

Research Article

What Drive International Tourism Visitors in Asean and Asia Pacific Countries?

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Abstract.

This study will analyze some factors that influence on international tourism visitors. Almost all determine factor from social and several economic factors. The subject observations in this research are ASEAN countries (Indonesia, Malaysia, Thailand, and Philippines) and four Asia Pacific countries (Korea, Japan, China, and India) and we called ASEAN plus 4. This research was estimated by the panel model with time observation from 2009 until 2020. Using the panel model, the dependent variable in this study is international tourism arrivals. The independent variables include the nominal effective exchange rate, real effective exchange rate, infrastructure index, criminal index, safety index, pollution index, and living cost index. The result of almost all variables are normally distributed. Meanwhile, cointegration test shows all of the variables cointegrated on the first derivative logarithm, so there is a long-term relationship between variables at the rate of change. The random effect panel model was indicated the whole variable was significant to the international tourist arrivals in ASEAN plus 4 countries. Another evidence from the result, the conclusion that appreciation of the exchange rate made bring down of international tourist visitors. However, decreasing on exchange rate raise of international tourist. The other result expressed the raise of criminality and safety made declines the number of international tourist visitors, the increasing on pollution and living cost made increasing the number of international tourism arrivals. The conclusion that several economic and social factors such as a depreciation of exchange rate and the increase in the cost of living and pollution had a positive and significant impact on the rise of international tourist arrivals. However, the appreciation in the exchange rate, raise on criminality and safety had an impact on declining on international tourists.

Keywords: tourism, exchange rate, living cost, criminal, pollution

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1. Introduction

In the middle of the world economic crisis and uncertainty of the industry and financial sectors in the last teen years, the tourism sector is still growing at about 5%. This condition is evidenced by Highlight report of World Tourism Organization (UNWTO 2019). Based on that report the total of international tourist arrivals worldwide reached 1.401 billion in 2018 larger than 1.329 billion in 2017. From their records report, tourism is become the one of the third largest leading sectors in produce world export. This result also showed that tourism sector becomes an important sector almost in many countries, both developed and developing countries. Where the average growth of international tourist arrivals in advanced economies or developed countries by 5% per year. While the growth of tourism in emerging economies or developing countries amounted 4.9% per year. Some result from previous research provided, increasing in foreign tourist arrivals gave impact to the raise on international tourism revenue (export) and gave impact to the appreciation on their foreign exchange, particularly country that become tourist destinations. Refers to from the UNWTO report shows revenue of international tourists arrivals from around the world reached 1.451 billion US dollar at 2018 increased from 1.346 billion US dollar in 2017 (UNWTO 2019). It means during 2017 to 2018 tourism experienced a growth of 4.4%

We found generally world tourism sector already increase. This condition is also discovered by raise on international tourism receipt in Asia Pacific area, especially ASEAN-5 countries and several Asia countries based on some research and report have a great tourism sector. ASEAN five countries consist of Indonesia, Malaysia, Thailand, Singapore, and Philippine. Meanwhile, several Asia countries include Japan, Korea, China, and India.

According to the UNWTO 2019 report demonstrated in 2018 the average of international tourism receipt of ASEAN-5 is 1,9861.4 million US dollar smaller than 2,3002.6 million US dollar at 2017. Experiencing a decline in international tourism receipts in ASEAN-5 fell by 0.1365%. However, the decline in international receipts in the ASEAN-5 is inversely proportional to the condition of the number of international tourist arrivals. Refers to the UNWTO report, international arrivals grew by 0.046% during 2017 to 2018. This result is known from on average international tourist arrivals in 2017 by 1,8981.8 million rose to 1,9861.4 million in 2018.

In contrast to asean-5 conditions where it has been reversed between their international tourist arrival and international tourism receipt, condition of both variables in

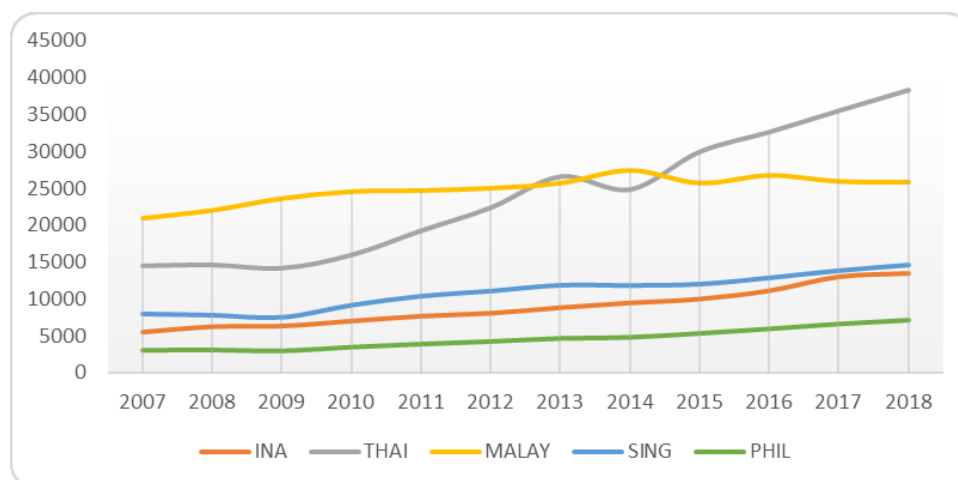


Figure 1: International Tourist Arrivals Trends of ASEAN-5, 2007-2018.

several Asia countries including China, Japan, Korea, and India have a uni-directional condition. Report of UNWTO shows on average international tourist arrivals in 2017 at 2,9577.5 million became 3,1716.5 million in 2018. During 2017 to 2018 on average four countries growing at 0.072%. This result reinforced by average international tourism receipt at 2,9577.5 million US dollar in 2017 became 3,1716.5 million US dollar in 2018. Figure 1 and Figure 2 below provide trend of International tourist arrivals ASEAN-5 and four Asia countries.

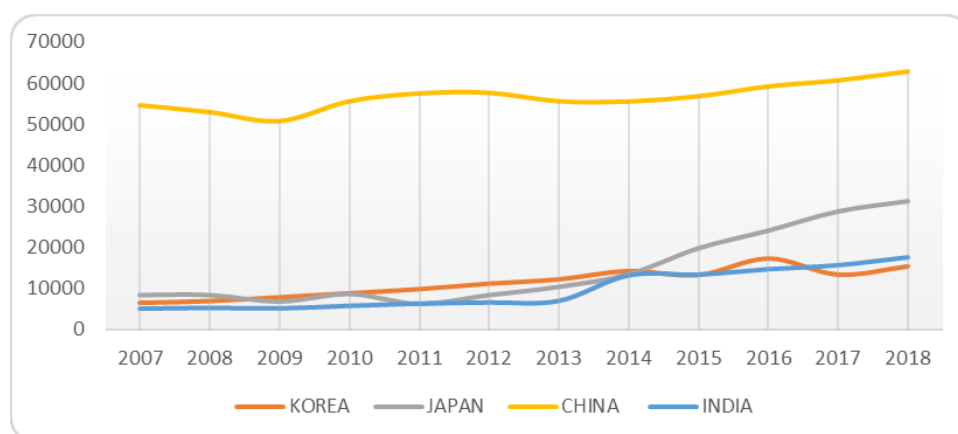


Figure 2: International Tourist Arrivals Trends for Four Asia Countries, 2007-2018.

Based on that figure overall trend of international tourist arrivals in ASEAN-5 and four Asia countries experience the ascending trend. This shows the high interest of the international tourist to visit these countries. The increase was also driven by several factors such as social, environmental, and economic factors that tend to be stable. In addition, this increase is also driven by Asian tourist destinations that tend to be diverse

and unique. However, lately uncertainty has also hit the ASEAN-5 plus 4 tourism sector. Social, politics, and economy determine tourism pattern in Asia.

Departing from the uncertainty condition of tourism in the ASEAN-5 region and four countries in Asia that joined in APEC organization, so this condition interesting to analyze the factors that influence foreign tourists visit. The reason why that whole countries has been used as an object in this research, because these countries having stability on social and political, and economic growth is quite high and stable In Asia in the last five years

Focus on this research is how influence of monetary factor, competitiveness, social factor, environment, and economy of ASEAN-5 and four Asia Pacific countries to the number of International Tourism Arrivals. Monetary factor are represented by variables *Nominal Effective Exchange Rate* (NEER) and *Real Effective Exchange Rate* (REER); for competitiveness factors are represented by variables *Infrastructure Index* (INFI). Meanwhile, the security factor is represented by the variables *Criminal Index* (CRII) and *Safety Index* (SAFI); environmental factors are represented by *Pollution index* (POLI); while economic factors are represented by variables *Living Cost Index* (LCI). Some previous research shows there are positive and significant impact from monetary factor, competitiveness, safeness, environment to the tourism. There is negative relationship between criminality and tourism (Zerva 2013; Johnny and Jordan 2011). Opposite with other research found out less safety would made encourage tourist arrivals (Michalko 2008).

The one of important thing tourism development is infrastructure which one several research found out infrastructure have sensitivity and role to the demand and development of tourism (Imikan and Ekpo 2012; Seetanah et al. 2011; Doerra et al. 2020; and Panasiuk 2007). Safety and security have an important role and quite influences to development and growth of tourism (Wang et al. 2009; Shin 2006; Ghaderi et al. 2016; Hall et al. 2008). Beside that environmental condition has considerable from foreign tourist. Some research figured out overall pollution gave significant and positive impact to the tourism growth and its development (Deng et al. 2017; S'aenz-de-Mieraa and Rossell 2013;. Gao and Zhang 2019; Xu Xu and Reed 2018).

This study provides new approach in terms of factors those affecting international tourist visitors. Some previous studies only look partially from factors that affect tourism visits, for example only from the economic aspect alone or the convenience factor alone. This study tries to analyze comprehensively from several factors above that

affect the international tourist visit, ranging from economic factors until security factors. In addition, this study not only looks at cases in one country but compares and analyzes some countries from ASEAN and Asia Pacific

2. Basic Study

This part will explain how theoretical and empirical view of relationship between several factors including international monetary, competitiveness or infrastructure, safety, environmental, and economic affecting the number of international tourism trade. Generally empirical analysis of tourism demand taken from theory of consumer demand. Specific formula for demand function $Q = f(X)$, where Q is the tourism demand and X is a vector of explanatory variables such as income, distance and price levels that explain Q . Meanwhile, tourism demand defined as the aggregate amount of a set of tourist products and services that the visitors are willing to buy during the period of their vacation (Song and Witt 2000; Proenca and Soukiazis 2005). The literature distinguishes three main ways to measure foreign demand for tourism. The first way is to take the total number of arrivals of non-resident tourists at national borders as measure for tourism demand (Aki 1998; Stucka 2002; Naude and Saayman 2005; Phakdisoth and Kim 2007). Mu noz (2006), and Dritsakis and Athanasiadis (2000) use tourist arrivals per capita to capture the volume of tourism in Canary Islands and Greece, respectively.

Leitao (2010) measures the demand for tourism using the number of visitors staying in hotels as the entrance of travelers from each origination does not take into account their stay-duration, a second way to measure tourism demand is to consider the number of nights spent by tourists in the destination country. In a study of international tourist flows to Spain, Garín-Mu noz and Amaral (2000) use the number of per capita overnight stays in hotels by each tourist generating country as a measure of tourism demand. In a similar way, Athanasopoulos and Hyndman (2008) in model the Australian domestic tourism demand. A shortcoming of this approach is that it excludes a considerable number of tourists – those who stay in their own accommodations or are hosted by family and friends. Both tourist arrivals and overnight stays define foreign demands for tourist services without considering the consumption behavior of visitors.

For this reason, some studies applied a third way of measurement, the total expenditures made by foreign tourists as a proxy for tourism demand (Loeb 1982; González and Moral 1995; Tse 2001). De Mello et al. (2002) define tourist demand in the UK as the share of tourism expenditures of the sending country to alternative destinations.

Proenca and Soukiazis (2005) estimate the demand for tourism in Portugal as the share of the spending of each origin country to the total tourism expenditures in the destination country. Ideally, one would want to measure foreign tourism demand by a combination of the three approaches mentioned above. In reality, however, this appears unfeasible due to the great complexity involved in constructing data for such a variable. Furthermore, data on tourism expenditure are rarely available. Song and Li (2008), and Lim (1997), who carried out a review of more than 100 empirical studies of international tourism, conclude that the total number of tourist arrivals remains the most commonly used method for measuring tourism demand. The present study follows this strand of literature.

2.1. Determinants of Foreign Tourism Demand

Early empirical studies on tourism demand underline the importance of visitors' purchasing power for the demand of international tourism services (Gray, 1966; Kwack, 1972; Loeb, 1982). For some recent studies (Muñoz and Amaral 2000; Song et al. 2003a; Leitao 2010) income was found have a strong explanatory power in the tourism demand function. Higher income leads to more demand for tourism services. According to Muñoz (2006), Proenca and Soukiazis (2005) and Ledesma-Rodríguez et al. (2001), tourism is a luxury goods. In microeconomics theory luxury goods included inelastic demand, where raise on income would be increasing demand of luxury goods. On the other hand, Phakdisoth and Kim (2007) and Habibi et al. (2009) find that tourist came to Laos and Malaysia, respectively, are inelastic and hence not regarded by travelers as a luxury good. This suggests that income elasticity of tourism demand is country specific and no generalisation can be made about its value. Apart from income, prices are another dominant factor that is found to influence the international tourism demand (Gray 1966; Kwack 1972; Loeb 1982; González and Moral 1995; Song et al. 2003).

Based on Tourism Research Australia report in 2011 were covering the income, relative price, and air capacity in analyzing the factors that influence inbound tourism in Australia, particularly in investigating the volatility of exchange rate (Australian Dollar). Hanafi and Harun (2010) with using Gravity model found out that tourism demand had correlated with exchange rate, Gross National Income, inflation/CPI, distance, population and economic crisis.

2.2. Tourism Infrastructure

Tourism infrastructure is component of regional tourism product and one of important materials in tourism sector. Infrastructure is comprised of basic divide, buildings and service institutions. Infrastructure is one of government tools which the existences most crucial for operating of economy and society. Infrastructure separated into: (a) technical, including basic devices used in transport, communication, gas, heat, power, and road industry, act; (b) social, including devices and institutions connected with education, culture, science, health, physical culture and tourism, public administration. Imikan and Ekpo (2012) said by using double correlation and stage correlation analysis the result shows there is a significant relationship between a set of infrastructure component and tourism development. Especially transportation had significant contribution to the all various of tourism development.

Meanwhile, Lim et al. (2018) figured out with implementing generalize dynamic method of moment tourism gave high trend to the tourism demand. By involving modeling of total tourist arrivals from Europe, America, Asia, and Africa to Mauritius Island, they found out tourism vulnerable of infrastructure materials (Seetanah et al. 2011). Doerra et al. (2020) identify tourism based on military airport conversion became regional commercial airport of one of state in Germany in 2007. They found out there is tourism increasing during 2008 until 2016. This evidence means airport conversion could drive regional economic development. Four basic materials and also called tourism infrastructure that could support tourism sector including accommodation, food and beverage, accompanying, and communication facilities (Panasiuk 2007).

2.3. Tourism Safety and Pollution

Beside comfortable, another factor that made considerable of foreign tourist came to tourism destination is security and environment factor. Safeness or less criminality is something important to the tourism. Some empirical studies were done such as: described variables such as security, citizen participation, media and tourism, and information technology and tourism are the factors that support the development of Tourism Industry. Hall et al. (2008) revealed tourism and its organization have a little influence to the security and peace agenda. Some literature review from China and west especially China show proved that security and safety have important role to tourism (Wang et al. 2019). Peace region such as Demilitarization Zone (DMZ) affect

tourism development (Shin 2006). Besides that by using Panel Generalized Method of Moment (GMM) from 29 developed countries and 45 developing countries got some conclusion safety index and security of social, politics, and economy have positive and significant relationship with tourism in developing countries, but has negative and significant relationship in developed countries (Ghaderi et al. 2016). This result shows that security and safety in developing countries more important for foreign tourist than in developed countries.

Based on Zerva (2013) criminality has negative relationship with tourism. Highest criminalities restrict tourist arrivals. Discovering from Johnny and Jordan (2011) shows criminality and tourism having opposite relation. This results opposing with Michalko (2008) he prove increasing on criminality would upgrade tourist arrival in Hungary. Biaga and Detotto (2012) found out increasing on social cost such as criminality in line with raise international tourist arrivals.

According to Medlik (1980), another factor that affects tourism demand consist of income, social and culture, and social and politics. Raise on income will encourage people to spend more their money. The unique and typical cultures become one factor that attracts people to come and see. Stability on social politics condition of a country can influence the tourism demand. The safety and comfort level is the major factor for international tourist.

Beside safety influencing tourism sector, environment condition also have a role to the tourism. In this case the presence or absence of pollution also determines of tourism development. Confirmed from Deng et al. (2017) that air pollution has negative effect to the inbound tourist to China. Increasing tourism activity in Mallorca caused by an enhancement daily concentration of troposphere ozone (S'aenz-de-Mieraa and Rossel 2013). Gao and Zhang (2019) figured out by using panel cointegration test there is a long-term equilibrium relationship between environmental pollution, energy consumption, economic development, and tourism growth. In other hand this research found out Granger causality test demonstrate there was bidirectional causality between four air pollution (CO_2 , NO_x , SO_2 , $\text{PM}_{2.5}$) and tourism growth. By using Panel Vector Autoregressive (PVAR) shows that pollution is a strong deterrent for international tourist (Xu Xu and Reed 2018).

2.4. Economic Factors of Tourism

Based on Walsh (1996) price of tourism including three basic components such as transportation costs, exchange rate costs, and living cost. Transportation cost could be measured by kilometeric distance between countries (Khadaroo and Seetanah 2008; Archibald et al. 2008; Görmüs and Göçer 2010). Change of price on international travel is more complex. The consumer price index (CPI) is widely used as an indicator of living cost of tourists during stay in their holiday destination (Martin and Witt 1987; Morley 1994). Most empirical studies using ratio of destination and tourist generating CPI's that represented by exchange rate (Dritsakis 2004; Muñoz and Martin 2007). This way has purpose to measure price levels between different countries. Furthermore, Song et al. (2003a, 2003b) using a substitute price variable, while Görmüs and Göçer (2010) employ the ratio of CPIs in the destination and alternative tourist competing countries in order to capture substitution price effects. By using Panel Data Econometrics Analysis got conclusion that the relative price, substitution country, SARS epidemic, global economic crisis influence the demand for tourism in Malaysia. Medlik (1980) proved the main factor that affects tourism demand is price. High price in tourism destination will give impact decreasing on tourism demand

3. Research Method

In this study we are using secondary data taken from several countries from ASEAN such as Indonesia, Malaysia, Singapore, Thailand, and Philippine and coupled with a four Asia Pacific countries including Japan, Korea, China, and India. Then, we named these observation countries as ASEAN plus 4. Meanwhile, period observation in this study taken from 2009 until 2020, includes:

- International Tourism Arrivals from UNWTO Highlight
- Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) from world bank and <http://www.bruegel.org/>
- Infrastructure Index from World Bank
- Criminal, Safety, and Pollution index from <https://www.numbeo.com>
- Living Cost Index from <https://www.numbeo.com>

Based on the data above dependent variable is International Tourism Arrivals (ITA). Meanwhile, independent variables including Nominal Effective Exchange Rate (NEER);

Real Effective Exchange Rate (REER); Infrastructure Index (INFI); Criminal Index (CRII); Safety Index (SAFI); Pollution index (POLI); and Living Cost Index (LCI).

According to UNWTO definition of International Tourism Arrivals (ITA) refers to overnight visitors and the number of arrivals. Overnight visitor is visitors who stay at least one night in a collective or private accommodation in the country visited. While the number of arrivals is the same person who makes several trips to a given country during a given period will be counted as a new arrival each time.

NEER is the geometric average of a foreign exchange rate weighted in foreign currency, where the weight is determined by the amount of bilateral trade between domestic and other countries during the base year period. The defined of NEER as the nominal multilateral exchange rate. NEER shows the price of the domestic currency relative to two or more foreign currencies.

Based on Erlandsson and Markowski (2006) generally REER is defined as the weighted average of the bilateral real exchange rate. In this study we are using these definition. Another definition from Santoya and Soutar (2011) REER is the ratio of foreign prices to domestic prices multiplied by NEER.

World Bank made definition of infrastructure index is an index that consists of basic divide, buildings and service institutions. Criminal Index (CRII) defined as an annual study that measures the extent and incidence of a crime. This study was conducted by the FBI with the aim of comparing criminal law statistics in order to make legal uniformity in all areas. While the Safety Index (SAFI), is the opposite of the crime index is an annual study that measures the level of security of a region.

Pollution index (POLI) explained as an overall estimate of the pollution that occurs in the city. Highest pollution was caused by two main factors such as air pollution and water pollution (<https://www.numbeo.com>). Living Cost Index (LCI) is an index used to compare average person costs used to obtain food, shelter, transportation, energy, clothing, education, health, childcare and entertainment in a particular area (<https://www.numbeo.com>). Based on some variables above this research will estimate by using panel model structure such as following:

$$lITA_{it} = \alpha_0 + \alpha_1 dlNEER_{it} + \alpha_2 dlREER_{it} + \alpha_3 dlPOLI_{it} + \alpha_4 dlCRII_{it} + \alpha_5 dlSAFI_{it} + \alpha_6 dlINFI_{it} + \alpha_7 dlLCI_{it} + e_{it} \quad \dots\dots(1)$$

Description:

lITA = log International Tourist Arrivals

dINEER = derivation of log Nominal Effective Exchange Rate

dIREER = derivation of log Real Effective Exchange Rate

dIPOLI = derivation of log Pollution Index

dICRII = derivation of log Criminality Index

dISAFI = derivation of log Safety Index

dIINFI = derivation of log Infrastructure Index

dILCI = derivation of log Living Cost Index

Before we are using panel model to estimate, firstly we must estimate with using cointegration test. The purpose of this test is showing and detecting long-run relationship between variables in this research. Cointegration test would used for make sure that the variables were integrated each other. With null hypothesis is no cointegration and alternative hypothesis there is cointegration.

The next and the last estimation is using Panel Model. This model will be estimated by using panel OLS analysis and then proceed with Chow test and Hausman test. Chow test would used to compare the best model whether the model Pool Least Square (PLS) Model and Fixed Effect Model (FE). Meanwhile, Hausman test would used for choose the best panel model between Fixed Effect Model or Random Effect Model.

4. Epirical Result

We are using some estimation test in this study to prove the involvement of social and several economic factors that impacts on tourism. The test including: descriptive statistic, normality, cointegration, and panel model.

4.1. Descriptive Statistic

First test using descriptive statistic to find out how much is the means of each variable. The table 1 below showing descriptive statistic result. The average change in the number of international tourists of ASEAN plus 4 during 2009 until 2020 is 9.577% per year. These results indicate the percentage of visit of international tourists to ASEAN plus 4 is quite high and shows the interest of tourists to visit ASEAN countries plus 4 large. The average exchange rate change represented by NEER and REER amount 4.682% and 4.603%. Positive results from changes in the exchange rate shows the exchange rate of the ASEAN plus 4 experienced the real depreciation slightly greater than the nominal depreciation per year. Average change in criminality in ASEAN plus 4 amount 3.531% per

year. In the meantime, the average security change rate of 4.092% per year. If comparing between the two can be concluded that the percentage of criminality is smaller than security. This is evidence that the high security factor in tourist destinations can be a trigger for tourists to visit the place. Security and criminality factors are considered for International tourists to travel. High Security and decreased criminality are important for tourist destinations to get more opportunities in the tourist sector.

For the average percentage change of infrastructure in the ASEAN plus 4 in the amount 1.210% per year. This evidence suggests the dominance of emerging economies countries and developed countries such as Malaysia, Thailand, India, Singapore, Japan, Korea, and China is quite high. Where emerging economies countries and developed countries have a tendency to improve the provision of infrastructure. Meanwhile, the average change in pollution is 4.199% per year. In other words pollution for ASEAN plus 4 is quite controlled though, China, India and Indonesia, and Philippine have a tendency to high pollution levels. Change rate of Average living cost 3.984% per year. These findings show the percentage of living cost in ASEAN plus 4 is quite low.

TABLE 1: Descriptive Statistics.

	IIINF	IISAFI	IICRII	IIPOL	IITA	ILCI	INEER	IREER
Mean	1.209	4.092	3.531	4.199	9.577	3.983	4.602	4.682
Maximum	1.453	4.545	4.260	4.985	11.049	4.906	4.992	4.980
Minimum	0.815	3.371	1.749	3.474	8.012	3.185	4.255	4.278
Std. Dev.	0.169	0.265	0.507	0.332	0.754	0.400	0.186	0.136
Observations	99	81	81	81	90	108	99	99

This evidence showed the ASEAN plus 4 is still dominated by developing countries such as Indonesia, Malaysia, Thailand, India, Philippine, which has the cost of living is very affordable. This gives the conclusion that in addition to the attractive tourist destinations, international tourists also consider several factors such as exchange rates, level of crime and security, infrastructure provided, level of pollution, and living cost.

4.1.1. Normality Test

This test was conducted to determine the normality of the data in this study. Normality test data in this study was conducted in the form of log. The results of the normality test are presented in Table 2. From the table it is known that almost the whole variable observations normally distributed. This is evidenced by chi square probability values

of data changes international tourist arrivals, real effective exchange rate, safety index, pollution index, i.e. 0.144, 0.231, 0.265, 0.126 greater than the 5% significance level. In other words, the null hypothesis stating the data is normally distributed is not rejected and the alternative hypothesis the data is not normally distributed is rejected.

TABLE 2: Normality Test.

	IINF	ISAFI	ICRII	IPOL	ITA	LCI	NEER	REER
Obs	99	81	81	81	90	108	99	99
Skewness	0.378	0.119	0.001	0.047	0.330	0.480	0.413	0.099
Kurtosis	0.000	0.712	0.322	0.792	0.093	0.004	0.013	0.710
Adj Chi ²	15.75	2.65	9.87	4.15	3.88	7.90	6.39	2.93
Prob	0.000*	0.265	0.007*	0.125	0.143	0.019	0.040*	0.231

*significant at a significance level of 5%

However, in contrast to the fourth data before the data changes in the nominal effective exchange rate, criminality index, infrastructure index, and the living cost index is not normally distributed. Evident from the probability value of Chi Square, i.e. 0.0409; 0.0072; 0.0004; 0.0192 less than a significance level of 5%. In other words, do not reject H_a that states the data is not normally distributed and rejected H_0 stating the data is normally distributed.

4.1.2. Cointegration Test

The next test is the cointegration test. This test to see any long-term relationship or not between variables of the object. Table 3 shows the results of the cointegration. The result shown by table co-integration as a whole is that the variables are highly cointegrated. Cointegration that occurs in the form of the first derivative logarithm. This is evidenced by the probability value of the t statistic of the ADF and DF respectively 0.0000, 0.0369, 0.0380, 0.0000 less than significant level at alpha 5%.

These findings suggest an alternative hypothesis not rejected null hypothesis is rejected. In other words there is a long-term relationship between variables in ASEAN 5 plus 4 or cointegrated one and the other. These results prove the manifest variable in this study, namely on the condition of the first derivative on the rate of change of the variable ITA, NEER, REER, ICRII, SAFI, LCI, INFI, and POLY has a long-term relationship.

TABLE 3: Cointegration Test.

	t-Statistic	p-value
Modified Dickey-Fuller	1.132	0.129
Dickey-Fuller	-5.040	0.000*
Augmented Dickey-Fuller	1.7884	0.037*
Unadjusted modified Dickey-Fuller	-1.775	0.038*
Unadjusted Dickey-Fuller	-7.8840	0.000*

*significant at a significance level of 5%

4.1.3. The Best Panel Model and Result Discussion

Because result estimation from cointegration and normality test showing first derivation from log variables, so in this study using panel equation in form first derivation and logarithm. Because we are using panel data to known about the influence of some factor such as pollution, exchange rate, infrastructure, criminality, safety, and living cost to the tourism sector, then firstly we estimated between Pooled Least Square models (PLS) compared with Fixed Effect Model (FE). Estimate and compare both of these models the goal is to get the best model whether PLS or FE model as the best model. Then both models were tested using chow test Using Chow test to determine null Hypothesis is Pooled Least Square (PLS) Model and alternative hypothesis Fixed Effect Model. Next step is comparing between Fixed Effect model (FE) and Random Effect model (RE) with using null hypothesis is Random Effect model and alternative hypothesis fixed effect model.

TABLE 4: Panel Model Summary.

	Indicator	Null Hypothe- sis (H0)	Alternative Hypothesis (Ha)	Result	Best Model
Pooled Least Square (PLS)	F-Statistic:	PLS	FE	H0, rejected Ha, not rejected	FE
Versus	0.000				
Fixed Effect (FE)	< 5%				
Random Effect (RE)	Chi Square- Statistic:	RE	FE	H0, rejected Ha, not rejected	RE
Versus	1.000				
Fixed Effect (FE)	> 5%				

Then to select the best model between FE and RE model using Hausman test. Based on Table 4 presented a summary of the panel model estimation results. Based on Chow test got result the best model is Fixed Effect model (FE). This is reinforced from a probability value of F statistic of 0.000 greater than 5% significant level. Thus H_0 is rejected and H_a is not rejected or the best model is a fixed effect model. Meanwhile, based on Hausman test got result the best model is Random Effect model. This is evidenced by probability value of Chi Square Statistic is 1.000 more than 5% significant level, then reject alternative hypothesis (H_a) and not reject null hypothesis. This explanation got conclusion is the best model Random Effect model.

TABLE 5: Result Estimation of Random Effect Model.

IITA	Coef.	Std. Err.	Z	P>z	[95% Conf.Interval]	
dIREER	-8.282	2.367	-3.50	0.000*	-12.921	-3.643
dINEER	8.266	2.295	3.60	0.000*	3.767	12.764
dICRII	-.643	.198	-3.24	0.001*	-1.032	-0.255
dISAFI	-1.023	.353	-2.90	0.004*	-1.032	-0.331
dIINFI	.236	.493	0.48	0.633	-.731	1.202
dIPOLI	.239	.120	1.99	0.046*	.004	.474
dILCI	.398	.220	1.81	0.071**	-.033	0.829
_cons	9.851	.231	42.60	0.000	9.398	10.304

*significant at a significance level of 5%

**significant at a significance level of 10%

Meanwhile, Table 5 shows results estimation of the best model is a Random Effects model. Based on result estimation overall independent variables have significant impacts to the dependent variable. This result is shown by the value of the probability value of Z-statistic is less than the significant level of 5% and 10%. For the probability value of Z statistic from the change rate of real effective exchange rate, nominal effective exchange rate, criminality index, safety index, and pollution index each 0.000; 0.000; 0.001; 0.004; and 0.046 less than the significant level of 5%. Whereas, a probability value of the Z statistics of the rate of change of living cost index is 0.071 less than the significant level of 10%. From The explanation provides some conclusions, including the 1% appreciation at the rate of change in the real exchange rate of ASEAN 5 plus 4 will decrease the number of international tourists by 8.282%. Whereas, the depreciation of 1% in the rate of change nominal effective exchange rate, increase international tourist arrivals 8.266%. This provides evidence that the role of exchange rates determines the ups and downs of international tourist arrivals. If occurred depreciation of the exchange

rate, then increase of international tourists arrival. However, if the exchange rate is appreciated, then international tourist arrivals decrease.

Another determining factor of international tourist arrivals is the level of criminality and the level of security. A 1% increase of the rate of change criminality index reduce international tourist arrivals 0.643% and 1% increase of the rate of change of the safety index drop off international tourist arrivals by 1.023%. This means that international tourists are still considering aspects of criminality and security to visit the intended tourist destination. The higher the level of security and criminality of the international tourist destination reduce the number of international tourist arrivals. Same with level of criminality and safety, factor pollution is one of the considerations for international tourists to visit tourist destinations. A 1% enhancement in the rate of change of pollution index produces an increase in international tourist arrivals 0.239%. Although the environment is less clean encouraging increase in the number of international tourists but the countries of observation in this study should consider how to lower the level of pollution. The last if 1% raise in living cost index produces an increase in international tourist arrivals 0.398%.

The role of living cost becomes a factor that needs to be considered by international tourist. These results show higher living costs in international tourist destinations also lead to the addition of the number of international tourist arrivals. The high living cost factor that triggers the raise in international tourist arrivals provides evidence that international tourist destinations generally are countries with high economic growth rates such as developed countries and emerging economies countries. Developed and emerging economies countries are seen as countries which are able to provide tourism facilities and according to the standard international tourist. Countries in this group are able to suppress crime, to improve the tourism sector, although some determining factors such as the level of pollution should be a consideration for them.

5. Conclusion

Some of the conclusions obtained from the results of the previous estimate, the all four data is normally distributed, but the three data is not normally distributed. Based on cointegration test all of variable in this research have been already cointegrated at the time of the first derivative logarithm. We can conclude a whole variable in the long run have relationship. Result estimation from panel model obtain the result that the best model is Random Effect model. All of the independent variables in this study significant

to the dependent variable. This is reinforced by the probability value Z-statistic is less than the significance level of 5% and 10%. Overall can made a summary that all of the factors that become the observations in this study have influence and impact to the international tourism in ASEAN plus four.

Some detail from result estimation we got explanation and description that depreciation on exchange rate made international tourism visitors raise, but inversely appreciation on exchange rate reduce international tourism visitors. Meanwhile, the level of criminality and security has a negative impact and significantly influence to reducing international tourist visitors. These findings imply depreciation on exchange rate gave positive influencing to the tourism sector. It means the depreciation in the exchange rate give an encourage for international tourist to visit because the value of the currency of the destination country international tourist is cheaper. However, reducing on the number of international tourist due to the high value of exchange in the country of destination tourism. Aspects of criminality and security are among the main things that need to be considered by international tourists. Increased criminality and declining security levels will make international tourists feel worried and uncomfortable while in tourist destinations. Similarly, if the level of security rises and the crime rate drops, it will affect the reduction in the number of international tourists. This is most likely because a high level of security can still bring up aspects of criminality even if reduced.

The concerns and inconveniences of international tourists should be considered by tourism destination countries. Positive and significant impact from living cost and pollution also give the raise of international tourist. This means that international tourists still do not consider the factors of living cost and pollution levels, although both are classified as high. Living cost and pollution factors still do not affect the behavior of international tourists not to visit the destination country. Meanwhile, the infrastructure indicated to be one that has an impact on international tourists does not have a significant influence on international tourist arrivals. This result clarified with a probability value Z-statistic more than the level of significance of 5% and 10%. These results also provide conclusions that the international tourist arrivals still give priority to things other than infrastructure in the country the purpose of the travel.

Conclusion from the results of this study found that there are several factor that becomes a determinant of the ups and downs in the number of international tourist arrivals in ASEAN 5 plus 4, included exchange rates, safety, criminality, living cost, and pollution. Some factors give the positive and significant impact to the increasing on international tourist arrivals such as depreciation in exchange rate, raise in pollution

and living cost. However, should the countries of destination tourism remain to keep the environment clean, healthy, and conducive. Meanwhile, some factors give the negative and significant impact to the reducing on international tourist visitors such as appreciation in exchange rate, decreasing on criminality and safety

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