An Examination of Exchange Rates on Foreign Tourist Flows into ASEAN-3

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Abstract

This research aims to analyze the effect of exchange rates on foreign tourist flows in ASEAN-3. A fixed-effect model is used to estimate data from three ASEAN countries, namely: Indonesia, Malaysia, and Thailand from 1995 to 2016. The result shows that the exchange rate has a significant positive effect on foreign tourist flow. In other words, the depreciation of domestic currency increasing foreign tourist flow. Other control variables such as income per capita, HIV prevalence, trade, and consumer price index significantly affect a different sign.

Key words : Exchange rate, Tourism, Fixed Effect Model, ASEAN-3.

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INTRODUCTION

The increase or decrease in tourist arrivals is closely related to the country's economic, political, and social stability. Likewise, changes in exchange rates have a bearing on the arrival of foreign tourists. Currency depreciation in the destination country causes foreign tourist visits to increase, and vice versa (Agiomirgianakis, Serenis, & Tsounis, 2014).

The exchange rate can be a direct or indirect determinant of foreign tourist visits. An indirect determinant is the volatility of the exchange rate (variation), reflecting the level of uncertainty of the exchange rate. If the exchange rate volatility increases, then the level of uncertainty of the exchange rate will increase, causing tourist visits to decrease, and vice versa (Agiomirgianakis, et al., 2014).

Being in the same region and being near makes Indonesia, Thailand, and Malaysia have similarities, especially landscape, culture, and natural resources. The three countries' tourism potential is also quite similar, including cultural diversity, performing arts, handicrafts, coastal panoramas, and mountain beauty.
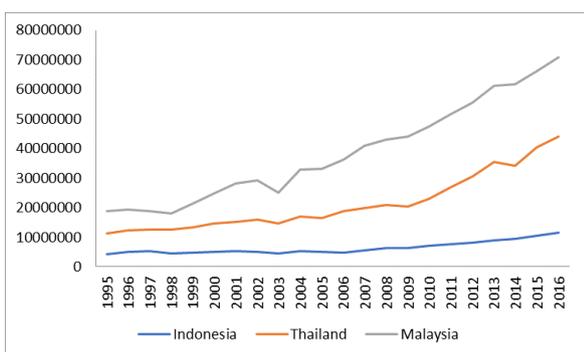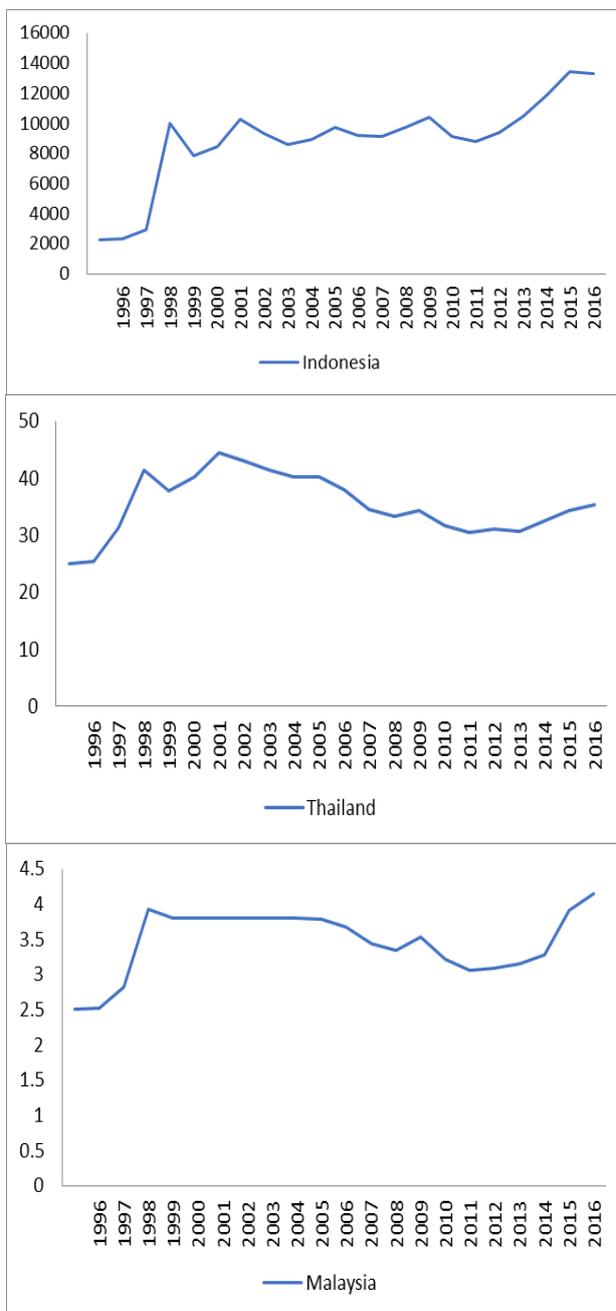

Source: Worldbank, processed data

Figure 1. Number of Tourist Visits

Based on data published by Worldbank (Figure 1), the average growth in tourist visits to Indonesia, Thailand, and Malaysia is 5.1%, 8%, and 7.5%, respectively. Malaysia is in first place in the number of tourist visits,

followed by Thailand in second place, and Indonesia in third.

Source: Worldbank, processed data.

Figure 2. The Movement of ASEAN 3 Exchange Rates Against US Dollar

The movement of the currency exchange rates of Indonesia, Thailand, and Malaysia against the US dollar, as shown in Figure 2, shows a trend that tends to increase (depreciation). Indonesia, Thailand, and Malaysia experienced the worst depreciation in 1997 and 1998 due to the Asian financial crisis. The rupiah currency depreciated by 24% in 1997

and 244% in 1998. The Indonesian rupiah exchange rate against the US dollar in 1996 was IDR 2,342/ USD, which depreciated quite a lot to IDR 2,909/ USD in 1997 and even to IDR 10,014/ USD in 1998. The Thai baht depreciated by 24% in 1997 and 32% in 1998.

Research related to the effect of exchange rates on the number of foreign tourist visits has been carried out, including by Agiomirgianakis, et al (2014), Agiomirgianakis, Serenis, & Tsounis (2015), Garin-Munoz & Amaral (2000), Quadri & Zheng (2010), Ruane (2014), Vita (2014), and Yap (2012). In general, these studies can be grouped into two, namely first, proxies the exchange rate using the exchange rate volatility variable. (Agiomirgianakis et al., 2014, 2015; Vita, 2014; and Yap, 2012), The second is proxies the exchange rate using the exchange rate itself (Garin-Munoz & Amaral, 2000; Quadri & Zheng, 2010; Ruane, 2014; and Tan, McCahon, & Miller, 2002).

The results of empirical studies that analyze the effect of exchange rates, which are proxied by its volatility value, show a negative effect (Agiomirgianakis et al., 2014, 2015; and Vita, 2014). Volatility reflects the risk. If the value of risk is high, tourist visits tend to decrease. However, on the other hand, Yep (2012) found different results: the volatility did not affect tourist arrivals' growth in Australia's case. It means that changes in exchange rates are not related to changes in the growth of tourist visits.

Furthermore, the results of empirical studies that proxied the exchange rate with the exchange rate itself showed a positive effect (Garin-Munoz & Amaral, 2000; Ruane, 2014). The increase in the exchange rate reflects a depreciation condition, namely a decline in the domestic currency value against foreign currencies. It implies that the price of domestic goods becomes cheaper for international consumers. Therefore, it attracts foreign tourists to visit. Nevertheless, on the other side, Quadri & Zheng (2010) found a contrast, namely the exchange rate did not affect tourist visits when Italy was made the destination country.

In some cases, the exchange rate between home countries against the Euro is not statistically significant in explaining Italy's tourist visits. A more ambiguous thing was discovered by Tan, et al (2002) for the case of tourist visits in Indonesia and Malaysia. The research found that there are exchange rates that have positive, negative, and even no effect.

Agiomirgianakis, et al (2015) analyzed the effect of exchange rate volatility on tourist arrivals in Iceland during the first quarter of 1990 to the fourth quarter of 2014. The method used in the study was ARDL (autoregressive distributed lag). The variables used are the number of tourist visits, the real effective exchange rate index between the domestic country and the rest of the world, GDP per capita of the country of origin of tourists, two measures of volatility, seasonal dummy, and time trend. The volatility is first measured using a moving average of the exchange rate, and the second is measured using the highest and lowest value of the exchange rate) The results show that exchange rate volatility harms tourist arrivals in Iceland.

Agiomirgianakis, et al (2014) analyze the effect of exchange rate volatility on tourist visits to Turkey. The method used in this research is ARDL (autoregressive distributed lag) with four independent variables and one dependent variable. The dependent variable in this study is the number of incoming tourists with the independent variable CPI (consumer price index), GDP (Gross Domestic Product), V (two measures of volatility, namely volatility calculated by the movement of the average standard deviation of the real effective exchange rate, and volatility calculated by taking values above and below 6% of the average value of the

average movement of the real effective exchange rate). The results of this study indicate that there is a negative relationship between exchange rate volatility and tourist visits to Turkey. Other than that,

Vita (2014) analyze the long-term impact of the exchange rate regime on international tourist flows. The dependent variable is the number of tourist visits. In contrast, the independent variables are trade (total exports plus total imports), GDP per capita, real effective relative price, geographic distance, language, free trade agreements, colonial relationships, national borders, real exchange rate volatility, and a dummy variable for the exchange rate regime. They used panel data from 27 OECD and non-OECD member countries with the study period from 1980-2011 estimated using SYS-GMM (to control possible endogeneity bias). The results show that the exchange rate regime has a significant effect on the flow of international tourists. Other than that.

Yep (2012) analyzes the impact of exchange rate volatility on tourists' growth rate fluctuations entering Australia. Its main objective is to measure the level of uncertainty between foreign tourists' growth rate and the exchange rate. The data used is tourist visit data from nine countries of origin, namely China, India, Japan, Malaysia, New Zealand, Singapore, South Korea, England, and the United States, who visited Australia from January 1991 to January 2011. The variable used was the growth in the number—tourists and exchange rates. The data analysis method used is multivariate conditional volatility regressions to model time-varying conditional variances of international tourist growth and exchange rates. This study indicates that tourists from Malaysia and New Zealand are relatively more sensitive to exchange rate shocks than other countries. However, its impact in the

long term may diminish so that a sudden appreciation of the Australian dollar will not have a negative long-term impact on incoming tourist arrivals to Australia.

Quadri & Zheng (2010) analyze the relationship between exchange rates and international tourist arrivals to Italy. The dependent variable used is the number of tourist visits, while the independent variable used is the exchange rate. The data used is daily data on the exchange rate of 19 national currencies against the Euro from 1 February 2004 to 31 July 2009, then analyzed using regression techniques. The results show that exchange rates do not universally affect international tourist arrivals to Italy.

Garin-Munoz & Amaral (2000) analyze macroeconomic variables on international demand for tourist services in Spain. This study uses panel data from 17 countries during the 1985-1995 period. The dependent variable is the length of stay of tourists in Spanish hotels. In contrast, the independent variables are GNP (gross national product) per capita, exchange rates, real prices, and Gulf War in 1991. The analysis method used is panel regression. The results show that the income elasticity is 1.41, the price elasticity is -0.3, the exchange rate elasticity is 0.5, the Gulf War effect is -0.15.

Ruane (2014) analyzed the effect of strengthening the dollar on the yen on Japanese tourist visits to Guam. Guam is a tourist destination visited by 1.3 million tourists, 70% of whom came from Japan during 2012. Guam is very dependent on income from tourist arrivals from Japan. However, because the yen has continued to depreciate against the dollar during the last few years, it is essential to do this research. The method used is OLS (ordinary least squares), with the dependent variable being the number of Japanese tourist visits to Guan, and the independent variables, namely the nominal exchange rate, Japanese economic growth, the Tohoku disaster, time trend, monthly season, and the number of tourists in

the previous period. The results show that the yen's depreciation caused a decrease in the number of tourists from Japan who came to Guam. However, the weakening of the exchange rate could have an impact on encouraging the Japanese economy to grow, causing Japanese people to increase again so that their purchasing power also increased and encouraged Japanese people to travel to Guam again.

Tan, McCahon, & Miller (2002) analyzing the factors that influence tourist visits from six countries with the destinations of Indonesia and Malaysia. The dependent variable is the number of tourist arrivals. The independent variables are population, GDP, relative price index, exchange rate, time trend, exchange rate adjusted to the relative price index, and dummy events. In the form of a time series during the period 1980 to 1997, the data used is then analyzed using the OLS method. The results show that the variables of income, price, and time trend explain tourist visits in Indonesia and Malaysia. The exchange rate adjusted for relative prices is positive and significant for Indonesia (for origin countries Singapore, Australia, America, and Germany) with two cases marked negative (Singapore and Germany). For Japanese origin, the coefficient is also negative but not significant. Meanwhile, for destinations to Malaysia, the exchange rate coefficient adjusted for relative prices is significantly negative (for countries from Singapore, Australia, UK, and Germany).

There is still a research gap as described above, which is why the author reexamines the effect of exchange rates on foreign tourist visits with the case of three ASEAN countries, namely Indonesia, Thailand, and Malaysia, during the period 1995 to 2016.

METHOD

This study used a descriptive quantitative approach because it was analyzed according to statistical methods and then interpreted. This study aimed to determine exchange rates on tourist visits in ASEAN 3 (Indonesia, Thailand, and Malaysia). The analytical tool used is panel regression with foreign tourist expenditure as the dependent variable and the exchange rate variable as the independent variable, which is also the exciting variable. The control variables used are the price index, exports, imports, population, real interest rates, total exports and imports, HIV infection, per capita income, and the 1997-1998 crisis dummy.

The data used in this study is secondary data in the form of panels or longitudinal data with the number of three countries (Indonesia, Thailand, and Malaysia) with a long period of 22 years (from 1995 to 2016, yearly). Data on spending on foreign tourists, exchange rates, imports, exports, inflation, per capita income, population, and HIV transmission are obtained from the Worldbank website.

Panel data provide information on each individual's behavior over time because it has cross-sectional and time series characteristics. The primary assumption of panel data is that individuals' data are correlated over time but independent of other individuals. The specifications of the general panel regression model in this study are as follows:

$$
\begin{aligned}
ITEX_{it} =\ & \beta_0 + \beta_1 LOG\_ER_{it} + \\
& \beta_2 CPI_{it} + \beta_3 LOG\_EXP_{it} + \\
& \beta_4 LOG\_IMP_{it} + \beta_5 LOG\_POP_{it} + \\
& \beta_6 RIR_{it} + \beta_7 TRADE_{it} + \\
& \beta_8 PHIV_{it} + \beta_9 GDPCAP_{it} + \\
& \beta_{10} D\_CRISIS_{it} + v_{it}
\end{aligned}
$$

(1)

Where *ITEX* = foreign tourist expenditure (% of total imports); *LOG_ER* = official exchange rate (domestic currency against US dollar); *CPI* = consumer price index, *LOG_EXP* = natural log of export value (US dollars, constant 2010); *LOG_IMP* = natural log of import value (US dollars, constant 2010); *LOG_POP* = natural log of population; *RIR* = real interest rate (%); *TRADE* = sum of exports and imports (% of GDP); *PHIV* = HIV prevalence total (% of population aged 15-49 years); *GDPCAP* = income per capita (US dollars); *D_CRISIS* = *dummy* 1997-1998 crisis (1997-1998 = 1); β_0 = constant; β_1-β_5 = regression coefficient; *v* = error; *i* = individual is 3 countries (Indonesia, Thailand, and Malaysia); and *t*= period 1996 to 2016.

The panel regression model used in this study is more specific in the form of the Fixed Effect Model with the following equation:

$$ITEX_{it} = \beta_0 + \beta_1 LOG\_ER_{it} + \beta_2 CPI_{it} + \beta_3 LOG\_EXP_{it} + \beta_4 LOG\_IMP_{it} + \beta_5 LOG\_POP_{it} + \beta_6 RIR_{it} + \beta_7 TRADE_{it} + \beta_8 PHIV_{it} + \beta_9 GDPCAP_{it} + \beta_{10} D\_CRISIS_{it} + a_i + u_{it}$$ (2)

a_i in the equation above is the unobserved effect or so-called unobserved heterogeneity that varies between individuals (countries) but does not vary over time. In this study, it is more specific to the unobserved characteristics of each country. Meanwhile, there are idiosyncratic errors or shocks whose values vary between individuals (countries) and between times. Using the Fixed Effect Model is correlated with the independent variable (explanatory variable) over time. Therefore a within estimator is used to eliminate so that the regression equation can produce consistent estimates. $a_i.a_{it}.u_i.a_i$ (Wooldridge, 2010). The form of the within estimator equation is as follows:

$$ITEX_{it} - \overline{ITEX_{it}} = \beta_0 + \beta_1\left(LOG_{ER_{it}} - \overline{LOG_{ER_{it}}}\right) + \beta_2(CPI_{it} - \overline{CPI_{it}}) + \beta_3(LOG\_EXP_{it} - \overline{LOG\_EXP_{it}}) + \beta_2(LOG\_IMP_{it} - \overline{LOG\_IMP_{it}}) + \beta_5(LOG\_POP_{it} - \overline{LOG\_POP_{it}}) + \beta_4(RIR_{it} - \overline{RIR_{it}}) + \beta_4(TRADE_{it} - \overline{TRADE_{it}}) + \beta_6(PHIV_{it} - \overline{PHIV_{it}}) + \beta_6(GDPCAP_{it} - \overline{GDPCAP_{it}}) + \beta_6(D\_CRISIS_{it} - \overline{D\_CRISIS_{it}}) + (u_{it} - u_{it})$$ (3)

$\overline{ITEX_{it}}$ is the foreign tourist expenditure variable averaged over time (t) for each country (i). The above equation is also known as time-demeaned because it uses the time average to subtract for each variable to eliminate the equation. a_i

RESULTS AND DISCUSSION

Panel regression was carried out to see the effect of exchange rates on foreign tourist visits to three ASEAN countries. The addition of several control variables aims to explain the situation in more detail. The fixed effect method is also carried out because the data held comprises 22 years of observation periods combined with three ASEAN countries' observations.

Table 1. Heteroscedasticity Test

Test	Statistics	df	Prob.
Breusch-Pagan LM	4,932006	3	0.1768

Source: Eviews 10

The results of the Breusch-Pagan test in Table 2 show a relatively large probability value. It indicates that the hypothesis that the heteroscedasticity disorder exists can be rejected. So it can be concluded that the model built does not have heteroscedasticity problems.

Table 2. Likelihood Test

Effects Test	Statistics	df	Prob.
Cross-section F	15,870675	(2.50)	0.0000
Chi-square cross-section	30.966831	2	0.0000

Source: Eviews 10

The likelihood test results in Table 3 show that the fixed effect method is the best model choice. The probability value is below 0.05, which means that the null hypothesis cannot be accepted. Some variables show coefficient values that match expectations. It is just that not all variables show a significant level of personal significance. Several variables whose coefficient values are not consistent between models processed using OLS panel regression and panel regression are processed using fixed effects. The variables with a consistent value are the exchange rate, the consumer price index, the real interest rate, and the 1997-1998 crisis.

Table 3. Estimation Results

| Variable | POLS | | Fixed Effect | |
	Coefficient	Prob,	Coefficient	Prob,
C			-74,144	0.3336
LOG_ER	1,310	0.0042 ***	3,021	0,000 ***
CPI	-0.03926	0.0051 ***	-0.03306	0.0007 ***
LOG_EXP	0.009986	0.8093	-0.02061	0.4714
LOG_IMP	-0.08102	0.0208 **	0.002729	0.916
LOG_POP	-0.28304	0.2877	4,328	0.3362
RIR	0.039523	0.1776	0.021578	0.2942
TRADE	0.004029	0.6626	-0.05154	0,000 ***
PHIV	2,640	0.0042 ***	-2,516	0.0334 **
GDPCAP	0.001369	0.0003 ***	-0.00036	0.4743
D_CRISIS	-0.39247	0.2238	-0.25132	0.2642
R-squared	0.606827		0.832478	
Adjusted R-squared	0.540062		0.792273	

Source: Eviews-10 data processing results

Information: * = significant 10%, ** = significant 5%, *** significant 1%

The amount of adjusted R2 value can explain that the model built in this study can explain 79.2% of all the effects of the variables, and variables outside the model can explain about 20.8%. With a large enough value, it indicates that the variables chosen can represent the number of tourists in an area.

In line with research conducted by Agiomirgianakis et al. (2014 and 2015) and Garin-Munoz and Amaral (2000), the consumer price index also has a significant effect on foreign tourist arrivals entering a country and has a negative effect. It shows that with an increase in prices in a country, people from foreign countries think twice about traveling due to changes in prices that are becoming more expensive than before—thus causing the number of foreign tourists who come to be less than before.

Trade carried out by a country with other countries has a significant effect in reducing foreign tourist visits. This negative effect explains that an increase in trade volume reduces the number of foreign tourists entering a country due to the government's focus on paying more attention to the trade sector than other domestic goods and services sectors.

Factor health is an essential factor in attracting foreign tourists. The PHIV variable in the model shows the number of HIV disease occurrences in a country has a negative and significant effect on foreign tourist visits to a country. It can be interpreted that the healthier a place or the cleaner a place from diseases, especially those that are contagious, raises expectations from better foreign tourists to come to that place.

Tan, McCahon, & Miller (2002) found the same result for the variable per capita income has a significant but negative effect. These results explain in this case that an increase in income can be interpreted as an increase in prices at that place or only an increase in income on the nominal side. However, not on the real side, causing foreign tourists to be more careful in determining their destination countries due to perceived prices being higher than their origin.

The variable that is the primary concern in this study shows a positive and significant effect on the visiting foreign tourists who come. It can be said that when there is a depreciation in the exchange rate, people from foreign countries will see a decrease in the cost of coming to that country. Even though they have not too much money, the depreciation makes them feel they have more money than before. Conversely, suppose there is an appreciation in the exchange rate. In that case, foreign tourists will see that their destination country prices are higher than their origin, and they need more money to travel to the destination country. Even foreign tourists' visits have a reasonably high elasticity to changes in the exchange rate with a value of 2.93. It can be the basis for the government to pay more attention to the tourism sector so that later it will be able to invite more tourists, especially in a state of depreciating exchange rates (Agiomirgianakis, et al., 2015). This finding is following research conducted

by Garin-Munoz & Amaral (2000), Tan, McCahon, & Miller (2002), Quadri & Zheng (2010), and Ruane (2014), which states that the exchange rate has a positive influence on foreign tourist visits.

CONCLUSION

The volatile movement of the exchange rate is a determining factor for the occurrence of an economy. One of the economic events that occur due to exchange rate movements is foreign tourists' visit to a country. The depreciation of the exchange rate can cause foreign tourists to feel richer so that they only need a little capital to travel and increase income for the destination country. Meanwhile, if there is an appreciation of the exchange rate, it will cause prices in that country to feel expensive, so that foreign tourists need more capital to travel, making them think twice about traveling.

From the discussion above, several things can be underlined, especially the variables that are the focus of this research. The use of panel data and the fixed effect method is more or less able to explain the model variables' effect even though there are still variables that do not have a significant effect. The government should anticipate a positive influence by the exchange rate on the number of foreign tourists arriving, especially in its policies to attract their interest. The efforts made by the government, especially Indonesia, in promoting tourism that it owns have been fruitful enough with the increase in the number of tourists in recent years. Moreover, it is hoped that this increase will increase the country's foreign exchange reserves due to the flow of money inflows.

It is necessary to develop research on the relationship between the number of tourists and the exchange rate. This research can assist the government in preparing for the community's needs, both domestic and abroad. So that not only do foreign tourists get

happiness due to the trips they take, but the domestic community is also able to be happier due to the incoming flow of funds, thereby increasing individual income. The 20.8% gap of influence influenced by other variables still needs to be further explored so that later the given policy can cover all the lines needed, not only on one side.

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