

The Determinants of Foreign Tourism Demand to Indonesia: Gravity Model Approach

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Abstract: This study aims to analyse determinants of foreign tourists demand to visit Indonesia. As one of potential sources of foreign exchange, tourism sector in Indonesia become necessary to foster the Indonesian's economic growth. Declining in number of local tourist is not as matter as foreign tourist since it has a potential source of foreign exchange. Gravity model of travel cost for foreign tourism is estimated using panel data consisting of eight countries during 2009-2016. Data are obtained from Statistics Indonesia (BPS) and the World Bank data. The results show that, GDP per capita of both domestic and foreigners also population are significant factors that increase foreign tourists demand. One of a significant factor that lower the number of foreign tourist visiting Indonesia is the distance from the origin country foreigner travelled from. In addition, the appreciation of Indonesia (domestic) exchange rate against \$US also decrease foreign tourism demand. This research suggests that, Indonesian policy should provide a guarantee of airline access for tourists in order to attract more visitors. Thus, the increasing in such foreigners to visit Indonesia will lead to expanding in job creation and the increasing share of GDP which finally strengthen the Indonesian economy.

1 INTRODUCTION

Tourism is a sector that has experienced rapid growth in recent decades. With the increasing growth in the tourism sector, it can encourage a country's economic development. Tourism is a potential sector for national development because it can generate foreign exchange (Deluna Jr and Jeon, 2014) (Chasapopoulos et al., 2014). Multiple effects from the tourism sector certainly affect the economy. Both foreign and domestic tourists will certainly influence tourist consumption. The value of tourist expenditure will affect income, foreign exchange earnings for tourist areas, and employment opportunities. Tourism is an important sector in attracting resources and generating income. Interest and efforts to develop the tourism sector will help the process of economic development for a country. Tourism sector does not only bring contribution to Gross Domestic Product (GDP), but also directly and indirectly has impacted the whole economy, partially through it contributions to expand employment opportunities, enhance source of tax revenue, and open a way to increase welfare of the people. Therefore, most countries are trying to remove barriers that limit the flow of tourists and continue to

increase the benefits of tourism revenues.

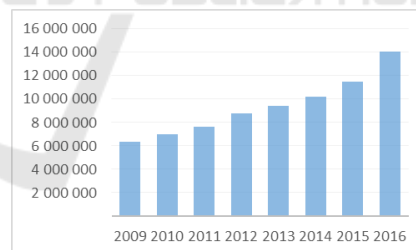


Figure 1: The Total Number of Foreign Tourist Visits to Indonesia, 2009-2016 Source: Statistics Indonesia (Badan Pusat Statistik Indonesia)

It can be seen from the figure 1, the development of foreign tourists every year always shows a positive level of growth. In 2009 the total number of foreign tourists are visiting Indonesia was 6,323,730 people which then continued to increase until 2016 the number of foreign tourists was 11,519,275. There are eight countries with the largest number of tourist visits to Indonesia, such as Singapore by 24%, followed by Malaysia at 22%, Australia 17%, China 15%,

Japan 8%, Korea 6%, Britain and the United States 4% each. Considering the geographical distance between Indonesia to some countries such as Singapore and Malaysia, those countries has become the two largest number of tourist visiting Indonesia because Indonesia away closer compared to other countries.

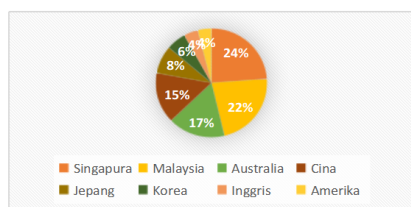


Figure 2: Total Number of Visits of Foreigner from Top Eight Countries, 2009-2016 Source: Statistics Indonesia (Badan Pusat Statistik Indonesia)

2 LITERATURE REVIEW

Some previous studies supporting the hypothesis of the research was conducted by (Pratomo, 2012), he conducted the research from 1989 to 1997 using Error Correction Model (ECM). They reveal that, Malaysian per capita GDP has a positive and significant also elastic effect. This means that, in the long run an increase in Malaysian per capita income impact on the rise in the average number of tourists. (Selimi et al., 2017) conducted a study and their analysis was carried out from 1998 to 2014 with 6 countries using econometric panel regression. In their research, they found that, per capita gross domestic product (GDP) has positive and significant effect on tourism and economic growth. Another study was also conducted by (Fang Bao and Mckercher, 2008), their study shows that, distance has a negative and significant effect. Therefore, distance plays an important role in tourism. The further distance, difference available in terms of travel duration, activities taken, friends, expenses, and how many times they can repeatedly visit a certain place for vacation.

Another study conducted by (Chasapopoulos et al., 2014) with panel data analysis using Gravity model from 2001 to 2010. They reveal that, distance has negative relationship with foreign tourist demand, whereas trade ties between Greece and countries destination is an important factor that can affect foreign tourists' demand for tourism services. Furthermore, (OTHMAN et al., 2018) was conducted from 2012 using cross-sectional data with regression of ordinary least squares (OLS) and quantile regression (QR). The results of his research show that, population and GDP have a significant positive effect while distance

has a significant negative effect on tourist arrivals to Malaysia from Muslim countries. (Blake and Cortes-Jiménez, 2007), their analysis was carried out in the first quarter of 1994 to the third quarter of 2006 using a structural time-series model. Their study shows that, the exchange rate variable of the country of origin and the exchange rate of the destination country have a negative and significant effect on the interest of tourists traveling to UK, while the dummy foot and mouth disparity variable has positive relationship with the interest of tourist to travel to UK. (Mariyono, 2017) was conducted his research from 2002 until 2011 using panel data regression. In his study, GDPi and GDPj have positive relationship with demand for foreign tourism to Indonesia, whereas distance has a negative and significant effect. Moreover, population variables have a positive and significant effect on the demand for foreign tourism to Indonesia.

Furthermore, the research was conducted by (Leitão, 2015) using a unit root test panel and dynamic data panel (GMM-system estimator). The resulted of his research shows that the ICP variables such as the number of workers in tourism sector, inflation and consumer prices and final government consumption expenditure have negative and significant effect while GDP of foreign country has a significant positive effect. The research conducted by (Deluna Jr and Jeon, 2014), they investigate determinants of international tourism demand for the Philippines using gravity models. This study reveals that, the variable of Gross Domestic Product (GDP) has a positive relationship with the flow of foreign tourist visits.

3 RESEARCH METHODOLOGY

This study mainly focused on eight largest countries where foreigners mostly is coming from, those are Singapore, Malaysia, Australia, the United States, United Kingdom, Republic of China, Japan, and the Republic of Korea. The selection of the research period for eight years is from 2009 to 2016. This study is used secondary data. The data was obtained from various credible sources such as Statistics Indonesia (BPS), the World Bank, and the Ministry of Tourism for data on the total number of foreign tourist visits to Indonesia, Indonesia's GDP per capita, foreign countries GDP per capita, exchange rates of domestic country (Indonesia), distance between two countries and population of foreign tourists. The research framework based on macroeconomics theory and previous study is as follows:

The gravity model has been familiarly used in explaining the volume of trade, capital flows and re-

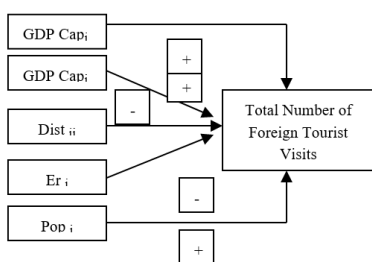


Figure 3: Framework of Analysis of Gravity Model

gional science economic geography also migration of people between countries in the world (Kosnan et al., 2013). This research applied Gravity model approach, as research conducted by Sheldon and Var (1985) explains that initially the gravity model predicts that the flow of tourism from region i to region j is the same as from country j to country i. (Kimura and Lee, 2006) in their study shows that, gravity equations is better to predict service trade than service trade. Distance between the two countries is also important in measuring interactions between two countries. In looking at economic interactions between Newton’s gravitational law regions, they can be used with equation (Anderson, 2016):

$$X_{ij} = \frac{GY_iE_j}{D_{ij}^2} \quad (1)$$

Where X_{ij} is the economic interaction of region i with region j, G is gravitational constant, Y_i is economic activity in region of origin, E_j is a measure of economy in the destination region, and D_{ij} is a distance between countries i and j. The equation explains that in each region the greater economic activity will have a positive effect on economic interaction between two countries, whereas the distance has a negative effect. In addition, studies that used the bilateral tourism flows gravity model include (Garin-Munoz and Amaral, 2000) (Eilat and Einav*, 2004) (Gil-Pareja et al., 2007) (Hanafiah et al., 2010) (Mohabi et al., 2010) (Kosnan et al., 2013) (Ghani, 2016) (OTHMAN et al., 2018) Model is applying the gravity model of international trade which is introduced by (Tinbergen, 1962). In estimating tourism demand, some adjustments are made by the Rodrigue (2004). Therefore, it become more convenient with the tourism model. The model that has been proposed by Rodrigue (2004) as follows:

$$TDx_{ij} = \frac{K m_i m_j}{D_{ij}^\gamma} \quad (2)$$

Where:

TD_{ij} : represents tourist arrivals from country, i to destination country, j. K is a constant, m_i is a factor that

generate the flow of international tourism, m_j is a factor that attracts the flow of international tourism. D_{ij} is the distance between origin country, i and destination country, j.

4 RESULT AND DISCUSSION

The aim of this research is to analyze the effect of the Indonesian GDP per capita, foreigner countries GDP per capita, the distance between Indonesia and the foreign countries, Indonesia exchange rate, and foreign countries population in 2009-2016 toward total number foreign tourist visits. This study uses panel data analysis with a random effect model. The results shown in this chapter are the best estimation results to meet the criteria of theory, econometrics and economics.

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Independent Variable: ln (Total Number of Foreign Tourist Visits)	Model	
	Fixed Effect	Random Effect
Constant	0,855	-1,126
Standar Error	14,311	2,866
P-Value	0,953	0,694
ln GDP capi (Indonesia)	1,191***	1,217***
Standar Error	0,309	0,231
P-Value	0,000	0,000
Independent Variable: ln Total Foreigner Visits)	Model	
	Fixed Effect	Random Effect
ln GDP capj (Foreigner)	1,338***	0,939***
Standar Error	0,290	0,245
P-Value	0,000	0,000
ln Distance _{ij}	(omitted)	1,622***
Standar Error	(omitted)	0,355
P-Value	(omitted)	0,000
ln Exchange rate (Indonesia)	-0,113	-0,141**
Standar Error	0,159	0,073
P-Value	0,481	0,053
ln Population (Foreigner)	-0,596	0,469*
Standar Error	0,872	0,181
P-Value	0,498	0,010

Note that * indicates level of statistical significance: *p<0.01, **p<0.05, ***p<0.10, standard errors in parentheses.

Figure 4: Regression Results.

From the estimation results of the Figure 4, random effect estimation model can be made through the following equation:

$$\ln(\text{tot foreignvisits}) = -1,126 + 1,217\ln(\text{GDPcap}_i) + 0,939\ln(\text{GDPcap}_j) - 1,622\ln(\text{Distance}_{ij}) - 0,141\ln(\text{ER}_i) + 0,469\ln(\text{Population}_j) \quad (3)$$

Where:

$\alpha = -1,126$, this means that, when all independent variables (Indonesian GDP, foreign tourists' GDP, distance, exchange rate, population) are considered to be zero, then the demand for foreign tourists to Indonesia is -1.126. $b_1 = 1,217$, this means that, with a 1% significance level, for each 1% increase in Indonesia's GDP per capita will increase the total number of foreign tourist visits by 1,217% (*ceteris paribus*). Furthermore, $b_2 = 0,939$, this means that, with a 1% significance level, for each 1% increase in GDP per capita of foreign tourists' countries will increase the total number of foreign tourist visits by 0.939% (*ceteris paribus*). Moreover, $b_3 = -1,622$, is identifying that, with 1% significance level, for every 1% increase in distance reduces will decrease the total number of foreign tourist visits by -1,622% (*ceteris paribus*). Then, $b_4 = -0,141$, this means that, with 10% significance level, for each 1% increase in domestic exchange rates, will decrease the total number of foreign tourist visits by -0.141% (*ceteris paribus*). $b_5 = 0,469$ means that with 5% significance level, for each % increase in population of foreign tourists' countries will increase the total number of foreign tourist visits by 0.469% (*ceteris paribus*).

Based on the results, an analysis of the discussion on each of the effects of the independent variables can be made on the demand for foreign tourism to Indonesia which can be interpreted as follows, the regression results in this study show that the probability of Indonesian GDP per capita is 0,000 which means that the variable GDP of Indonesia does affect the total number of foreign tourists with a significance level of 5%. This is in line with the research hypothesis. The coefficient of Indonesia's GDP per capita is 1,217, means that an increase of 1% in Indonesia's GDP per capita will increase the total number of foreign tourists by 1,217%. The positive relationship between Indonesia's GDP per capita and the total number of foreign tourist visits to Indonesia is consistent with the study by (Deluna Jr and Jeon, 2014). Their study reveal that, per capita income in Indonesia has a strong influence on tourists' tourist decisions because per capita income in Indonesia reflects the economic condition of the country. The regression results show that, the probability of GDP per capita for-

foreign tourists' countries is 0,000 which means that the variable GDP per capita of foreign countries the total number of foreign tourist visits with a significance level of 5%. This result is as stated by the research hypothesis. The coefficient value of GDP per capita foreign countries is 0.939, it means that, an increase of 1% of GDP per capita foreigners, will increase the total number of foreign tourists by 0.939%. The positive relationship of foreign countries GDP per capita with the total number of foreign tourist visits is in line with the theory of (Garin-Munoz and Amaral, 2000). According to (Garin-Munoz and Amaral, 2000), the amount of GDP per capita in the destination country can illustrate the magnitude of economic activity in the country. The good condition of a country's income allows its citizens to travel more frequently to other regions.

The regression results indicate that, distance coefficient is -1.622, this means for each 1% increase of the GDP per capita of foreigner countries will reduce the total number of foreign tourists by 1.622%. The negative relationship between distance and the total number of foreign tourist visits in Indonesia is along the lines of the theory. Distance is important in affecting the number of foreign tourists. The further the distance, the more costs will be incurred by tourists to visit a country destination. According to (Fang Bao and Mckercher, 2008) Distance plays an important role in tourist visits. Indonesian exchange rate influences tourist demand. This is in line with the research hypothesis. The coefficient value of Indonesian exchange is -0.141, this means that, for an increase of 1% point of domestic exchange rate (IDR against US \$, appreciates), this reduces the total number of foreign tourists by 0.141%. The negative relationship of the Indonesia exchange rate with the total number of foreign tourist visits is in agreement with the theory of (Blake and Cortes-Jiménez, 2007). Exchange rates of foreigners greatly influence the total number of foreign tourist visits to Indonesia. This is because when the currency of Indonesia depreciates against the US\$, then the total number of foreign tourist visits to Indonesia increases and vice versa.

The population coefficient value of 0.469, this indicates that, for 1% increase in GDP of the country of origin of foreign tourists will increase the number of tourist demand by 0.469%. The positive relationship of the population with the demand of tourists to Indonesia is in line with the theory. This is because the population in the world grows from time to time, and the arrival of tourists to a country will also increase along with population growth in the world. This result in accordance with the study of (Santeramo and Morelli, 2015) which states that the greater

the population of a foreigner's country, the higher the demand for tourism. Population also corresponding to the tourism market in the destination countries.

5 CONCLUSION AND RECOMMENDATION

Determinants of the number of foreign tourists to Indonesia from 2009 to 2016, can be concluded as follows, both Gross Domestic Product per capita (GDP per capita) of Indonesia and foreign countries have positive and significant effect on the total number of foreign tourist visits to Indonesia. This explains that the greater the GDP per capita of Indonesia, the greater the total number of foreign tourist visits to Indonesia. At the same time, the greater the GDP per capita of foreign countries, the greater the total number of foreign tourist visits to Indonesia. This situation also indicates the larger market of tourism sector in foreign countries, with the increasing GDP per capita of foreign countries reflects purchasing power and demand power. Moreover, the better living standard, the higher ability of foreign tourist to travel for vacation purposes. Therefore, this is also means a large potential for foreigners to travel to Indonesia, since Indonesia is well-known as one of interesting tourism destination. Distance between Indonesia and foreign countries is significant and it affects the demand for foreign tourism with a negative relation. This means that, the further the distance a country, the fewer the total number of foreign tourist visits to Indonesia, this is because transportation cost will also become more expensive with the further distance. Domestic exchange rates of Indonesia has a negative and significant effect on the total number of foreign tourists to Indonesia, this explains that, when the exchange rate of the Indonesia currency weakens, the tourism cost will reduce, then the total number of foreign tourists to Indonesia increases, and vice versa. Population of foreign countries has a positive and significant effect on the total number of foreign tourist visits. This reveals that, the more population of foreign countries, the greater chance the number of foreign tourists to visit Indonesia.

Based on the conclusions, we can provide some policy recommendation for the Indonesian government as, the first, this research is expected to be a material improvement and consideration for the government in improving and maintaining the stability of Indonesia's income to maintain the number of foreign tourists to visit Indonesia. The second, the government is expected to increase cooperation in the expansion of international airline routes to reduce distance

constraints in order to increase the number of tourists from various countries.

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