# Analysis_of_Tourism_in_Southeast_Asian_Countries.pdf

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RESEARCH ARTICLE

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# Analysis of Tourism in Southeast Asian Countries

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Tourism is one of the most important sectors in economy as one of the main sources of foreign exchange incomes. This sector drives domestic production sector, absorbs a large number of skilled or non-skilled workforces. Tourism sector is sensitive to the changes of global economy as it is closely related to the ability of expenditure and income level. By employing error correction model (ECM), this study analyzed the influence of the dynamics of the global economy—as measured by gross domestic product—towards three Southeast Asia tourism countries, i.e., Indonesia, Malaysia, and Thailand—as represented by the number of tourist arrivals. Furthermore, by incorporating the Philippines, Vietnam, Cambodia, and Singapore, and by using paneldata regression model, this study examined how changes in the world economy affect tourism in Southeast Asia. This study found that in the long run, the growth of the world GDP has positive effect on the growth of the number of foreign tourists' arrivals in the three Southeast Asian countries. Even though the ECM can explain the behavior of short run to long run, the short run changes of the world economy does not affect statistically on tourism in these three countries. By using a fixed effect model of panel data regression, the result showed that the changes in the world economy affect the number of foreign tourist's arrivals of the Southeast Asian countries.

**Keywords:** Tourism, Global Economic Changes, Error Correction Model, Panel Data Regression.

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## 1. INTRODUCTION

Many countries in the world are interested in tourism because of the multiplier effect generated by this industry. In addition to increase the national income—in the form of foreign exchange—from all activities of tourism, the tourism industry is the driving force for other industries directly or indirectly that boost the domestic economic growth. As a labour intensive industry, tourism provides and expands the employment opportunities both skilled and unskilled, and nowadays tourism became the mainstay industry to reduce the level of poverty.

By its activities that incur tourists from abroad, this industry is vulnerable to global economic shocks. The slowing of the global economic growth lead to reduce the income per capita of the world household in general then reduces the expenditure part for traveling. The total impact is the declining of the tourism industry, as well as other industries, either directly or indirectly, and further it scrunches the economy.

The impact of the world economic turbulence on the tourism can be explained by the economic crisis occurred in 2008–2009 known as world financial crisis which was triggered by the United States financial crisis. The United Nations World Tourism Organization (UNWTO) (2013) stated that the recession such as the 2008–2009 global crises—by the negative growth of the world economy by 1.24 percent—led to a decrease in the number of foreign tourist arrivals by 4 percent, and reduced the tourism expenditure by 6 percent in 2009. Several researches such as the UNWTO and International Labor Organization (ILO) (2013) stated that all regions of the world experienced negative growth in the number of foreign tourists, except Africa, as the impact of the 2009 world financial crisis. Firmansyah[3] analyses the impact of the global economic changes against the foreign tourists' arrivals in Indonesia and measures the multiplier effect on other domestic industries. Kapiki[4] investigates the impact of global economic crisis toward Greek tourism, Sian et al.[5] discusses the impact of the crisis on the tourism decline in Hawaii, and Al-Shamaileh et al.[6] examine the decline of tourism in Jordan to 15 percent due to the financial crisis of 2008–2009.

In Indonesia, even though the number of foreign tourists' arrivals had a positive growth in 2009, the impact of the global economic crisis had also been experienced on Indonesian tourism as the growth was only 1.43 percent compared to the 2008 growth, which was 13.24 percent. In addition, according to the data from the Ministry of Tourism and Creative Economy (2013), the average length of stay and the average expenditure per day of foreign tourists decreased in 2009, and the amount of foreign exchange from tourism decreased to −14.29 percent compare to the previous year. For Malaysia and Thailand, the foreign tourist arrivals grew negatively in 2009 by 1.3 and 2.1 percent.[8]

Based on the previous explanation, this study aimed to analyze the changes of the global economy, measured by world gross domestic product (GDP), on tourism in Southeast Asia, particularly Indonesia, Malaysia and Thailand—represented by the number of foreign tourists arrivals of the respective countries—by employing a dynamic econometric model; the Error Correction

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Model (ECM). The ECM is a useful theoretical approach to estimate the effect of short run and long run of a time series variable to other time series variables. On the next stage, by using a panel data regression model and by involving more countries in region to the model, the Philippines, Vietnam, Cambodia, and Singapore, the aim is to examine on how the global economic changes affects tourism in the Southeast Asian countries. The selection of these countries is based on the consideration of the geographical adjacent as placed in one region areas, the high inter-linkages in economy as the members of the Association of South East Asian Nation (ASEAN), and cultural as well as the similarity of their natural contours. Most importantly, these countries are being very intensively developed tourism in their countries.

## 2. METHODS

### 2.1. Variables and Data

Suppose a tourist destination country in Southeast Asia is referred to a country of $N$, the definitions of the variables used in this study are as follows:

The tourism demand by global to the $N$ is approached by the number of foreign tourist arrivals in $N$, the unit of measurement is the number of people per year, is referred by $FT$.

The change in the world economy faced by $N$ which is approached by the real world Gross Domestic Product, with the unit of measurements in the US dollar, is referred by $WE$.

The data collected annually were varies among countries due to limited publications. The data used for the estimation of ECM covered the period of 1982–2014 for Indonesia, 1995–2014 for Malaysia, and 1996–2014 for Thailand. To estimate the panel data regression of the seven countries, Indonesia, Malaysia, Thailand, the Philippines, Vietnam, Cambodia, and Singapore, data covering the period of 2005–2014 were used. The data were collected from Bloomberg pavilion at the Faculty of Economics and Business, Diponegoro University, Indonesia, and the website of the World Bank, the UNWTO, the International Monetary Fund (IMF), and other sources.

### 2.2. Model Estimation

#### 2.2.1. Long Run, Cointegration, and Error Correction Model (ECM)

To achieve the first objective of the research, this study employed a dynamic econometric model, the error correction model (ECM), which is a useful theoretical approach to estimate the effect of short run and long run of a time series with other time series variables. The model used this study was developed by Granger representation theorem, which stated that if two variables, independent and dependent, are co-integrated, the relationship between the two can be expressed as ECM.

Co-integration occurring in two (or more) time series variable shows the long run relationship or balance (equilibrium) among these variables. In the short run, disequilibrium may appear, and the "error" can be treated as "error disequilibrium." This mechanism is called error correction. The co-integration test used was Engle-Granger (EG) and augmented Engle-Granger (AEG) test on the residual of long run equation, then the ECM equation is derived.[9]

The long run relationship of variables in each country is shown in this equation:

$$LFT_t = \varnothing_0 + \varnothing_1 LWE_t + \epsilon_t \quad (1)$$

where $L$ indicates the natural logarithm operator, and subscript $t$ indicates the time series observation.

EG test is conducted to test the cointegration of the residual $\epsilon_t$, with using the Dicky-Fuller (DF) stationary test:[9]

$$\Delta\epsilon_t = \omega_0 + \mu_1 \Delta\omega_{t-1} + \tau_t \quad (2)$$

Once the equation is co-integrated, it would be set up the error correction model (ECM). To estimate the ECM model, Eq. (3) needs to be re-ordered by first adding the lag of independent variables, and the model is autoregressive distributed lag (ARDL) (1, 1):

$$LFT_t = \rho_0 + \rho_1 LWE_t + \rho_2 LWE_{t-1} + \mu LFT_{t-1} + \varphi_t \quad (3)$$

To formulate ECM, we reordered the Eq. (3) with subtract $Y_{t-1}$ on both sides, and add and subtract $b_1 X_{t-1}$ on the right hand side:

$$LFT_t - LFT_{t-1} = \rho_0 + \rho_1 LWE_t - \rho_1 LWE_{t-1} + \rho_1 LWE_{t-1} + \rho_2 LWE_{t-1} - (1-\mu) LFT_{t-1} + \varphi_t \quad (4)$$

and then result is,

$$\Delta LFT_t = \rho_1 \Delta LWE_t - (1-\mu)(LFT_{t-1} - \frac{\rho_0}{1-\mu} - \frac{(\rho_1+\rho_2)}{1-\mu} LWE_{t-1} + \varphi_t \quad (5)$$

From the ADRL (1, 1), it is noted that where $\varnothing_0 = \rho_0/(1-\mu)$, $\varnothing_1 = (\rho_1+\rho_2)/(1-\mu)$. Equation (5) could be referred to a first order model ECM equation with $(LFT_{t-1} - (b_0/(1-\mu)) - ((b_1+b_2)/(1-\mu))LWE_{t-1})$ or $\epsilon_{t-1}$ as an error correction term (ECT), and $1-\mu$ is a discrepancy of FT—from the robust estimation—to achieve equilibrium.

#### 2.2.2. The Panel Data Regression

The Fixed Effects Model (FEM) was used to estimate the effect of global economic changes to tourism in Southeast Asian region. The FEM assumes the regression equation has a constant slope; while, the intercept varies among countries. The intercept of each country is assumed to be different because of special characteristics possessed by each country, but for each country, the intercept does not vary over time, called time invariant.[9]

By employing the data of the seven Southeast Asian countries during 2005–2014, the panel regression equations of tourism were formulated as follows:

$$LFT_{it} = \pi_0 + \pi_1 LWE_{it} + \pi_2 D_{2i} + \pi_3 D_{3i} + \pi_4 D_{4i} + \pi_5 D_{5i} + \pi_6 D_{6i} + \pi_7 D_{7i} + v_{it} \quad (6)$$

where Indonesia is a reference country, $D_{2i} = 1$ for Malaysia, 0 otherwise; $D_{3i} = 1$ for Thailand, 0 otherwise; $D_{4i} = 1$ for the Philippines, 0 otherwise; $D_{5i} = 1$ for Vietnam, 0 otherwise; $D_{6i} = 1$ for Cambodia, 0 otherwise; and $D_{7i} = 1$ for Singapore, 0 otherwise.

## 3. RESULTS AND DISCUSSION

### 3.1. Estimation Results of the Long Run Model and Co-Integration

Table I displays a summary of the long run model estimation. From Table I, it can be seen that all countries show a similar

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**Table I. Estimation results of long-run model: Dependent variable is *LFT*.**

| | *LWE* | |
|---|---|---|
| Country | Coefficient | *t* statistic |
| Indonesia | 1.273 | 14.170* |
| Malaysia | 1.532 | 9.916* |
| Thailand | 1.098 | 13.937* |

*Notes*: *Significant at 1%, **significant at 5%, ***significant at 10% level of confident.

**Table II. Estimation results of Engle-Granger co-integration test.**

| Country and variable | Co-integrated or not |
|---|---|
| Indonesia | Co-integrated |
| Malaysia | Co-integrated |
| Thailand | Co-integrated |

pattern regarding the influence of the global economy (*WE*) on the number of tourists' arrival (*FT*).

The positive magnitude of the parameter indicated that the increase in the world economy would increase the arrival of the foreign tourists, and vice versa. Moreover, when the *WE* grew by 1 percent, the number of foreign tourist arrivals in Indonesia increased by 1.273 percent and the 1 percent increase of the WE boosts foreign tourist arrivals in Malaysia by 1.532 percent. The increase of the *WE* by 1 percent raised the *FT* by 1.098 percent in Thailand. Among the three countries, in the long run, the tourists' arrival in Malaysia was the most sensitive to the world economy changes; while, Thailand's was the most non-elastic. Therefore, the tourism in Thailand was the least affected by the world economic changes compared to that of the other two countries.

The long run result was supported by co-integration test, as shown in Table II. The result proved that the equilibrium relationship of these variables was statistically proven, indicated by the stationery of the long-term residual at level 0.

### 3.2. Estimation Results of Error Correction Model

The short run model that can be proven by the ECM due to the negative significant of $\epsilon_{t-1}$, is only for Indonesian model, and no country shows the significant of individual parameters of *WE* (Table III).

The significant value $\epsilon_{t-1}$, it can be demonstrated that *FT* adjusts *WE* with lag. The Indonesian model showed that 15 per cent discrepancy of long run and short run of *FT* can be corrected in one period. Meanwhile, the diagnostic test results on the long run and the ECM model indicated that the estimator of the long run and short run are homoscedastic and non-autocorrelation.

**Table III. Estimation results of ECM: Dependent variable is *ΔLFT*.**

| | *ΔLWE* | | $\epsilon_{t-1}$ | |
|---|---|---|---|---|
| Country | Coefficient | *t* stat. | Coefficient | *t* stat. |
| Indonesia | 0.573 | 1.369 | −0.148 | −1.988*** |
| Malaysia | 0.704 | 0.732 | −0.387 | −0.732 |
| Thailand | 0.400 | 1.064 | −0.267 | −1.540 |

*Notes*: *Significant at 1%, **significant at 5%, ***significant at 10% level of confident.

**Table IV. Estimation results of the panel data regression—FEM: Dependent variable *LFT*.**

| Variable | Coefficient | *t*-statistic |
|---|---|---|
| Constant | −6.404 | −1.271 |
| LWE | 1.995 | 4.380* |
| $D_2$ | 1.162 | 11.192* |
| $D_3$ | 0.988 | 17.998* |
| $D_4$ | −0.586 | −7.798* |
| $D_5$ | −0.736 | −15.605* |
| $D_6$ | −3.134 | −59.211* |
| $D_7$ | 0.272 | 1.035 |
| *R*-squared | 0.935 | |
| Adjusted *R*-squared | 0.928 | |
| *F*-statistic | 127.205 | |

*Note*: *Significant at 1% level of confident.

From the results of the panel data regression, it can be concluded that the changes of world economy statistically significant affect the tourists' arrivals in Southeast Asian regions at 1 percent level of confidence ($\alpha$) (Table IV). The coefficient of *WE* with the positive sign is 1.995, meaning that if the change of world GDP increases by 1 percent, the tourists arrivals in the Southeast Asian region increases by 1.995 percent.

From the estimation results shown in Table IV, the coefficient of cross section dummy namely $D_2$, $D_3$, $D_4$, $D_5$, and $D_6$, individually statistically significant at 1 percent level of confident, except $D_7$. The significance of the dummy coefficients showed the difference in the average foreign tourists' arrivals in each Malaysia and Thailand on Indonesia, with the average number of foreign tourists' arrival in Malaysia and Thailand respectively higher than that of in Indonesia. Meanwhile, the differences in tourist arrivals of the Philippines, Vietnam, and Cambodia were statistically proven, but the foreign tourists' arrival in each country are still lower than the average of foreign tourists' arrivals of Indonesia. Lastly, statistically, foreign tourists visiting Singapore is no different with foreign tourists visiting Indonesia.

## 4. CONCLUSION

By using annual data with variation of period on each countries observed, it can be empirically concluded that the global economic changes affects tourism in Indonesia, Malaysia, and Thailand in the long run. It should be concerns by stakeholders and the policy maker, particularly in Malaysia, that the impact of the global economic crisis can reduce the number of foreign tourist's arrivals.

Associated with factors that influence the tourism, the policy makers has to develop the efforts to restrain the impact of the contraction of world economic by enhancing the attractiveness of tourism sector, such as development of public facilities and other facilities related to improving the convenience of tourists, promoting more cultural attractions and art, beside keep the domestic economy includes prices and costs stable, ensuring the availability of goods, maintaining the good level of security and the legal certainty.

To develop the study in the future, some limitation variables, methods, and data availability in this study can be extended by promoting data coverage, admitting other independent variables, include both economic and social variables, such as exchange rates, the cost of living and others. For the forecasting purposes,

a more complicated time series models can be used, for example, a model which accommodates the seasonal factors and the volatility.

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