Tugcu & Topcu (2016)</p>	<p>Variables</p> <ul style="list-style-type: none"> • Tourism Receipt • CO2 emission • GDP • CPI • Exchange rate <p>Time period(TP)</p> <ul style="list-style-type: none"> • 1995-2010 annual data <p>Source of data:</p> <ul style="list-style-type: none"> • World Bank 	<ul style="list-style-type: none"> • Pooled Mean Group estimator (PMG) • Panel ARDL 	<ul style="list-style-type: none"> • CO2 emission negatively impact tourism receipts at 5% level of significance • GDP positively impact tourism receipts at 1% level of significance • CPI negatively impact tourism receipts at 10% level of significance
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<p>Ubaidillah (n.d)</p>	<ul style="list-style-type: none"> • CO₂ Emission • Real GDP per capita • Tourist Arrival 	<ul style="list-style-type: none"> • VECM 	<ul style="list-style-type: none"> • Using VECM prove that CO₂ Emission, Real GDP per capita and Tourist Arrival has long run relationship
<p>Uyzal & Crompton (1984)</p>	<ul style="list-style-type: none"> • Number of tourists • Tourist expenditure • Income • Relative prices • Exchange rate • Transportation cost • Promotional expenditure • Source: Turkey Ministry of Tourism & Culture, OECD • 	<ul style="list-style-type: none"> • Ordinary Least Square (OLS) • Cochrane-Orrcutt (CO) procedure 	<ul style="list-style-type: none"> • Income, price and exchange rate are determinants of incoming tourist arrival. • As relative price increase in Turkey, due to for example inflation, there will be a reduction of international tourism.

Yong (2014)	<ul style="list-style-type: none"> • Visitor export • Price index • Patent Index • TP: 1988-2010 • Source: Global Innovation Index, WTTC, WDI 	<ul style="list-style-type: none"> • Feasible Generalized Least Square (FGLS) • Normality Test • Seemingly Uncorrelated Regression (SUR) 	<ul style="list-style-type: none"> • Inflation has a long, large, negative effect on the tourism sector.
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Media (Years)	Data	Model/Methodology	Findings
CBSNEWS (2013)	<ul style="list-style-type: none"> • CO₂ Emission • Air pollution • Tourist arrival 		<ul style="list-style-type: none"> • Tourist arrival declined due to air pollution which known as “Airpocalypse”

Chapter 3: Methodology

3.0 Introduction

This chapter consists of five sections. For the first section, we discuss about the model specification of the study. Section 2 we explain about the source of data used in the study. Section 3 we describe the methodology that are used in this study. Section 4 is about the diagnostic checking for the study. The last section which is section 5 is the conclusion of the study.

3.1 Model Specification

The model of the study is based on the past researches which are conducted by levantis and gani (2000). The researcher has used tourism development as dependent variable whereas GDP and crime rate growth as independent variables.

The specification used by levantis and gani (2000) is as below:

$$TD_i = \alpha_0 + \alpha_1 GDP + \alpha_2 CR + \mu_i$$

TD is representing Tourism development, GDP is representing GDP growth rate and CR is representing Crime rate growth. μ_i is representing the disturbance term.

This study estimates the panel regression model which is modified based on the above model specification to explain the determinants of the Tourism development as Co2 emission, Gross domestic product per capita, Inflation and Crime rate.

$$TOURR_{it} = \beta_0 + \beta_1 GDPP_{it} + \beta_2 CR_{it} + \beta_3 CPI_{it} + \beta_4 Co2_{it} + \mu_{it}$$

$TOURR_{it}$ = Tourism receipt

$GDPP_{it}$ = Gross domestic product per capita

CR_{it} = Crime rate

$Co2_{it}$ = Co2 emission

CPI_{it} = Inflation

The expected relationship between Tourism receipts and crime rate growth is a negative relationship. According to levantis and gani (2000), he stated that the tourism development of the country will be higher if the crime rate of the country is lower. Shafaqat, Zahid & Azim(2016) also stated that crime rate is having a negative and significant relationship with Tourism receipts. When crime rate has increased in a country, it means there is a higher chance where the tourist in that particular country will become the victim of the criminal cases while they visit the country. This will reduce the willingness of the tourist to visit the country. Therefore, it means that increase in crime rate will tend to decrease the willingness of the tourist to go to the country; this will reduce the expenditure due to the reduction of tourist visitation

Besides that, the expected relationship between Tourism receipts and co2 emissions is a negative relationship. Based on Ridderstaat, Oduber, Croes, Nijkamp & Martens (2013), the increase of co2 emmision will tend to reduce the tourist receipts. When the environment of the country is having a serious pollution problem, this will make the tourist become uncomfortable that eventually cause the reduction of tourist visitation. Lesser tourist will definitely reduce the tourist receipts, which will directly reduce the tourism spending in the country. Therefore, co2 emmision is negative related to the tourist receipts.

The expected sign for GDP and Tourism receipts is also a positive relationship. Based on the previous contribution by Lennox, J. (2012), it stated that when GDP increase, the tourism development will be also increase, this is a positive relationship among the two variables.

Besides that, the expected sign for inflation and tourism development is a negative relationship. According to Yong (2014), inflation can significantly affect tourism development. The tourism development will slow down when the inflation is higher.

3.2 Data Collection Method

This study is to examine the relationship between the dependent variable which is tourism receipt with another 4 independent variable which is Gross domestic product, crime rate, inflation and co2 emission. This study has included 5 advanced countries which are United States, Spain, Germany, France, Italy and also another 5 developing countries which includes Turkey, China, Mexico, Russia and Malaysia as the observations of this study. The time period of this study is from 2001 to 2010. We selected the period between 2001-2010 because some of the variable do not have the latest data up to 2016, so in order to make our model consistent, we decide to use the period between 2001-2010

All the data sources collected come from the World Bank and United Nation World Tourism Organization. In addition, E-view and Stata are the computer econometric programs that have been conducted to the study.

Variables	Proxy	Data sources	Definition
GDP	GDP per capita	World Bank	GDP is defined as the value of all finished goods and services which are produced by the particular country within the time period. The data can be found in the World Bank indicator.
Crime rate	Intentional homicides rate (per 100,000)	World Bank	Intentional homicide is defined as a kind of crime that is also known as murder (<u>Attorney Tracey A. Wood, 1992</u>). The increase of murder rate will tend to increase the overall crime rate. The data can be obtained in World Bank.

Air pollution	CO2 Emission	World Bank	CO2 emission is defined as the release of the carbon dioxide into the atmosphere which can cause the change in climate. The sources of data we can gain come from the World Bank Indicator.
Inflation rate	Consumer price index	World Bank	<p>The definition of CPI is a measurement of the weighted average price of goods and services in a country. The formula for CPI d is show as below:</p> $\text{CPI} = \frac{\text{current period price}}{\text{based period price}} \times 100$
Tourism	Tourist receipts	World Bank	Tourist receipts also can be said as tourist expenditure. It means that the total spending by the tourist in the particular country. It also can be said to be the contribution of income to the country.

3.3 Empirical Methodology

The following section will demonstrate all the data and models occupied in this study. First, the section 3.2.1 will show all the types of data and models. Nevertheless, the methods and tests are carried out to identify the best models in the next section. There are some benefits of using the pooling method. Firstly, the pooling method allows the examination of the cross sectional units along with the individual units of the time. Furthermore, pooling method can also be used to have a more complex analysis for cross sectional units individually.

3.3.1 Pooled OLS Model

Pooled OLS Model

When the groups are being pooled to have a homogenous characteristic in terms of countries at a constant intercept, we can use the pooled ordinary least square (OLS) model. The pooled OLS model is one of the most rigid models because it has a specific constant coefficient of intercept. The written form of the estimation pooled regression model by using Ordinary Least Square (OLS) is as below:

$$Y_{it} = \beta_1 + \sum \beta_2 X_{kit} + e_{it}$$

Where i refer to a cross sectional unit

t refer to a time period

k refers to a specific explanatory variable

In addition, Y_{it} refers to the dependant variable and X_{kit} refers to the independent variables for unit i and time t; e_{it} is the error term and β_1 refers to the constant intercept and β_2 refers to the slope parameters.

We assume that the regressors and error terms do not have any relationship. In this situation, the OLS model is the best though it is a must to assume that all error terms are independent and not related to the regressors. This also means that it is identically zero mean and with a constant variance too. Thus, it is a normal distribution that will show the hypothesis testing to be valid and effective. Ordinary Least Square

estimator can be used as long as the four conditions have been fulfilled. Furthermore, an unbiased estimator should be having a sampling distribution with mean equal for the parameter to be estimated. The characteristics of an efficient estimator should have the smallest variance. At last, if the sample size is increasing until infinity, its sampling distribution will become more implode in the true value of the parameter. Finally, the estimator is to be said as consistent.

In the real world, highly rigid assumptions such as homogeneous are less likely to achieve because countries are having different characteristics across the period. When they are trying to apply pooled data among the observations across the period, this might lead OLS regression estimates be biased or inefficient.

3.3.2 Fixed Effect Model

Fixed effects model is a model that represents the number of observation which served as non-random quantities. This model helps to identify the relationship between dependant and independent variables in the selected countries because different countries have different characteristics which may be affected or not affected. The fixed effect model can produce estimator no matter the model is random or pooled, but it has a limitation which is cannot estimate the time-invariant variables.

Fixed effect model (FEM): $Y_{it} = \beta_1 + \beta_2 X_{it} + \varepsilon_i + \mu_{it}$

In this model, i refers to the ten different countries and t refers to different point of time. $\beta_2 X_{it}$ Referring to the fixed effect, β_2 is the fixed parameter while X_{it} terms are all measured in value. ε_i is treated as a set of fixed parameter which is able to be estimated directly.

Assumption 1

Cor (ε_i, X_{it}) $\neq 0$

The fixed parameters and independent variables are correlated.

Assumption 2

The cross sectional elements are having assumption of normal distribution.

$U_{it} \sim N(0, 1)$

3.3.3 Random Effect Model

Random effect model is one of the most frequently used models in panel data. The random effect model makes an assumption on the effect of the independent variables while individual specific effect on dependant variable is same over the time. So, we can get $\beta_{1,t} = \beta_1; Y_{1,t} = Y_1; \lambda_{1,t} = 1$. Furthermore, Random effect models also assume that the error variances are constant over the time ($\sigma^2_{\mu t} = \sigma^2_{\mu}$).

The difference of general panel model and random effect model

General panel model: $Y_{it} = \alpha + \beta_{1,t} X_{it} + \gamma_{i,t} Z_{it} + \lambda_{i,t} C_i$

Random effect model: $Y_{it} = \alpha + \beta_1 X_{it} + \gamma_i Z_i + C_i + \mu_{it}$

As we can see in the random effect model, the individual special effect (C_i) is a random variable, which means it does not consist of relationship to the independent variable. If we want to get an unbiased and consistent estimators, there are two assumptions should be fulfilled.

Assumption 1

1. $E(C_i | X_{it}, Z_i) = E(C_i) = 0$
2. $E(\mu_{it}, Z_i, C_i) = 0$

The main key difference on fixed effect model and random effect model is that random effect model have an assumption of variables which is not under observation and is uncorrelated with the independent variables (add the equation) but in fixed effect model, unobserved variables can be associated with the independent variables. Assumption 1(b) states that the independent variables have no correlation with error term in any of the time period. If autocorrelation problem has been observed in the random effect model (REM), OLS regression model cannot be used due to not being the best linear regression estimator. Furthermore, random effect model also can be used to estimate generalized least squares and Feasible Generalized Least square. Thus, to ensure consistency for the two estimators mentioned above, Random effect model also can be as below:

$$Y_{it} = \alpha + \beta_1 X_{it} + \beta_2 Z_{it} + V_{it}$$

Where $V_{it} = C_i J_r + u_{it}$ and $E(V_{it} | X_{it}, Z_{it})$

J_r is the vector of different years

In order to apply Generalized Least Square or Feasible Generalized Least Square estimators, we must first determine the variance structure. If it is known variance structure, we can use General Least Square to estimate it, otherwise, we may use the Feasible Generalized Least Square.

Since Random effect model fulfil the requirement of the assumption, we can say that the generalized Least Square or Feasible Generalized Least Square will provide an unbiased and consistent estimator for the model.

Assumption 2

a. $V(C_i | X_{it}, Z_{it}) = \sigma^2_{c,i}(X_{it}, Z_{it})$

b. $V(u_{it} | X_{it}, Z_{it}, C_i) = \sigma^2_{\mu}$

Assumption 2(a) stated that there is constant effect variance on the individual specific effect. On the other hand, 2(b) is about the error variance are constant over the time.

In random effect model (REM), error terms variance and coefficient estimators and also individual specific effect is usually using Feasible Generalized Least Squares estimator. u_{it} and C_i is usually the variances estimator which is used to form variance-covariance matrix for Feasible Generalized Least Square Estimators. Lastly, all of the assumptions must be achieve in order to get an unbiased estimator.

Random effect model can be shown as below:

General form: $Y_{it} = \alpha + \beta_1 X_{it} + \beta_2 Z_{it} + C_i + u_{it}$, where

Y_{it} = Dependant variable

α = intercept

β_1 = Coefficient of time varying independent variable

X_{it} = time varying independent variable

Z_{it} = Coefficient of time invariant independent variable

Z_1 = time invariant independent variable

C_i = Individual specific effect

μ_{it} = Error term

3.3.4 Hausman Test

This test is to detect endogenous variables in the regression model. If the regression model consists of endogenous variable, we cannot use ordinary least square estimator. It is because one of the ordinary least square assumption is no correlation between endogenous variable and error term. To decide between using fixed effect model or random effect model, we shall proceed to the Hausman test.

$$\text{Test statistic} = (\hat{\beta}^{\text{FE}} - \hat{\beta}^{\text{RE}}) [\text{VAR}(\hat{\beta}^{\text{FE}}) - \text{VAR}(\hat{\beta}^{\text{RE}})]^{-1} (\hat{\beta}^{\text{FE}} - \hat{\beta}^{\text{RE}})$$

$\hat{\beta}^{\text{FE}}$ represents the coefficient estimates from fixed effect modal, $\hat{\beta}^{\text{RE}}$ represents the corresponding coefficient estimates of random effect modal. If the result of this test shows no correlation between independent variable and the unit's effect., then random effect is more appropriate to be used.

3.3.5 Redundant Fixed Effect Test

Redundant Fixed effect test is to determine whether the model in the studies is more applicable to the pools Ordinary Least Square and fixed effect regression.

Hypothesis

H₀: Pooled Ordinary Least Squares is consistent and efficient.

H₁: Fixed effect model is consistent and efficient

If we reject the null hypothesis, this means the fixed effect regression is more suitable to use in the model. If we do not reject the null hypothesis, this means that pooled Ordinary Least Square regression is more suitable to use in the model.

3.5 Conclusion

This chapter had summarized all the data sources as well as the methodology that are carried out in the next chapter. In Chapter 4, it will demonstrate the empirical findings of this study by computing all the methodologies listed in Chapter 3.

Chapter 4: Data Analysis

4.0 Introduction

This chapter is made up of 4 sections. Section 1 is about the discussion of the Measurement of Central Tendency, Dispersion and Variability and Comparison between Pooled OLS, Fixed Effect Model and Random Effect Model. Section 2 is the interpretation of results from Fixed Random Effect. Section 3 is Conclusion.

Table 4.0.1: Measurement of Central Tendency and Dispersion and Variability for Developing Countries

Variable		Mean	Std Dev	Min	Max	Observation
LNTOURR	Overall	23.4058	0.5447	22.2763	25.5479	N=50
	Between		0.47905	22.8912	24.1244	N=5
	Within		0.3307	22.7910	23.9993	T=10
LNGDP	Overall	8.8498	0.4701	7.5526	9.3138	N=50
	Between		0.4873	7.9821	9.1064	N=5
	Within		0.1648	8.4202	9.2929	T=10
LNCR	Overall	1.5977	0.9851	0	3.3203	N=50
	Between		1.0514	0.4161	2.9102	n=5
	Within		0.2607	1.0099	2.2899	T=10
LNCPI	Overall	4.3413	0.2739	3.3934	4.6052	N=50
	Between		0.1720	4.1480	4.4984	n=5
	Within		0.2255	3.5688	4.7985	T=10
LNCO2	Overall	1.6860	0.4521	1.0087	2.4861	N=50
	Between		0.4741	1.2840	2.4237	n=5
	Within		0.1444	1.2184	2.0898	T=10

The table above shows the result of the central tendency, dispersion and variability of the variables based on the developing countries for the study that we have chosen. Using Stata can generate the result of between and overall, while using Eview can only acquire the results of overall. According to the table, figures for the between mean and within mean will not be generated.

The first variable, Log Tourism Receipt shows the highest overall mean, which is 23.40582 and the standard deviation of 0.5446776, with 50 observations that applies

to other variables as well. The following variable, Log Gross Domestic Products per Capita has the overall mean of 8.849774 and standard deviation of 0.4700761. For Log Crime Rate, it generates the lowest overall mean, which is 1.597682 and the standard deviation is 0.985117. Meanwhile, Log consumer Price Index shows the overall mean of 4.341302 and the standard deviation of 0.2738752. Lastly, the Log Co2 gives the result for overall mean of 1.686014 and standard deviation of 0.4520651.

For the maximum values, Log Tourism Receipt shows the highest figures among other variables, which is 24.54786 while Log Co2 has the lowest figures for the minimum values, which is 0.

4.1 Comparison between Pooled OLS Model, Fixed Model and Random Effect Model for developing country

4.1.1.0 Result of Developing country

Dependent Variable: Tourism (LNTOURR)

Variable	Pooled OLS Model	Fixed Effect Model	Random Effect Model
LNGDPP	-0.1736** (0.0714)	1.1586** (0.5246)	-0.1736** (0.0536)
LNCR	-0.1870*** (0.0471)	0.0170 (0.0689)	-0.1870*** (0.0285)
LNCO2	-0.2154*** (0.0596)	-0.0203 (0.3704)	-0.2154*** (0.04880)
LNCPI	0.8030*** (0.0801)	0.6592*** (0.1206)	0.8030*** (0.0837)
Redundant Fixed Effect		65.1172***	
Hausman Test		260.4688***	

Source: E-view

Note: * represent the significant at 0.10 significant level, ** represent the significant at 0.05 significant level, *** represent the significant at 0.01 significant level, the parenthesis is refer to the robust standard error

4.1.3 Interpreting the Result

Results for developing countries:

$$\begin{aligned} \text{LNTOURR}_{it} = & 10.2979 + 1.1586 \text{ LNGDPP}_{it} + 0.01701 \text{ LNCR}_{it} + 0.6592 \text{ LNCPI}_{it} + \\ & \mathbf{(3.7097)} \quad \mathbf{(0.5246)} \quad \mathbf{(0.06891)} \quad \mathbf{(0.1206)} \\ & (-0.02031) \text{ LNCO2}_{it} \\ & \mathbf{(0.3704)} \end{aligned}$$

**Figures bolded denotes the standard error of the coefficients above.*

Interpretation:

LNGDPP_{it} : 1.1586

If the GDP per capita of a developing country increase by 1%, its tourism receipts is expected to increase by 1.1586% on average, holding other variables constant. The variable is significant at $\alpha=5\%$ with p-value at 0.0329. This is consistent with our expectation. Higher GDP in a country will provide more capital for promoting and developing its tourist attractions.

LNCR_{it} : 0.01701

If the crime rate of a developing country increase by 1%, its tourism receipts is expected to increase by 0.01701% on average, holding other variables constant. The variable is insignificant at $\alpha=10\%$ with p-value at 0.8062. The result is inconsistent with our expectation as we expect the crime rate to have negative relationship with tourism receipts. It might be because of incoming tourists already expected the bad security in developing countries. They are willing to spend more for safer travel and accommodation by staying in 5 stars hotel. This contributes to the increase in tourism receipts. The insignificance of this variable is explained by Alleyne and Boxill (2013) which claims that the effect of crime rate towards the tourism industry is lower than other factors such as advertising and promotions.

$LNCPI_{it}$: 0.6592

If the consumer price index of a developing country increase by 1%, its tourism receipts is expected to increase by 0.6592% on average, holding other variables constant. The variable is significant at $\alpha=1\%$ with its p-value= 0.0000. This contradict our expectation that the sign will be negative. It could be because of when the consumer price index rises, the prices of goods and services in the tourist destination rises. Tourists spend more instead of less in order to get the same enjoyment from the trip.

$LNCO2_{it}$: -0.02031

If the carbon dioxide(CO2) emission in a developing country increase by 1%, its tourism receipts is expected to decrease by 0.02031% on average, holding other variables constant. The variable is insignificant at $\alpha=10\%$ with p-value at 0.9565. The result confirms our expectation that CO2 emission has a negative relationship with tourism receipts. The reason is most tourist visiting developing countries want to enjoy the nature there. The increase in severity of air pollution reduce the attraction of those countries to the tourists. The insignificance of the variable shows that few tourists care about the air pollution of the countries.

Table 4.2.0. Measurement of Central Tendency and Dispersion and Variability for Developed Countries

Variable		Mean	Std Dev	Min	Max	Observation
LNTOURR	Overall	24.7193	0.4970	23.9086	25.8472	N=50
	Between		0.5016	24.3371	25.5775	N=5
	Within		0.2042	24.2426	25.0351	T=10
LNGDP	Overall	10.5654	0.1462	10.2842	10.8194	N=50
	Between		0.1582	10.3377	10.7742	N=5
	Within		0.3010	10.5067	10.6249	T=10
LNCR	Overall	0.3361	0.9319	-2.3026	1.9021	N=50
	Between		0.8691	-0.6555	1.7156	n=5
	Within		0.5019	-1.3110	1.1739	T=10
LNCPI	Overall	4.5196	0.0665	4.3650	4.6052	N=50
	Between		0.0173	4.4984	4.5386	n=5
	Within		0.06467	4.3861	4.6263	T=10
LNCO2	Overall	2.2037	0.4115	1.6910	2.9798	N=50
	Between		0.4494	1.7697	2.9416	n=5
	Within		0.0670	1.9748	2.3056	T=10

The table above shows the result of the central tendency, dispersion and variability of the variables based on the developed countries for the study that we have chosen. Using Stata can generate the result of between and overall, while using Eview can acquire the results of overall. According to the table, figures for the between mean and within mean will not be generated.

The first variable, Log Tourism Receipt shows the highest overall mean, which is 24.71926 and the standard deviation of 0.4970439, with 50 observations that applies to other variables as well. The following variable, Log Gross Domestic Products per Capita has the overall mean of 10.5654 and standard deviation of 0.1462279. For Log Crime Rate, it generates the lowest overall mean, which is 0.3361123 and the standard deviation is 0.9319224. Meanwhile, Log consumer Price Index shows the overall mean of 4.519555 and the standard deviation of 0.0665414. Lastly, the Log Co2 gives the result for overall mean of 2.203743 and standard deviation of 0.4115126.

For the maximum values, Log Tourism Receipt shows the highest figures among

other variables, which is 25.84721 while Log Crime rate has the lowest for the minimum values, which is negative figures of -2.302585.

4.2.1 Comparison between Pooled OLS Model, Fixed Model and Random Effect Model for developed country

4.2.1.0 Result of Developed Country
Dependent variable: Tourism (LNTOURR)

Variable	Pooled OLS Model	Fixed Effect Model	Random Effect Model
LNGDPP	0.0446 (0.1844)	1.8825** (0.7872)	0.0446 (0.1844)
LNCR	0.2632*** (0.0645)	-0.0425 (0.0321)	0.2632*** (0.0645)
LNCO2	0.5832*** (0.0490)	0.3444 (0.3427)	0.5832*** (0.0490)
LNCPI	3.5885*** (0.1858)	2.2634*** (0.3605)	3.5885*** (0.1858)
Redundant Fixed Effect		75.1537***	
Hausman Test		300.6148***	

Source: E-view

Note: * represent the significant at 0.10 significant level, ** represent the significant at 0.05 significant level, *** represent the significant at 0.01 significant level, the parenthesis is refer to the robust standard erro

4.2.3 Interpreting the result

Results for developed countries:

$$\text{LNTOURR}_{it} = -6.1444 + 1.8825 \text{ LNGDPP}_{it} + (-0.04252) \text{ LNCR}_{it} + 2.2634 \text{ LNCPI}_{it} + 0.3444 \text{ LNCO2}_{it}$$

(6.3445) (0.7872) (0.03211) (0.3605)
(0.3427)

**Figures bolded denotes the standard error of the coefficients above.*

Interpretation:

LNGDPP_{it} : 1.8825

If the GDP per capita of a developed country increase by 1%, its tourism receipts is expected to increase by 1.8825% on average, holding other variables constant. It is significant at $\alpha=5\%$ with p-value at 0.0215. Tugcu and Topcu (2016) explains that higher GDP in a country will enable the country to provide better services in transportation, catering and accommodation to tourist. The better service received by the tourists in turns transfer into more willingness to spend money.

LNCR_{it} : -0.04252

If the crime rate of a developed country increase by 1%, its tourism receipts is expected to decrease by 0.04252% on average, holding other variables constant. The variable is insignificant at $\alpha=10\%$ with p-value at 0.1928. The result confirms our expectation that crime rate have a negative relationship with tourism receipts. Its sign is different from developing countries because crimes in developed countries is more reported in the global media. The reporting create more negative perception of the destination to the potential travellers. The insignificance of this variable is explained by Alleyne and Boxill (2013) which claims that the effect of crime rate towards the tourism industry is lower than other factors such as advertising and promotions.

LNCPI_{it} : 2.2634

If the consumer price index of a developed country increase by 1%, its tourism receipts is expected to increase by 2.2634 % on average, holding other variables constant. The

variable is significant at $\alpha=1\%$ with its p-value= 0.0000. This contradicts our expectation that the sign will be negative. It could be because when the consumer price index rises, the prices of goods and services in the tourist destination rise. Tourists spend more instead of less in order to get the same enjoyment from the trip.

$LNCO2_{it}$: 0.3444

If the carbon dioxide emission in a developed country increases by 1%, its tourism receipts are expected to increase by 0.3444% on average, holding other variables constant. The variable is insignificant at $\alpha=10\%$ with a p-value of 0.3207. The positive relationship can be explained by the tourists that travel to developed countries do not care about the air pollution as they focus on visiting cities and marvel at the impressive buildings. The insignificance of the variable shows that few tourists care about the air pollution of the countries.

4.3 Conclusion

The conclusion we can draw from our results is the effects of GDP and CPI towards the tourism receipts are positive and significant in both developing and developed countries. This indicates the importance of these variables towards tourism receipts. Crime rates and CO₂ emissions differ in their signs in developing and developed countries respectively. Crime rates are positive in developing countries and negative in developed countries. CO₂ is negative in developing countries and positive in developed countries. Both crime rates and CO₂ emissions are insignificant in developing and developed countries.

Chapter 5: Implication, limitation and conclusion

5.1 Introduction

In this last chapter we will discuss about the overall contribution of our journal. Besides that, we will also give a brief explanation on why we are using tourism receipts instead of tourist arrival in our research project. Then, we will discuss about the findings from our research project. In addition to that, we will explain about the limitation or difficulties when we conduct this research project. Lastly, we will provide recommendation for further studies on this topic.

5.2 Summary

In our research, we are comparing how do macroeconomic variables affect the tourism receipts between developed and developing country. We chose 5 countries for developed countries and developing countries respectively. The 5 developed countries are USA and 4 European Union countries which are Italy, Germany, France and Spain. The developing countries are China, Malaysia, Mexico, Turkey and Russia. We chose the countries based on their tourist attractiveness. We use tourism receipts unlike most of the researchers using tourist arrival because not all tourist arrival will translate into tourism receipts as evidenced by the difference in top 10 ranking of tourist arrival and tourism receipts. So, we think that tourism receipt will be more suitable in our research project as it directly reflect the income from the tourism industry.

Based on the research project, we have observed that some of the independent variables is insignificant to the dependent variable, which is tourism receipts. The result in the data analysis shows that GDP and CPI affect the tourism receipts significantly. GDP and CPI affects tourism receipts positively and significantly in both developing and developed countries. Co2 emission and crime rates is insignificant in both developing and developed countries. Co2 demonstrate a negative relationship in developing countries in contrast with a positive relationship with tourism receipts in developed countries. Crime rates shows a positive relationship in developing countries while negative in developed countries.

In this research, we are using fixed effect model (FEM) to estimate our result. Before that, we went through redundant fixed effect test and Hausman test to examine whether pooled ordinary least squares, fixed effect model or random effect model is most

suitable for our model. After the testing, it is determined that FEM is the best model for our research. Aside from that, we did not perform unit root test due to the short period of data.

5.3 Policy Implications

Tourism receipts is getting more important in this day and age to countries be it developed or developing, in light of the ease of travel, abundance of cheap flights and growth of the world economy. Based on our findings, we intend to make some suggestion on the policies a country could adopt to maximize their earnings in the tourism industry.

For developing countries, our findings suggest that there is a positive relationship exists between GDP and tourist receipts. It means that when the overall development of the country is good, more tourist will be attracted to the country. It is because higher GDP in a country will provide more capital for the developing countries to promote and develop its tourist attractions. Therefore, we suggest the government to spend more resources in developing, protecting and promoting their tourist attractions.

The findings also determined that there is a positive relationship between CPI and tourism receipts. We theorize that it is because tourists have to spend more in order to obtain the same enjoyment for the products and services. Our findings indicate that tourist does not mind the high price of tourism products. However, the increase in CPI will increase the cost of living of the citizen in the country. Our output also shows that the rate of increase in tourism receipts is actually lower than the rate of increase in CPI in developing countries. This suggest that the rise in inflation will result in lower tourism earnings in real income terms due to the loss in money value. Therefore, we suggest central banks in developing countries to keep the inflation target low.

For developed countries, positive relationship also exists between GDP and tourist receipts. It is because when the country increase in GDP, the country is able to provide better services in transportation, catering and accommodation to tourists. Therefore, we suggest that the policy makers to implement policies that encourage economic growth and at the meantime provide incentives to the businesses in the transportation, catering and accommodation sector.

The relationship between CPI and tourism receipts is also positive in developed

countries. This is also because tourists have to spend more in order to obtain the same enjoyment for the products and services. The positive relationship of CPI might be also due to the fact of weaker currency according to the tourism demand model. For example, Gul, Asik and Gurbuz (2014) found that demand of tourism in Turkey increases even after inflation due to the depreciation of Turkish Lira. Therefore, in the event of high inflation, we suggest the government to weaken the currency.

5.4 Limitations

In this research, we had found some of the limitation when we are doing the research project. Firstly, we encountered a lack of data. Due to this, the time period of our research is only 2001-2010. The lack of data means we are not able to perform the unit root test to determine the past effects on the variables. This is one of the reason that we could only use static panel data for this study. Secondly, we did not use the most recent data to estimate our results due to insufficient data in some countries. For example, we could not get the data of crime rates in Malaysia after 2010. This affect the relevance of our study.

5.5 Recommendation

We recommend that future researchers to use bigger pool of data so that they can use dynamic panel to estimate their result. Besides that, researchers should include the latest data so that can make the entire research more accurate and more efficient. Future researchers could also focus on region by region to study the different effects of the variables towards the tourism receipts. For example, they could focus their study in the Asia Pacific, European Union or Latin America to find if there is any region effects.

1.0 Appendix

Developing country

Cross Sectional: None, Coef covariance method: White Cross

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:25

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	-0.173551	0.071407	-2.430457	0.0191
LNCR	-0.187048	0.047126	-3.969106	0.0003
LNCPPI	0.802951	0.080111	10.02295	0.0000
LNCO2	-0.215366	0.059550	-3.616567	0.0008
C	22.11782	0.746390	29.63306	0.0000

R-squared	0.579103	Mean dependent var	23.40582
Adjusted R-squared	0.541690	S.D. dependent var	0.544677
S.E. of regression	0.368739	Akaike info criterion	0.937183
Sum squared resid	6.118576	Schwarz criterion	1.128386
Log likelihood	-18.42959	Hannan-Quinn criter.	1.009994
F-statistic	15.47865	Durbin-Watson stat	0.177984
Prob(F-statistic)	0.000000		

Cross Sectional : Fixed, Coef covariance method : White cross

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:25

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	1.158608	0.524601	2.208552	0.0329
LNCR	0.017012	0.068912	0.246866	0.8062
LNCPPI	0.659159	0.120575	5.466816	0.0000
LNCO2	-0.020306	0.370393	-0.054822	0.9565
C	10.29786	3.709701	2.775926	0.0083

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.942758	Mean dependent var	23.40582
Adjusted R-squared	0.931588	S.D. dependent var	0.544677
S.E. of regression	0.142464	Akaike info criterion	-0.897911
Sum squared resid	0.832131	Schwarz criterion	-0.553747
Log likelihood	31.44777	Hannan-Quinn criter.	-0.766851
F-statistic	84.40669	Durbin-Watson stat	0.798381
Prob(F-statistic)	0.000000		

Redundant Fixed Effect

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	65.117190	(4,41)	0.0000
Cross-section Chi-square	99.754717	4	0.0000

Cross-section fixed effects test equation:

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:33

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	-0.173551	0.138822	-1.250173	0.2177
LNCR	-0.187048	0.073838	-2.533211	0.0149
LNCPI	0.802951	0.216612	3.706858	0.0006
LNCO2	-0.215366	0.126296	-1.705246	0.0950
C	22.11782	1.382691	15.99621	0.0000

R-squared	0.579103	Mean dependent var	23.40582
Adjusted R-squared	0.541690	S.D. dependent var	0.544677
S.E. of regression	0.368739	Akaike info criterion	0.937183
Sum squared resid	6.118576	Schwarz criterion	1.128386
Log likelihood	-18.42959	Hannan-Quinn criter.	1.009994
F-statistic	15.47865	Durbin-Watson stat	0.177984
Prob(F-statistic)	0.000000		

Cross Sectional: Random, Coef covariance method: white cross –section

Dependent Variable: LNTOURR

Method: Panel EGLS (Cross-section random effects)

Date: 07/25/17 Time: 19:37

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Swamy and Arora estimator of component variances

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	-0.173551	0.071407	-2.430457	0.0191
LNCR	-0.187048	0.047126	-3.969106	0.0003
LNCPI	0.802951	0.080111	10.02295	0.0000
LNCO2	-0.215366	0.059550	-3.616567	0.0008
C	22.11782	0.746390	29.63306	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.142464	1.0000

Weighted Statistics

R-squared	0.579103	Mean dependent var	23.40582
Adjusted R-squared	0.541690	S.D. dependent var	0.544677
S.E. of regression	0.368739	Sum squared resid	6.118576
F-statistic	15.47865	Durbin-Watson stat	0.177984
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.579103	Mean dependent var	23.40582
Sum squared resid	6.118576	Durbin-Watson stat	0.177984

Hausman test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	260.468761	4	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LNGDPP	1.158608	-0.173551	0.187290	0.0021
LNCR	0.017012	-0.187048	0.010359	0.0450
LNCPI	0.659159	0.802951	0.011390	0.1779
LNCO2	-0.020306	-0.215366	0.141778	0.6044

Cross-section random effects test equation:

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:37

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.29786	3.031044	3.397461	0.0015
LNGDPP	1.158608	0.436081	2.656863	0.0112
LNCR	0.017012	0.105703	0.160942	0.8729
LNCPI	0.659159	0.135623	4.860235	0.0000
LNCO2	-0.020306	0.379682	-0.053481	0.9576

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.942758	Mean dependent var	23.40582
Adjusted R-squared	0.931588	S.D. dependent var	0.544677
S.E. of regression	0.142464	Akaike info criterion	-0.897911
Sum squared resid	0.832131	Schwarz criterion	-0.553747
Log likelihood	31.44777	Hannan-Quinn criter.	-0.766851
F-statistic	84.40669	Durbin-Watson stat	0.798381
Prob(F-statistic)	0.000000		

2.0 Developed Country

Cross sectional: None, coef cross-section: white cross-section

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:40

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	0.044598	0.184353	0.241916	0.8099
LNCR	0.263222	0.064463	4.083298	0.0002
LNCPI	3.588459	0.185789	19.31470	0.0000
LNCO2	0.583196	0.048977	11.90744	0.0000
C	6.656146	1.446719	4.600855	0.0000
R-squared	0.766145	Mean dependent var		24.71926
Adjusted R-squared	0.745358	S.D. dependent var		0.497044
S.E. of regression	0.250819	Akaike info criterion		0.166469
Sum squared resid	2.830956	Schwarz criterion		0.357671
Log likelihood	0.838287	Hannan-Quinn criter.		0.239279
F-statistic	36.85666	Durbin-Watson stat		0.457089
Prob(F-statistic)	0.000000			

Cross sectional: Fixed, coef cross-section: white cross-section

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:47

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	1.882513	0.787215	2.391357	0.0215
LNCR	-0.042519	0.032112	-1.324102	0.1928
LNCPI	2.263366	0.360470	6.278930	0.0000
LNCO2	0.344438	0.342664	1.005177	0.3207
C	-6.144404	6.344529	-0.968457	0.3385

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.971933	Mean dependent var	24.71926
Adjusted R-squared	0.966457	S.D. dependent var	0.497044
S.E. of regression	0.091033	Akaike info criterion	-1.793643
Sum squared resid	0.339766	Schwarz criterion	-1.449479
Log likelihood	53.84108	Hannan-Quinn criter.	-1.662583
F-statistic	177.4744	Durbin-Watson stat	0.727881
Prob(F-statistic)	0.000000		

Redundant Fixed

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	75.153688	(4,41)	0.0000
Cross-section Chi-square	106.005579	4	0.0000

Cross-section fixed effects test equation:

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:52

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	0.044598	0.378700	0.117766	0.9068
LNCR	0.263222	0.049760	5.289871	0.0000
LNCPI	3.588459	0.646141	5.553676	0.0000
LNCO2	0.583196	0.132506	4.401276	0.0001
C	6.656146	3.509893	1.896395	0.0643

R-squared	0.766145	Mean dependent var	24.71926
Adjusted R-squared	0.745358	S.D. dependent var	0.497044
S.E. of regression	0.250819	Akaike info criterion	0.166469
Sum squared resid	2.830956	Schwarz criterion	0.357671
Log likelihood	0.838287	Hannan-Quinn criter.	0.239279
F-statistic	36.85666	Durbin-Watson stat	0.457089
Prob(F-statistic)	0.000000		

Cross Sectional: Random, Coef covariance method: White cross

Dependent Variable: LNTOURR

Method: Panel EGLS (Cross-section random effects)

Date: 07/25/17 Time: 19:57

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Swamy and Arora estimator of component variances

White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDPP	0.044598	0.184353	0.241916	0.8099
LNCR	0.263222	0.064463	4.083298	0.0002
LNCPI	3.588459	0.185789	19.31470	0.0000
LNCO2	0.583196	0.048977	11.90744	0.0000
C	6.656145	1.446719	4.600854	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	1.41E-05	0.0000
Idiosyncratic random	0.091033	1.0000

Weighted Statistics

R-squared	0.766145	Mean dependent var	24.71926
Adjusted R-squared	0.745357	S.D. dependent var	0.497044
S.E. of regression	0.250819	Sum squared resid	2.830956
F-statistic	36.85666	Durbin-Watson stat	0.457089
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.766145	Mean dependent var	24.71926
Sum squared resid	2.830956	Durbin-Watson stat	0.457089

Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	300.614712	4	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LNGDPP	1.882513	0.044598	0.503043	0.0096
LNCR	-0.042519	0.263222	0.000502	0.0000
LNCPPI	2.263366	3.588459	0.154116	0.0007
LNCO2	0.344438	0.583196	0.120297	0.4912

Cross-section random effects test equation:

Dependent Variable: LNTOURR

Method: Panel Least Squares

Date: 07/25/17 Time: 19:59

Sample: 2001 2010

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.144404	5.737211	-1.070974	0.2904
LNGDPP	1.882513	0.722450	2.605733	0.0127
LNCR	-0.042519	0.028774	-1.477695	0.1471
LNCPPI	2.263366	0.457287	4.949550	0.0000
LNCO2	0.344438	0.350156	0.983670	0.3310

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.971933	Mean dependent var	24.71926
Adjusted R-squared	0.966457	S.D. dependent var	0.497044
S.E. of regression	0.091033	Akaike info criterion	-1.793643
Sum squared resid	0.339766	Schwarz criterion	-1.449479
Log likelihood	53.84108	Hannan-Quinn criter.	-1.662583
F-statistic	177.4744	Durbin-Watson stat	0.727881
Prob(F-statistic)	0.000000		

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