

# THE AIDS MODEL OF INDONESIA TOURISM PRICE COMPETITIVENESS

*by* Faurani Santi Singagerda

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## THE AIDS MODEL OF INDONESIA TOURISM PRICE COMPETITIVENESS

Singagerda, Faurani Santi<sup>1\*</sup>; Rafik, M<sup>2</sup>; Wibaselppa, Anggawidia

### ABSTRACT

According to World Economic Forum (WEF) data of 2013, Indonesia's tourism price index is ranked 9 out of 140 countries in the world far beyond Malaysia and even Thailand. However, a low price level does not guarantee high foreign exchange earnings of a tourism destination. If the demand for a destination is price-inelastic, the price reduction strategy can not increase the foreign exchange earnings of a destination. Therefore, the appropriate demand elasticity approach is used to measure tourism competitiveness in terms of price. This research uses model of Almost Ideal Demand System (AIDS). The value of price elasticity shows that Indonesia is more competitive than Thailand even by Australian and American tourists and more competitive than Malaysia by American tourists. The results also show that the price of tourism is the main determinant affecting the allocation of tourist spending in the three destinations. By knowing the position of Indonesia's competitiveness of tourism to competitor countries, it is necessary to apply different promotion strategies for each country of the tourist market according to its demand characteristics. This research proposes policy recommendation in the form of the need to apply the increasing of foreign exchange earnings of tourism sector in Indonesia, among others the need of pricing strategy, domestic inflation stability, monetary price trend of competitor country, and tourism industry cooperation.

**Keywords:** *tourism price, competitiveness, elasticity*

### PRELIMINARY

The tourism sector is one of the fastest growing economic sectors in the world. The total number of foreign tourists who are visiting the world is able to grow rapidly, from 25 million people in 1950 to 1.04 billion in 2012. With the rapid development also, 5000-7000 people (World Tourism Organization / UNWTO, 2013b). About the challenges advanced tourism sector, such as the global economic crisis, rising world oil prices, natural disasters and terrorism attacks, not great to the tourism sector. This is evidenced by the growth of the world economy, 9% contribution to GDP, 6% of total exports, and can create 1 of 11 new jobs (UNWTO, 2013a).

The dynamics of the global tourism industry is facing the increasingly cheaper situation of competition, both at the regional and international levels between countries as tourist destinations. The more competitive a country as a tourist destination will attract more tourists to visit, tourists will bargain more money in the destination country. Gross Domestic Product (GDP), economic growth of the country, and people's economic welfare will increase. Therefore, each country will compete with each other to attract more tourists and spending (Crouch, 1999; Dwyer et al, 2000). UNWTO (2011) predicts the number of foreign tourists will increase on average by 3, 3% every time from 2010 to 2030 and will reach 1, 8 billion tourists by 2030. Asia Pacific is predicted to be a tourist destination with the highest growth rate of tourist visits 4, 9% per annum and market consumption increased 22% in 2010 to 30% in 2030.

Southeast Asia as the region with the second largest market share in Asia Pacific, after South Asia, is predicted to increase market share and 5.1% tourist growth (UNWTO, 2011). This growth rate is even above the average projected growth of Asia Pacific and World tourists in the period 2010-2030. Indonesia as one of the countries in Southeast Asia has significant potential to develop into a world tourist destination, especially leisure tourism. The World Economic Forum (WEF) in Blanke (2013) places Indonesia 6th and 38th of 140 countries in the world respectively for the ownership of natural and cultural resources. This rating is well above the neighboring countries, such as Thailand and Malaysia.

However, with the potential of natural resources and a great culture, the achievement of Indonesian tourism can be said to be not optimal. Since the global economic crisis of 2008, tourist arrivals and total tourist spending in Indonesia have tended to grow slowly. Similarly, Indonesia's market share of total visits and tourist expenditures in Southeast Asia continues to decline when the market share of Southeast Asian tourists to the world actually increased. This condition indicates a decline in the competitiveness of Indonesian tourism.

Based on previously described backgrounds, this study aims to investigate the main determinants of allocation of expenditures from the seven major market countries of tourists to three destination countries

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<sup>1</sup> Faculty of Economics and Business Institut Informatika dan Bisnis Darmajaya, Lampung, Indonesia

\*Correspondent author: [fsingagerda@gmail.com](mailto:fsingagerda@gmail.com)

<sup>2</sup> Faculty of Economics and Business Institut Informatika dan Bisnis Darmajaya, Lampung, Indonesia

(Indonesia, Thailand, Malaysia); estimate the elasticity of demand to see how sensitive tourist demand is to price changes, changes in tourist income and the effects of global economic crisis; and analyze the competitiveness of Indonesian tourism prices compared to their two main competitors according to the viewpoint of tourists from different market countries.

Previous studies on the competitiveness of tourism can be grouped into two major groups, namely the study of related dimensions and related research models. Some studies of the dimensions of tourism competitiveness include those of d'Hartesse (2000), Go & Govers (2000), Prideaux (2000) and Dwyer et al (2000). The complexity of the concept of tourism competitiveness itself causes the research that analyzes the overall competitiveness (multidimensional) is limited to descriptive analysis only, so the result becomes less focused or deep. One of the research which according to the writer is quite comprehensive with specially analyze price competitiveness is research conducted by Dwyer et al (2000). However, research Dwyer et al (2000) does not analyze how price competitiveness affects the amount of foreign exchange earned from the expenditure of tourists in each destination. Dwyer et al (2000) used several stages to compile the index but without doing econometric techniques.

Several comparative studies related to the selection of the research model were the research that has been done by Lyssiotou (2000), Durbarry & Sinclair (2003), Li et al (2004), Cortez et al (2009) and Mangion et al (2005). The model used is static AIDS and AIDS (EC-LAIDS) estimated by Seemingly Unrelated Regression (SUR) method, 3-Stage Least Square (3SLS), Full Information Maximum Likelihood (FIML), or Nonlinear Least Squares (NLS). The majority of studies using the AIDS demand system model analyzed the demand for tourists in the European region. The results showed that demand for foreign tourists was price sensitive, but the degree of sensitivity varied by country of origin and tourist destinations.

Although the AIDS model is quite popularly used in the literature on tourism demand, few are aware of its application for an analysis of the competitiveness of tourism. According to the authors, there are only two literatures that have applied the AIDS model for tourism competitiveness analysis, ie Mangion et al (2005) and Li et al (2013). Mangion et al (2005) concluded that the price sensitivity level of British tourist demand varies for each destination in the Mediterranean region so it is important for each destination to monitor the competitiveness of the relative price of the antardestination in order to attract more tourist expenditures. However, Mangion et al's (2005) study does not provide an overview of the relative competitiveness of a particular destination from the point of view of tourists from different market nations.

Research Li et al (2013) bridged the gap. Li et al (2013) analyzes Hong Kong's price competitiveness as an international tourist destination compared to its competitor countries (Macau, Singapore, and South Korea), from the point of view of tourists from Australia, China, Japan, Taiwan, Britain and the United States. The results concluded that Hong Kong's competitiveness level against competitors varies for each country of the tourist market. However, overall, Hong Kong is more competitive than Macau, especially from the perspective of Australian and Chinese tourists, while Singapore and South Korea are more competitive than Hong Kong.

Research on price competitiveness of tourism in relation between price and its effect on budget allocation of tourists in destination country, especially in Asian region is still little found. The most detailed study is done by Wang et al (2003). However, the budget share in this study is only proportioned to the proportion of tourist visits (visitor share) so that less can capture the income of tourism in the real sense of the term.

This research analyzes power Taiwan's tourism competitiveness to 6 major competitors (Hong Kong, Singapore, Malaysia, Thailand, Indonesia, and Filipina), from the point of view of Japanese and US tourists. However, this study only uses the usual simultaneous regression model so that the estimation results do not meet the demand assumptions. The results concluded that the Visit Malaysia Year logo launched in 1990 had a significant impact on US and Japanese tourists visiting Malaysia. The political and social crisis in Philippines (1983- 1994) had a negative impact on US tourist visits to the Philippines, Singapore and Indonesia. For US tourists, Malaysia-Thailand, Indonesia-The Philippines, and Taiwan-Hong Kong are the destinations of the compiler while Hong Kong-Philippines is a substitution destination.

Traveling is one of the preferences for consumers (d'Hartesse, 2000). When the decision to travel has been made, consumers choose various tourist destinations with varying degrees of substitution (Couch, 1996; Darvas, 2012). Tourists are confronted with income and time constraints. This is the underlying theory that choosing a tourist destination is one of the problems of consumer preference.

Tourists are assumed to be faced with various alternative destinations, then choose a destination to maximize its utility (Crouch, 1999). Utility is a measure of satisfaction that consumers receive based on the use of goods and services (Go et al. 2000), whereas every customer has a different level of satisfaction but they will try to achieve maximum satisfaction.

The utility gained by tourists from spending time in a tourist destination. Utilities derive from the attributes of the tourist destination, such as natural beauty, suitable climate, or other socio-cultural features (UNWTO, 2013a-c). This attribute is consumed in conjunction with other goods and services available at the destination.

The function of the tourist utility indicating its preference is assumed to be weakly separable. The concept of weak separability means preference on a kind of goods does not depend on how other goods are consumed. The concept of separability illustrates that consumers allocate their expenditures into a group of commodities in a multistage budgeting process, i.e. preference in any independent commodity group or unaffected by demand in other commodity groups (Durbarray et al. 2003). This assumption is valid as long as the commodities in one group are linked (complement or substitute). In the context of tourism, the nature of substitution or complementary antardestination depends on the similarity of tourist attributes, tourist consumption patterns, or geographical proximity.

In this study, tourists are assumed to allocate their total budget in a four stage process. This assumption is based on the consideration that the use of the AIDS model depends on the stage budgeting, in which the consumer is assumed to allocate expenditure in separate stages of decision so that it is assumed that consumer preferences are independent (Durbarray et al, 2003 ).

The four stages are as follows. The first stage, tourists from each of the seven major market countries, namely Singapore, Malaysia, Australia, Japan and China long-distance travelers as well as long-distance travelers UK and United States will determine the amount of money it has for travel expenses and not tourist spending. The second stage, tourists will decide to travel outside the country of residence or in the country. The third stage, tourists will share their international travel expenditure between destinations in three countries, namely Indonesia, Thailand, and Malaysia and destinations in other countries. Fourth, travelers will allocate their spending among destinations in Indonesia, Thailand and Malaysia.

This study focuses on the fourth phase of the budget allocation process. The decision of the allocation of tourist spending in three destinations, namely Indonesia, Thailand and Malaysia is only influenced by the total expenditure and price of tourism in the three destinations. This means that the decision is independent of conditions in other tourist destination countries (other than those three countries), in the country of origin of the tourist, and also independent of the amount of expenses other than for travel.

The competitiveness of a tourist destination is a concept that includes adjusted price differences with exchange rate movements, productivity levels of various components of the tourism industry, and other qualitative factors affecting the attractiveness of a tourist destination (Forsyth & Dwyer, 2009). Price competitiveness is a key component in the overall competitiveness of a tourism destination. The total price (cost) borne by tourists includes transportation costs to and from tourist destinations as well as expenses incurred during tourist destinations, including accommodation, tour package services, food and beverages, entertainment, etc. The total price determines the decision of a tourist to travel to a destination (Dwyer et al, 2000).

The competitiveness of tourism is essentially related to tourist spending (Li et al, 2013). Ritchie & Crouch (2003) states that what makes a tourist destination really competitive is its ability to increase tourist spending and attract more tourist arrivals than competitor destinations, which in turn will increase the income of tourism. However, a low price level does not guarantee high foreign exchange earnings of a tourism destination. If the demand for a destination is price-inelastic, the price reduction strategy can not increase the foreign exchange earnings of a destination. Therefore, the appropriate demand elasticity approach is used to measure tourism competitiveness in terms of price.

The focus of this research is the use of a demand system approach with the Almost Ideal Demand System (AIDS) model to analyze competitiveness in relation to demand elasticity, which is rarely encountered in tourism literature. The AIDS model can analyze changes in the allocation of tourist spending on alternative destinations. This is based on the consideration that based on the theory of consumer demand, the estimation of the AIDS model is expected to satisfy the demand-demand theories Deaton (1980).

In long-term (balance) conditions, travelers can always adjust their expenses to changes in prices and revenues. In fact, however, factors such as repeater tendencies, unstable preference, imperfect information, adjustment costs, improper expectations, and misinterpretation of changes in real prices in adjusting their expenditures, will prevent tourists from adjusting in perfect price and revenue changes. Therefore, until a perfect adjustment occurs, tourists are no longer in equilibrium. This condition which is one of the causes of static AIDS modeling does not meet the demand-demand theory (Li et al, 2004). In addition, the static AIDS model also does not take into account the dynamics (non-stationarity of data) that often appear in time series analysis. This is what lies behind the use of dynamic model specifications by applying cointegration and Error Correction Mechanism (ECM) techniques in this study.

This study is expected to be overcome the gap in the limited review of the tourism literature on price

competitiveness, particularly in Southeast Asia. Based on the consumer demand theory framework, the use of AIDS models in this study is appropriately used to capture changes in the allocation of tourist spending so as to signal the economic performance (supply side) of the three alternative destination countries, namely Indonesia, Thailand and Malaysia.

In this study, competitiveness analyzed in relation to demand elasticity linking between the supply and demand sides of competitiveness. For each country of the tourist market, the elasticity of demand for Indonesia and its competitor countries is estimated and the results are compared for all market countries. This comparison result is used to analyze how successful a destination increases its demand compared to competitors Li et al. (2013).

## METHODOLOGY

To answer the purpose of the study, the authors estimate the tourist demand with a model system and EC-LAIDS LAIDS, then do most facing restriction EC model-related LAIDS assuming the theory of demand to be met, and test the validity of restriction to test whether the model actually satisfy the assumptions of the demand theory. To answer the first objective of this study, we estimated the model of EC-LAIDS. Previously, need to be estimated LAIDS models to ensure their cointegration relationship between the variables in the model and to calculate the ECT variables to be included as one of the independent variables in the model EC-LAIDS.

### Specification Model Linear Almost Ideal Demand System (LAIDS)

The LAIDS model for tourist requests to three destination countries, namely Indonesia, Malaysia, and Thailand from seven countries of the tourist market (Singapore, Malaysia, Australia, Japan, China, UK and USA) are as follows.

$$w_{it}^o = \alpha_i^o + \sum_j \gamma_{ij}^o \ln p_{jt}^o + \beta_i^o \ln E_t^o + \phi_i^o D_t^o + \varepsilon_{it}^o \quad \text{Eq. (1)}$$

(Deaton & Muellbauer, 1980), where:

$w_{it}^o$  : budget share, the proportion of expenditures allocated by tourists from certain countries  $o$  to a destination country  $i$  at a time  $t$ .

$p_{jt}^o$  : the price of tourism (relatively effective) at each destination in time  $t$

$E_t^o$  : real per capita expenditure of tourists from certain countries  $o$  to three destinations concerned at the time  $t$  of the real expenditure per capita

The per capita real spending of travelers is the per capita expenditure of tourists deflated by the S tone price index,  $\ln P_t^* = \sum_i w_{it} \ln p_{it}$ .

$D_t$  : time dummy variable that captures the effects of the global economic crisis.

$\alpha_i, \gamma_{ij}, \beta_i, \phi_i$  : estimation of parameters

$i, j = 1, 2, 3$  (1=Indonesia, 2=Thailand, 3=Malaysia)

$o =$  origin tourists countries (Singapura, Malaysia, Australia, Japan, China, UK and USA)

$t = 2005, 2006, \dots, 2012$

$\varepsilon_{it}$  : error term at time  $t$

The above model follows the specification of the AIDS model developed by Deaton (1980) by adding the dummy variable of the crisis that allegedly influenced tourist demand, as did De Mello et al (2002). There are seven demand systems for each origin. Each system consists of 3 equations for each destination, except for the Malaysian tourist demand system consisting of only 2 equations. This is because the focus of this study is the tourists overseas and not domestic tourists.

### Specification Model Error Correction- Linear Almost Ideal Demand System (EC-LAIDS)

The EC-LAIDS model for tourist demand to three destination countries, namely Indonesia, Malaysia, and Thailand from seven countries of the tourist market (Singapore, Malaysia, Australia, Japan, China, UK and USA) is as follows (Wu et al, 2011).

$$\Delta w_{it}^o = \alpha_i^o + \sum_j \gamma_{ij}^o \Delta \ln p_{jt}^o + \beta_i^o \Delta \ln E_t^o + \lambda_i \text{ECT}_{it-1} + \phi_i^o D_t^o + \varepsilon_{it}^o \quad \text{Eq. (2)}$$

$\Delta =$  Operator differentiator states lag difference data between the previous time period, for example,

$$\Delta w_{it} = w_{it} - w_{it-1}$$

$\text{ECT}_{it-1}$  : lag LAIDS residuals of the model equations Eq.(3)

$\alpha_i^*, \gamma_{ij}^*, \beta_i^*, \lambda_i, \phi_i^*$ : estimation of parameters

$\varepsilon_t^*$  : error term at current time  $t$

For each origin, the EC-LAIDS model is estimated to determine which determinants (prices, real expenditures, dummy) significantly affect the allocation of tourist spending to the three destinations.

The LAIDS and EC-LAIDS demand system model parameters were estimated by multivariate regression analysis, the Seemingly Unrelated Regression (SUR) method. SUR method with Generalized Least Square (GLS) approach is appropriately used when all independent variables are assumed exogenously and error is heteroscedastic and correlates between equations in a system (Deaton, 1980; Martin, 1987; Song, 2010)

Before estimating the EC-LAIDS model it is necessary to test for stationarity and cointegration. The stationary test is required to ensure that all variables in the model have long-term trends. In econometrics, intuitively, the model has a long-term trend if every nonstationary variable is at the level, but stationary at the first difference level, or integrated into order 1, I (1). Cointegration test is done by Engle-Granger test. This test is performed by testing the stasis of the residual LAIDS model. The stationary test used is the Dickey-Fuller GLS test because the test statistic is more robust on small sample conditions than other root unit tests such as Augmented Dickey-Fuller or Phillips-Perron (Li et al., 2013). If the stationary residual is at the level, then all variables in the model are cointegrated, or in other words have a long-term relationship or equilibrium (Nachrowi & Usman, 2006).

Furthermore, the EC-LAIDS model is estimated by incorporating Error Correction Term (ECT) as an independent variable, measured as the residual lag of the LAIDS model, where the dependent and other independent variables (except dummy variables) are in the first distinction form (Cortez, 2009; Li et al. 2004; Li et al. 2013). ECT coefficients are expected to be significant and negative so that there is a correction or adjustment of short-term imbalances towards the long-term trend. In accordance with the theoretical framework of demand theory, the EC-LAIDS model must meet three main assumptions: adding-up, homogeneity, and symmetry.

Stages of restriction i model are as follows. First, the unrestricted EC-LAIDS model (Eq.2) is estimated by issuing the Eq.3 (Malaysia) in each system of equations for the seven originals. Second, the EC-LAIDS restricted model is reinterpreted by including one by one homogeneity and symmetry restrictions (Eq. 4 and Eq. 5). The parameters for the Malaysian equation are calculated by the add-up rule (Eq. 3). Finally, restriction validity is performed to test whether the model actually meets the above three theoretical demand assumptions.

Stages of restriction i model are as follows. First, the unrestricted EC-LAIDS model (Eq. 2) is estimated by issuing the Eq.3 (Malaysia) in each system of equations for the seven originals. Second, the EC-LAIDS restricted model is reinterpreted by including one by one homogeneity and symmetry restrictions (Eq. 4 and 5). Parameters for Malaysia equation is calculated by adding up the rules (Eq. 3). Finally, the validity of the restriction performed to test whether the model actually meets these three assumptions above demand theory. The model is said to be valid for all three assumptions if the test statistic  $t_1$  and  $t_2$  (or at least one of them) is smaller than the corresponding table statistics.  $t_1$  following distributin  $F(q, N-k)$  and  $t_2$  following the the distribution  $\chi^2(q)$ .

Model EC-LAIDS homogeneity and symmetry, need to be tested goodness of fit (Cortez, 2009). An important test is an autocorrelation test. Residual system models are not expected to correlate serially. This test is done by Portmanteau test.

To answer the second objective of this study, calculations of elasticity of demand include price elasticity, cross price elasticity, and elasticity of expenditure. The value of elasticity of demand is obtained from the estimated homogenous and symmetry restricted EC-LAIDS model which is then calculated as follows:

a. *Price Elasticity*

A tourism destination is elastic if the value of elasticity is significantly more than one (in absolute) statistically. This means that demand for the destination is sensitive to price changes (Morley, 1994; Mangion et al., 2005). The smaller the value of elasticity indicates that price changes are less dominant in affecting demand to those destinations. In other words, demand is more stable. The value of price elasticity calculated by negative means a complementary relationship.

$$\varepsilon_{ii} = \frac{w_{ii}}{w_i} - \beta_i^* - 1 \quad \text{Eq. (4)}$$

While the value of cross price elasticity is calculated as follow:

$$\varepsilon_{ij} = \frac{w_{ij}}{w_i} - \beta_i^* \frac{w_j}{w_i} \quad \text{Eq. (5)}$$

While the value of cross price elasticity is calculated

$$\text{var}(\varepsilon_{ij}) = \frac{\text{var}(w_{ij})}{w_i^2} + \text{var}(\beta_i^*) \left(\frac{w_j}{w_i}\right)^2 \quad \text{Eq. (6)}$$

The variance of the price elasticity value is calculated by

$$\text{var}(\varepsilon_{ii}) = \frac{\text{var}(y_{ii}^*)}{w_i^2} + \text{var}(\beta_i^*) \quad \text{Eq. (7)}$$

The test statistic for the value of price elasticity is calculated by

$$t(\varepsilon_{ii}) = \frac{\varepsilon_{ii}}{\sqrt{\text{var}(\varepsilon_{ii})}} \quad \text{Eq. (8)}$$

b. *Cross- Price Elasticity*

Cross-price elasticity indicates the substitution or complementary effect used to analyze Indonesia's competitiveness to competitors (Dwyer, 2000; De Mello et al. 2002; Mangion et al. 2005). A positive value indicates a substitutionary relationship whereas a negative value means a complementary relationship (Dwyer, 2000; Durbarry, 2003)

c. *Expenditure Elasticity*

The elasticity of expenditure of a destination of more than one value signifies that the demand for the destination is sensitive to changes in the total budget of the tourist (UNWTO, 2013a; Mangion, et al, 2005). A positive value of spending elasticity indicates that the destination is a normal destination and if the negative value is an inferior destination (Dwyer, 2000; Durbarry, 2003).

The value of elasticity of expenditure is calculated by

$$\varepsilon_{ix} = \frac{\beta_i^*}{w_i} + 1 \quad \text{Eq. (9)}$$

The variance of the expenditure elasticity value is calculated by

$$\text{var}(\varepsilon_{ix}) = \frac{\text{var}(\beta_i^*)}{w_i^2} \quad \text{Eq. (10)}$$

The t-test for the value of elasticity of expenditure is calculated by

$$t(\varepsilon_{ix}) = \frac{\varepsilon_{ix}}{\sqrt{\text{var}(\varepsilon_{ix})}} \quad \text{Eq. (11)}$$

The elasticity of expenditure is identical to the income elasticity because the expenditure here is the proxy of income (Wu, 2011). The significance test of elasticity is performed by one-tailed t-test. The data used in this study is secondary data during the period 2009-2016. These data include tourist spending, tourist numbers, consumer price index, and foreign exchange rates.

The dependent variable used is the budget share of tourists from each market country (origin) to the three destination countries. This variable is the ratio between the amount of an originator's tourist expenditure to a destination for total expenditure in the three destinations. According to the UNWTO (2013a, 2013b, 2013c), tourist spending is defined as the total money spent by tourists in a tourist destination. These expenses include accommodation, meals and drinks, recreation and entertainment, tour guide services, local travel packages, local transport, souvenirs, health or beauty, daily necessities, money tips and other expenses (UNWTO, 2011). This expenditure does not cover transportation costs from home country to destination country or vice versa. According to Crouch (1996), tourist spending is a measure of demand more elastic than the number of tourists. This is because tourists tend to respond to changes in prices or revenues by changing the amount of spending (in terms of length of stay or expenditure per day) rather than changing the decision to travel (UNWTO, 2011; UNWTO, 2013a; UNWTO, 2013c). The focus of this study is the elasticity of tourism demand so that the right size of demand used is the expenditure of tourists.

The data of tourist expenditure used in this research is sourced from the independent research institute of the world (<http://portal.euromonitor.com>). The calculations made by Euromonitor are derived from official data of the Statistics Bureau or the Ministry of Tourism in each country, in the form of survey results conducted by the tourism ministry or Statistics Board compiled with other information, for example from trade associations, trade news, research, and interviews with tourism industry actors (Euromonitor International, 2013a; Euromonitor International, 2013b)

The independent variables used include real tourist spending per capita, relatively effective tourist prices, and dummy global economic crisis (Divisekera, 2003; Blanke, 2013). The real spending of tourists per capita is a proxy of tourist income that reflects the purchasing power of tourists to tourism goods and services offered in a

tourist destination (Morley, 1994; Crouch, 1996). This variable is the natural logarithm of per capita tourist expenditure that is deflated by the aggregate price index. The per capita tourist expenditure of an origin is the ratio between the total expenditure of the origin to the total number of tourist visits in the three destination countries. In this study the authors use the Stone price index (1954) because it is a common approach used for aggregate price index in the LAIDS model in previous empirical studies (Stone, 1954; Deaton, 1980; Li, et al. 2004; Cortez, 2009). The data of tourist expenditures are sourced from Euro-monitors while the number of tourist visits comes from the World Tourism Organization (UNWTO) and Pacific Asia Travel Association (PATA).

In the context of international tourism, prices include several components, namely the prices of tourism goods and services in the destination country (occupying the largest portion of the total price paid by tourists), transportation costs between the country of origin, and tourist destinations, and the effect of exchange rate variation on purchasing power (purchasing power) tourists. Morley (1994) defines the price of tourism as all prices of goods and services purchased by tourists in the destination country, outside of the ticket price between the country of origin and the destination country. The tourism price variable used in this study is proportional to the natural logarithm of the ratio between the Consumer Price Index (CPI) and the Real Effective Exchange Rate (REER) in the destination country to the ratio in the country of origin of the tourists (Morley, 1994; Go, 2000; Song et al. 2010).

The assumption underlying the use of CPI is the change in the prices consumed by tourists in the same direction as the change in CPI value. In other words, the pattern of tourist spending is close to the average consumption expenditure pattern generally used to weigh the price in the CPI. The relative tourism price approach is made using the destination country CPI ratio with the CPI of the country of origin describing the decision making process of a tourist to choose between domestic travel or international travel (d'Hartesse, 2000; Dwyer et al. 2000). In other words, domestic tourism is considered a substitute for international tourism, or a mini-mine is used as a benchmark when tourists plan trips abroad (Song et al., 2010). While Martin & Witt (1987) states that an adjusted exchange rate-adjusted CPI ratio is an appropriate measure of tourism prices. The combination of relative tourism prices and exchange rates is referred to as relatively effective tourism price variables (Durbary & Sinclair, 2003). According to Darvas (2012), REER is an index of exchange rates that are often used to measure price competitiveness. CPI data are sourced from the World Bank while REER data are sourced from Bruegel (Darvas, 2012).

This model incorporates dummy variables to capture the effects of the crisis on tourism demand during the period of 2005-2012 to three destination countries, namely Indonesia, Malaysia, and Thailand. Dummy variable is the global economic crisis that occurred during the period 2008 - 2009, worth 1 (one) in the period of crisis and 0 (zero) when no crisis occurred.

## DISCUSSION

Total tourist spending from major market countries dominates more than 50 percent of total tourist spending in Indonesia and Malaysia. Meanwhile, for Thailand, tourist arrivals from other market countries such as Europe (France, Germany, Russia and Sweden), South Korea and India also contributed to total expenditure so that the seventh market share of tourists was only about 43% in Thailand.

Market share for short-distance travellers (Australia, Singapore, Malaysia, China and Japan) is highest in Malaysia (60 percent), followed by Indonesia (47 percent), and lowest in Thailand (26 percent). Market share for long-distance travellers (US and UK) are 17 percent, 6 percent, and 3 percent respectively in Thailand, Indonesia and Malaysia.

According to De Mello (2002), Li et al (2004), Cortez 2009), and Li et al (2013); Fuller-GLS indicates that the majority of variables are not stationary at the stationary level but at the first difference or the integrated variables are in order of 1, I (1). This result is very clear in the model for the countries of origin China, Japan and England. The results for all four other models appear to vary. In general, however, for seven models, the number of stationary variables on the first level of difference is more, or at least equal to the number of stationary variables at the level. This is an early indication of the necessity of modelling with the first difference, ie using a stationary variable to eliminate a potentially biased stochastic trend in the model estimation results. Therefore, it is necessary to use the EC-LAIDS model, which is the first difference from the LAIDS model.

The Engel-Granger cointegration test results show that the residual LAID model is not restricted to seven stationer-origin countries at a level, with a significance level of at least 5 percent. This means that there is a significant cointegration relationship between all the equations in each of the tourist demand systems (Li et al. 2004; Cortez et al. 2009). Therefore, EC-LAIDS modelling can be done.

Examples of corrected sample samples show that all six EC-LAIDS models (except for Malaysian models) satisfy separate homogeneity and symmetry assumptions. However, for the assumption of homogeneity and symmetry together can not be satisfied by the Australian model, Singapura, and US (Wu et al . 2011) state that the assumptions of homogeneity and symmetry are always met by every demand system theoretically, but not always



empirically fulfilled. There are several possibilities underlying such assumptions, among others, the data used to estimate the system model of equations is unable to accurately describe travellers' behaviour, sampling because of too little observation, and also the irrational behaviour of travellers in allocating their expenses when information is not available asymmetric information. In a majority, it can be said that six models of EC-LAIDS satisfy both assumptions so that the model to be analyzed further is a model with a combination of homogeneity and symmetry restrictions (Cortez et al. 2009).

To test the merits of the econometric model, model diagnostic tests are required. One of the important tick diagnostic tests for the demand system model is the autocorrelation test. The Portmanteau test showed that seven homogeneously-limited EC-LAIDS models and symmetry met non-residual non-correlation assumptions at the 5 percent significance level (Li et al. 2004). This condition means that the residual model is not correlated between the equations in the demand system.

The estimation result of the tourism demand system with the homogeneity and symmetry model of EC-LAIDS is limited to indicate that the ECT coefficient is negative and the majority is significant with minimum significance at the 10 percent level. This means that the EC-LAIDS model is appropriately used because of the expected short-term adjustment or correction mechanism.

Table 1. Estimated EC-LAIDS Model Homogeneity and Symmetry Restricted

	Country of origin of tourists						
	Australia	Singapore	Malaysia	China	Japan	USA	England
The 1st destination:							
Indonesia							
Constant	-0.03*	-0.01	-0.02	0.01*	0.00	-0.01	0.00**
Indonesia's price	-0.42	-0.11	-0.70	-0.01	-0.55***	-0.21	-0.37***
Thai's price	0.78**	0.06	0.70	-0.29*	0.27***	0.04	-0.03
Malaysia's price	-0.36	0.05	n.a.	0.30*	0.26***	0.18	0.35***
Tourist's expenditure per capita	0.01	-0.11	0.07	0.01	-0.05***	-0.11**	-0.12***
ECT	-1.46	-1.64	-2.00**	-1.41**	-1.51**	-5.06	-1.80***
Global crisis			0.09*		0.01**		0.00***
The 2nd destination : Thailand							
Constant	0.02*	-0.01	1.02***	-0.02*	0.00	0.01	0.01**
Indonesia's price	0.78**	0.06	0.70	-0.29*	0.27***	0.04	0.03
Thai's price	-1.79**	-0.01	-0.70	0.24	-0.35***	-1.42***	-0.56***
Malaysia's price	1.01	-0.05	n.a.	0.05	0.07*	1.36***	0.53***
Tourist's expenditure per capita	0.25**	0.07*	-0.07	0.13*	-0.01	0.05*	0.14**
ECT	3.52**	-1.35*	n.a.	-1.54***	-1.41***	-2.86***	-2.07***
Global crisis			-0.09*		-0.05***		-0.05***
The 3rd destination : Malaysia							
Constant	1.00***	1.02***		1.01***	1.00***	1.00***	0.98***
Indonesia's price	-0.36	0.05		0.30*	0.30*	0.18	0.35***
Thai's price	1.01	-0.05		0.05	0.05	1.36***	0.53***
Malaysia's price	-0.66	0.00	n.a.	-0.35	-0.35	-1.56***	-0.88***
Tourist's expenditure per capita	-0.24	0.04		-0.15	-0.15*	0.07	-0.02
ECT	n.a.	n.a.		n.a.	n.a.	n.a.	n.a.
Global crisis					0.03***		0.05***

Description: \*, \*\* and \*\*\* show significance at 10%, 5% and 1%. The model meters for Malaysia destinations are calculated based on the add-up rule.

Source: author, 2017

In general, estimates indicate that price is the main determinant affecting the allocation of tourist spending in the three destination countries. This can be seen from the value of variable price coefficient greater than the coefficient of real expenditure variable per capita and dummy global crisis variable. However, the effect is not significant on tourists from Singapura and Malaysia. The underlying reason is the fact that the largest proportion of tourists is a business destination and visiting families in the destination country. In addition, geographic proximity factors make travel choices for both travellers an ordinary routine (Prideaux, 2000). Revenue factors (proclaimed by real per capita spending) affect the allocation of tourist spending in all three destinations, except for Malaysian tourists. The global economic crisis is also a determinant affecting the allocation of tourist expenditures in the three destinations but its influence is only significant on tourists from Malaysia, Japan and the UK.

Meanwhile, the overall elasticity of significant expenditure (the significance of 10 percent) is a positive sign. This shows that the three destination countries, namely Indonesia, Thailand, and Malaysia are not inferior destinations. That is, the demand for tourists will increase along with the increase in budget tourists (total budget travel is a proxy). The value of elasticity of expenditure ranges from zero and two for the three countries and varies according to the country of origin of tourists.

If the value of expenditure elasticity is seen from the country of origin and destination, the total budget change of tourists from Australia, Singapore, China and the UK will have the greatest impact on spending on Thailand. Changes in the total budget of the US and Japanese tourists will have the greatest impact on spending to Malaysia and the total change of budget of tourists from Malaysia will have the greatest impact on spending to Indonesia. The interpretation of the value of elasticity of expenditure is exemplified in the elasticity of Indonesian and Thai expenditures from Malaysian tourists' point of view, each worth 1.19 and 0.89. This means that a 10 percent increase (decrease) of total budget of Malaysian tourists will increase or decrease the tourist spending to Indonesia by 11.9 percent and to Thailand by 8.9 percent.

**Table 2. Elasticity of Expenditure by Country of Origin and Tourist Destination**

Origin tourist's country	Indonesia	Thailand	Malaysia
Australia	1.03	1.62***	-0.25
Singapore	0.02	2.11***	1.04***
Malaysia	1.19*	0.99*	n.a.
China	1.09***	1.28***	0.61***
Jpan	0.78***	0.99***	1.35***
USA	0.31	1.06***	1.59***
UK	0.10*	1.21***	0.89***

Note: \*, \*\* and \*\*\* show significance at 10 percent, 5 percent and 1 percent.

Source: author, 2017

On the other hand, the overall price elasticity of significant value (at least at 10% level) is negatively marked. This is consistent with one of the theoretical demand assumptions, namely the negativity assumption. That is, spending will decrease as prices increase (Martin, 1987; Lyssiotou, 2000; Dwyer, 2003). The overall price elasticity value is less than -1. This indicates that the demand of tourists to three destinations namely, Indonesia, Thailand, and Malaysia sensitive to price changes in each of these destinations. From the point of view of the country of origin of tourists, long distance travellers look more sensitive than close-range tourists. Price changes in long-distance destinations will be an incentive for US and UK tourists to press their holiday expenditures by visiting closer destinations. For travellers, Australian and Japanese tourists tend to be more price sensitive than Singaporeans and Chinese tourists. In contrast, the value of price elasticity for Malaysian tourists is not significantly different from 0 (zero). Geographical proximity factors and the majority of tourist destinations to visit families are thought to be the two reasons that make Malaysian tourists' requests to Indonesia and Thailand are insensitive to price changes in both countries.

The value of price elasticity seen from the country of origin and destination shows that Japanese and Singaporean tourists are most sensitive to price changes in Indonesia. Australian tourists are most sensitive to price changes in Thailand and other travellers (US, UK, and China) most sensitive to price changes in Malaysia.

Table 3. Price Elasticity by Country a Tourist Origin and Destination

Origin tourist's country	Indonesia	Thailand	Malaysia
Australia	-1.96**	-6.18***	-4.21
Singapore	-1.92*	2.11	-1.01***
Malaysia	-2.92	0.89	n.a.
China	-1.09**	-0.60	-1.79*
Jpan	3.39***	-1.57***	-3.12***
USA	-2.18**	-3.02***	14.57***
UK	-3.66***	-1.96***	-5.84***

Description: \*, \*\* and \*\*\* show significance at the level of 10%, 5% and 1%.

Source: authors, 2017

The value of price elasticity seen from destination and origin countries shows that the most sensitive tourists to price changes in Indonesia are British tourists, in Thailand are Australian tourists, while in Malaysia are US tourists. The interpretation of the value of price elasticity is exemplified in the value of Indonesia's price elasticity from a UK tourist's point of view of -3.66, which means that a 10% decrease in tourism prices in Indonesia will increase (decrease) Britain's tourist exposure to Indonesia by 36.6 percent. The value of this demand change is greater than that of other countries, such as Japanese tourists by 33.9 percent, US by 21.8 percent, Australia by 19.6 percent, Singapore 19.2 percent, and China 10.9 percent.

While, the majority of significant cross-price elasticities (at 10 percent of significance) are marked positive. This indicates a substitutionary relationship between the three destination countries. The only exception is the value of cross-price elasticity between Indonesia and Thailand from a negative Chinese viewpoint. It means that Indonesia and Thailand are considered complementary destinations (complimentary) for Chinese tourists.

Table 4. Elasticity of Indonesian Cross Price to Country Competitors by Country of Origin of Tourists

Origin tourist's country	Indonesia	Thailand	Malaysia
Australia	1.73**	-0.8	1.30
Singapore	0.60	1.30	0.06
Malaysia	1.73	n.a.	n.a.
China	-1.81**	1.82**	0.87**
Jpan	1.34***	1.28***	1.55***
USA	0.71	1.16	1.44
UK	0.81***	2.75***	1.93***

Description: \*, \*\* and \*\*\* show significance at 10%, 5% and 1%.

Note:

I-T: changes in tourist demand in Indonesia due to price changes in Thailand.

I-M: changes in tourist demand in Indonesia due to price changes in Malaysia.

T-I: changes in demand for tourists in Thailand due price changes in Indonesia.

M-I: demand change tourists in Malaysia due to price changes in Indonesia.

Source: author, 2017

Table 4 below shows that the degree of effect of substitution between each pair of competing destinations shows the difference. For Chinese and British tourists, the allocation of spending to Indonesia on price changes in Malaysia is more sensitive than the allocation of expenditures to Malaysia on price changes in Indonesia. In contrast, for Japanese tourists, the allocation of spending to Malaysia on price changes in Indonesia is more sensitive than the allocation of expenditures to Indonesia whose sensitivity is not too great (Euromonitor International, 2013a). For Japanese tourists, the allocation of spending to Indonesia on price changes in Thailand is more sensitive than the allocation of expenditures to Thailand on price changes in Indonesia. For Australian tourists, the two substitution effects between Indonesia and Thailand show no significant difference, with cross-price elasticity values of 1.73 and 1.87.

Interpretation of cross-price elasticity values is exemplified in the value of Indonesia and Thailand cross-price elasticity from the point of view of Japanese tourists. ie -1.34 and 0.46. This means that a 10 percent decrease or increase of Thai tourist prices will lower (increase) Japanese tourist spending to Indonesia by 13.4 percent. Conversely, a 10 percent decrease (increase) of tourism prices in Indonesia will lower (increase) Japanese tourist spending to Thailand by 4.6 percent.

#### **Analysis of Price Competitiveness of Tourism**

As the final destination of this study, the competitiveness of Indonesian tourism prices for its two main competitor countries in Southeast Asia, Thailand and Malaysia, is analyzed in relation to the three elasticities discussed in the previous section. Based on the tourism perspective, travellers who are satisfied with a particular tourist destination are likely to visit the destination at another time (repeated visits) so that the demand for the destination is less sensitive to fluctuations associated with the total budget (income) of tourists and the price (Wang, 2003; World Tourism Organization, 2013c). Thus, from the view of industry and tourism stakeholders, the increase in tourist satisfaction is analogous to the reduction of demand elasticity (Divisekera, 2003).

#### **Indonesia Tourism Price Competitiveness to Thailand**

The value of price elasticity shows that the sensitivity of tourists to price changes varies by country of origin of tourists (Dwyer et al. 2000; Li et al. 2004; Mangion et al. 2005). The majority of tourists (except Malaysian tourists) are sensitive to price changes in Indonesia. Only four tourists (Australia, Japan, US and UK) are sensitive to price changes in Thailand. Indonesia is said to be more competitive than Thailand according to the views of Australian and US tourists. This is because the demand of both tourists to Indonesia is not as elastic as its demand to Thailand. When tourists are satisfied in a destination, the demand sensitivity to the destruction will decrease during price fluctuations. According to Blanke (2013), this will improve the position of the competitiveness of the destination compared to competitor destinations. In contrast, Thailand is said to be more competitive than Indonesia according to Japanese and British tourists.

Judging from the value of cross-price elasticity it can be seen that the competition between Indonesia and Thailand is significant to the tourists from Australia, China and Japan. Chinese tourists consider both countries complementary while Australian and Japanese tourists consider the two countries to be substitutes. Japanese tourists consider Thailand more competitive than Indonesia. When the prices of tourism in both countries decrease with the same percentage, the effect on decreasing demand for Japanese tourists in competitor countries will be greater in Indonesia than in Thailand.

According to Australian tourists, the value of cross-price elasticity between the two countries shows no significant difference. However, the high value of both cross-price elasticities indicates that Australian tourists have a high tendency to change their tourism preferences when price fluctuations occur in competing countries. The position of the competitiveness of the two countries by Singapore and Malaysia tourists cannot be determined because the majority of elasticity value is not significant. Thus, it can be concluded that the position of competitiveness between Indonesia and Thailand from the point of view of the seven countries of the tourist market varies according to the characteristics of the tourists.

#### **Indonesia Tourism Price Competitiveness to Malaysia**

The value of price elasticity shows that the sensitivity of tourists to price changes varies by country of origin of tourists (Morley, 1994; Dwyer et al. 2000; Wang, 2003; Li et al. 2004; Mangion et al. 2005). Indonesia is said to be more competitive than Malaysia from US tourists' view as demand for Indonesia is not as elastic as its demand to Malaysia. In contrast, Malaysia is said to be more competitive than Indonesia in the view of Singapore and Japan tourists.

The value of cross-price elasticity indicates that competition between Indonesia and Malaysia is significant only for tourists from China, Japan, and England. Chinese and British tourists consider Malaysia more competitive than Indonesia. When the prices of tourism in both countries decrease with the same percentage, the effect on the decline in demand of both tourists in competitor countries will be greater in Indonesia than in Malaysia. Meanwhile, according to Japanese tourists, the value of cross-price elasticity between the two countries shows no significant difference. The high value of both cross-price elasticities in UK tourists shows a high tendency to change their tourism preferences when price fluctuations occur in competitors' countries.

The position of the competitiveness of the two countries according to Australian tourists cannot be determined because the majority of the value of elasticity is not significant. Thus, it can be concluded that Malaysia has a better price competitiveness position than Indonesia, especially from the point of view of tourists Singapore, China, Japan and the UK.

## CONCLUSION

Price is the main determinant affecting the allocation of tourist spending in the three destination countries. However, the effect is not significant on tourists from Singapore and Malaysia. Revenue factors (which are proclaimed with real per capita spending) affect the allocation of tourist spending in all three destinations, except for Malaysian tourists. The global economic crisis is also a determinant affecting the allocation of expenditures on tourists in the three destinations but its influence is only significant on tourists from Malaysia, Japan and the UK.

The value of spending elasticity indicates that Indonesia, Thailand, and Malaysia are normal destinations (not inferior destinations). This means that demand for tourists to these three destinations will increase along with the increase in the total budget of tourists. The value of price elasticity indicates that the demand of tourists is elastic (sensitive) to the price, except for tourists from Malaysia. This means that the demand for tourists to the three destinations will decrease when the price increases in the destination, with the percentage of the decline in demand, is greater than the percentage increase in prices. The value of cross-price elasticity indicates a sub-institutional relationship between the three destinations. This means that tourists consider these three destinations as competitors, except Chinese travellers who consider Indonesia and Thailand as a complement. In general, price elasticity is worth more than the elasticity of the output. This means that tourist demand tends to be more sensitive to price changes compared to the total income of tourists.

The position of competitiveness between Indonesia and Thailand and Malaysia varies from the point of view of the seven countries of the tourist market. Indonesia has a better position of competitiveness compared to Thailand from the views of Australian and US tourists. Thailand has a better position of competitiveness compared to Indonesia from the view of Japanese and British tourists. Indonesia has a better position of competitiveness compared to Malaysia from the view of American tourists. Malaysia has a better position of competitiveness compared to Indonesia from Singapore, China, Japan and UK.

By knowing the position of competitiveness by knowing the position of competitiveness of Indonesia's tourism to competitor countries, it is necessary to apply different promotion strategies for each country of the tourist market in accordance with the characteristics of its demand. Some of the following policy recommendations need to be applied to improve the income of tourism sector in Indonesia. First, pricing strategies must be precise and maintain the stability of domestic inflation. This is because the demand for tourism from the seven market countries to Indonesia is price sensitive. Secondly, to monitor the prices of competing countries, especially to increase foreign exchange from Australian and British tourists, it because of the demand of both tourists is very sensitive to price changes in competitor countries. Third, the cooperation of the tourism industry in Indonesia and Thailand to be able to create attractive tour packages for Chinese tourists. This is because Chinese tourists consider Indonesia and Thailand as a complement. Fourth, the importance of providing quality tourism services and creating a conducive tourism environment (eg security factor) in order to increase the satisfaction of tourists, especially for tourists China (with low price tendencies) and Singapore and Malaysia price or income).

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