

Trade and Tourism Demand: A Case of Malaysia

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Abstract — Tourism industry can be claimed as one of the important sectors in the modern Malaysian economics development. It has been identified as second largest foreign exchange earning sector and had strengthen up the performance of Malaysia Gross Domestic Product and trade balance. Numbers of studies have been done in order to attempt the theory that there is a link between trade and tourism and most of them showed that it is positively correlated. This paper specifies tourism demand models in Malaysia and estimates demand equations using tourist inflow data for the period 1997-2008. The researchers identified that bilateral trade, population, income, tourism price and geographical distance between Malaysia and the Asian countries are the main determinants of tourism. It clearly shows that tourism demands relates significantly with the trades. With more proactive action taken by the policy maker in understanding the dynamic of this industry, Malaysia can always increase the quality of tourism industry in order to be the main center for tourism Asia region and the world beyond 2020.

Keywords - tourism, trade, economy, demand

I. INTRODUCTION

Tourism has become one of the most remarkable socio-economic phenomena. Furthermore, now it can be considered that it is a vital dimension of global integration and trade activities and has therefore become the world's largest source of foreign exchange receipts. As an evolving sector, tourism has been defined as the sum of those industrial and commercial activities which produce goods and services, and mainly consumed by foreign visitors or domestic tourists." Tourism industry can be claimed as an important sector for the Malaysia economy. It has been identified as the second largest foreign exchange earning sector and helped to strengthen the Malaysian economy in terms of international trade.

World Tourism Organization has classified tourism industry as comparable rather than export activities [1]. Researchers [2] and [3] in general have explained tourism demand by using variable such as income, tourism price, transportation costs, trade of goods and services. International trade is the most important role in generating national income.

Despite that, tourism also is a significant source of export revenues for any country in the world. International tourism is quite often the generator of international trade flows. Certain the increasing quantity of business travel, particularly in a destination where the economy is greatly driven by international business such as in Malaysia, international arrivals could be

determined by the level of business activities among the destination and its economic partners.

It is important that the government policy maker comprehend the factors affecting foreign tourism demand. There are only a small number of studies has been done in order to identify the relationship between trade and tourism. Furthermore, poor quality of research has been a continual problem in tourism studies and most of the studies merely focus on tourist flows and receipts.

II. EMPIRICAL STUDIES

International tourism also has become a major foreign exchange earner for many low-income countries and small islands, and it is a principal export for 83% of developing countries [1]. Many countries attempt to develop tourism sector and increase the number of coming visitors because of several reasons: international tourists bring foreign currency to a host country; tourism sector is much more merciful toward environment than many industries producing goods; growth in tourism industry accelerates other, related industries (retail, entertainment, transportation).

Since the September 11 event, Malaysia has become an oasis for tourists from the Middle East as it is able to provide a safe haven for Muslim tourists as an alternative to their traditional escapade to London (and Western Europe) during their hot and humid summer months [4]. The crisis named Islamophobia gave Malaysia a comparative advantage as the fear and/or hatred of Islam, Muslims or Islamic culture had encouraged the Middle East tourist to opted Malaysia rather than Europe as their travel destination.

The literature on tourism demand focuses on the determinants, as in cost of transport, price, income in tourism generating countries, and population. During the past decade or so, few econometrics models have been developed and estimated in tourism literature to identify the relationship between tourist arrivals in a particular country, and the factors that influence arrivals. In international tourism demand modeling, most of the previous studies have used the demand function approach to identify the quantitative relationships [5][6][7]. Some studies have used the gravity model approach (e.g. Witt & Martin, 1989). However, Witt and Martin point out that the gravity model approach lacks a firm theoretical foundation, and the final form of the model closely resembles the demand function.

Gravity-type models are applied in physics and have achieved increasing recognition in the analysis of economic phenomena related to the flow of goods and/or services [9]. This type of model has yet to be applied, with a proper

theoretical base to tourism demand. Although some studies may claim to have estimated a variant of the gravity model, omitted variables from the model and incorrect estimation technique bias the results’.

In this paper, the researchers estimated the impact of socio-geographical factors in the country of origin on tourism by using a gravity model. Founded by Newton, gravitation is the physical force that increases with mass and decreases with distance. In economics, gravity models have a long established history in the analysis of flow data, not least because of their strong empirical success in explaining international trade. In general, such models treat trade flows between two countries as being direct proportional to the product of their economic size (usually expressed as the absolute GDP) and inversely on the distance between them [15].

Although, the first gravity models of trade come without a theoretical foundation, this has changed. Several researchers assert that the gravity equation is a reduced form of a general equilibrium model in which countries’ income represents the productive capacity of the exporter (supply side) and the absorptive capacity of the importer (demand side), and distance approximates transport costs [4][9].

A set of potential determinants that can influence the decision to travel classified into the following categories: socioeconomic factors, such as, income level, relative prices between the origin and the destination places, demography, urbanization and length of the leisure time; technical factors related to easier communications and transport facilities; psychological and cultural factors reflecting personal preferences and the style of life of the potential travelers; and random factors related to unexpected events, like political instability, weather conditions, natural disasters, epidemic diseases, etc.

The above variables are correlated with immigration [10]. Furthermore, most of the immigrants prefer home-country products. For that reason, this phenomenon can reduce the trading transaction costs. In particular, tourism can be thought as a form of temporary international migration. Furthermore, inbound tourist could promote the tourism of their host country with their family and friends [8]. Not only that, other researchers believed that international trade theory is simply international localization theory [11]. From the above conjectures, the researchers considered that demand for travel export is equal to:

$$TA : f(GDP, RP, TRADE, POP, DIS)$$

where

- *TA* = the number of tourist arrivals;
- *GDP* = the income in tourist generation countries;
- *RP* = the relative price;
- *TRADE* = the bilateral trade;
- *POP* = the total population in tourist generation countries;
- *DIS* = the geographical distance.

Empirical literature reviews on tourism demand recommend that tourist demand is measured as in tourist arrivals and departures, with tourist arrivals as the dependent variable

[2][3][4][5][6][13]. On the other hand, empirical models of tourism demand use consumer’s income, the price of services, exchange rate, and distance as explanatory variables. A research specified an autoregressive model in demand estimation [12]. The author incorporated lagged variables to evaluate the determinants of international tourism demand. The econometric model was formulated to evaluate the international tourism demand by residents of Argentina, Brazil, Colombia and Venezuela to Aruba.

In the other hand, a research on Caribbean tourism demand empirically identified income as the most significant variable in explaining tourism demand [5]. Additionally, another researcher concluded that forecasting Portugal tourism demand is important in order to analyze the country’s economy position. The econometric methodology showed that key economic factors were vital on Portuguese tourism demand [7].

III. ECONOMETRIC MODEL

A common model used in tourism demand studies is a single equation model with demand explained by the income of tourists in their countries of origin, the cost of tourism in the destination and alternative destinations, and the substitute price variable. As to explanatory variables, the definitions of income used are usually personal disposable income or gross domestic product of the country of origin. In this study, income is measured by industrial output value, due to difficulties in obtaining figures for monthly GNP and population, or for per capita income, and even disposable income for the originating countries. Therefore, the researchers will use real income, cost of living, exchange rate, arrival from origin country, inflation rate and dummy variable (economic crisis) as the independent variables.

The dependent variable used is the number of arrivals at destination (i) from origin (j) in a given year (TA). Source from The World Development Indicators (World Bank, 2008) and INE (World Statistical Yearbook (2009) and The Tourism Compendium and Yearbook of Tourism Statistics (WTO, 2005) have been used for the explanatory variables and dependent variable respectively.

First, the researchers converted the GDP per capita in tourist countries into logarithm modes in order to find out whether tourism demand will be influenced by income in the country of origin of the tourists or not. Base on the empirical literature, the researchers expected for a positive sign. Income in the origin country is the most frequently used explanatory variable. Most researchers have relied on national income and GDP as measures for income in the origin. This paper considers that income is highly significant as a determinant of demand. Other than that, this paper is also to find out whether a trade partner is an important vehicle to expand tourism or not. In this study, trade openness is included in this analysis because arrivals on business purposes consistently made up about 11 percent on average of total arrivals to Malaysia in year 2006 [17]. For this reason, volume of trade is hypothesized to affect the demand for travel to Malaysia and it was therefore contained in the model to help explain demand.

$$\text{Log TRADE} = \frac{X_t + M_t}{\text{GDP}_m + \text{GDP}_i}$$

- X_t = the annual exports of Malaysia to the country of origin of each tourist at time t; origin at time t;
- M_t = the annual import of Malaysia from each tourist's country of origin at time
- GDP_i = the Gross Domestic Product per capita in tourist countries

Next, this research has been conducted in order to find out either population changes will positively affect the number of immigration from a particular country. A researchers showed that the level of tourism depends not only on the population of the origin country, but also on the immigrants from the destination country [14]. Therefore, population of the origin country is also part of explanatory variable. Nevertheless, most studies do not consider this variable because population tends to be highly correlated with income and at the same time will lead towards multicollinearity and autocorrelation problems. The researchers then manipulate macroeconomic variables (tourism price) and distance (transportation cost) to analyze their influence on the cost of tourist service.

$$\log(RP_{im}) = \log [CPI_m / CPI_i]$$

where CPI_m is the consumer price index in Malaysia and CPI_i is the consumer price index of origin country. The ratio will give the relative price of tourism and influences the decision for the tourist to decide whether to travel to Malaysia or not. Meanwhile, logarithm between the geographical distance and the partner country were compute in order to find out whether the cost of transports moderate the tourist arrivals [4].

IV. MODEL SPECIFICATION

This study used a panel data set between Malaysia and the Asian countries for the period of 1997-2008. The proposed panel data applies Newton's gravitational law and the gravity models are based on the gravity law of spatial interaction.

The gravity models utilized the gravitational force concept as an analogy in order to explain the volume of trade, capital flows, and migration of people among the countries in the world [15]. These models have been accepted in tourism studies as most of tourism demand researchers modified the Tinbergen Gravity Model for the purpose of estimating tourism demand [4][16]. A slight adjustment has been made by converting the variables proposed by Tinbergen in order to suit the tourism related variables.

Moreover, nearly 80 of 100 empirical studies on tourism demand or arrivals used single equation of linear and/or log linear equation [13]. As a result, estimated coefficients can be interpreted as elasticities. Therefore, the variables such as $\log(GDP_m)$, $\log(RP_{im})$, $\log(TRADE_{im})$, $\log(DIS_{im})$ and $\log(POP_{im})$ are treated as endogenous variables in this study. The log-linear model based on the modified Gravity Model for this present study is as follows:-

$$\log(TA_{im}) = \alpha + \beta_1 \log(GDP_m) + \beta_2 \log(RP_{im}) + \beta_3 \log(TRADE_{im}) + \beta_4 \log(DIS_{im}) + \beta_5 \log(POP_{im}) + u_i$$

where

- α = constant
- TA_{im} = the number of tourist arrivals in Malaysia
- GDP_{im} = the gross domestic product
- RP_{im} = the relative price
- $TRADE_{im}$ = the bilateral trade
- POP_{im} = the population
- DIS_{im} = the distance
- u_i = the error

V. FINDINGS

From the analysis, it is found that the explanatory power is quite high (Adjusted R²=0.738). All the explanatory variables are significant (LogGDP, LogTRADE, LogDIS, and LogPOP at 95%) confidence interval, with the exception of LogRP. Gross Domestic Product is statically significant, with an expected positive sign. The variables LogTRADE and LogRP are statistically significant with positive relationship with tourism demand. This outcome really shows that trade partners and relative price are crucial vehicle in order to inflate tourism demand. The coefficient of LogDIST (Distance) is negative, as expected. This result proves the justification of gravitational model and explains that high traveling cost really reduce the tourism demand. Finally, the variable population (LogPOP) finds a positive sign.

• TABLE I: THE IMPACT OF TRADE ON MALAYSIAN TOURISM DEMAND

| VARIABLES | COEFFICIENT |
|----------------------------|-------------|
| LogGDP | 0.582** |
| LogRP | -0.626** |
| LogTRADE | 0.118** |
| LogDIST | -0.572** |
| LogPOP | 0.620** |
| Adj. R ² | 0.738 |
| N | 84 |
| Durbin Watson | 0.674692 |
| nR ² = χ^2 | 61.992 |

** - statistically significant at 5% confidence intervals

A series of t-test have been applied in each independent variable against the dependent variable. From the above gravity model equation, the variables $\log(GDP_m)$, $\log(RP_{im})$, $\log(TRADE_{im})$, $\log(DIS_{im})$ and $\log(POP_{im})$ share the same significant level of 95 %. Taken as a whole, all independent variables are significant towards explaining the dependent variables and it shows that there are significant relationships between these variables. In other words, there are significant positive relationships between tourism demands with income, trade and population. On the other hand, there are significant negative relationship between tourism demand and distance and also tourism price.

F-test was used in order to verify the relationships between the independent variables (price, income, distance, population and economic crisis) as a group and the dependent variable (tourism demand). As indicated in Figure 1, the F-value

(18.0327) is more critical than the F-distribution value. Therefore, one can reject the null hypothesis and concludes with 95% confidence interval that the independent variables as a whole explained a significant changes in tourism demand. In a simple word, income, distance, population, tourism price and bilateral trade as a group have given significant effect either positive or negative towards tourism demand.

To test the White's Test, since the nR^2 value of 61.992 is lower than the 5% critical value, we can accept null hypothesis of no heteroskedasticity exists. Next, to test whether the variables have Multicollinearity problem, the variance inflation factor (VIF) analysis had been conducted. If the VIF result is less than 4, it indicates that there is no serious Multicollinearity problems occurred. As the VIF value (2.93) is less than 4 (rule of thumb), there is supporting evidence that TA_{im} is in absence of Multicollinearity.

VI. CONCLUSIONS

Any analysis of international tourism demand and the sensitivity of economic parameters in particular must be viewed with caution. There may be some unknown bias in the derived demand parameters due to the use of a small sample and that was the reason why the researchers used a modified gravity model. Thus, in order to understand the dynamic nature of tourism, the researchers constructed a log linear econometric model and the research findings confirmed the above hypothesis. The logged tourism demand showed an expected positive sign while other explanatory variables such as geographical distance and tourism price are statistically significant. These results prove that an augment technique is needed in order to understand more about the demand for tourism determinants. Thus, this study has generated new information on the affects and sensitivity of economic parameters and also their influence over demand for international tourism. As the quality of data for international travel and tourism increases, and more data become available, the methodology and the database developed in this study can be extended to obtain more vigorous parameter estimates. Basically, recommendations for further study were only intended in order to give guidelines for improvement on this research paper and for better understanding on the discussed topic.

As a conclusion, this study meets its objectives by conducting an exploratory research and identifying key economic indicators that have significant effect towards tourism industry development and performance measures for future applications. The research forms an understanding of the multitude of economic factors and issues that affect the nation's competitiveness and the effective operation of the government's strategies in the global tourism arena. To the investors and businessmen exploring good potential investment opportunities in Malaysia, this report offers a glimpse into various significant tourism related economics that local companies can take advantage on current and future world economic condition. Lastly, this paper has amply satisfied it aims and at the same time, the researchers proposed a similar study should be done using a bigger sample, more variables and current data in order to strengthen this study.

REFERENCES

- [1]. World Tourism Organisation (2002) *Tourism Highlight 2002*, Madrid: World Tourism Organisation
- [2]. Lim, C. "Review of International Tourism Demand Models", *Annals of Tourism Research*, 24 (4), 1977, pp. 835-849
- [3]. Kulendran, N, Wilson, K. "Is there a relationship between international trade and international travel", *Applied Economics*, 32, 2000, pp. 1001-1009
- [4]. Hanafiah, M.H. & Harun, M.F. "Tourism Demand in Malaysia: A cross-sectional pool time-series analysis", *International Journal of Trade, Economics and Finance*, 2010, pp 87-95
- [5]. Carey, K. "Estimation of Caribbean Tourism Demand: Issuers and Methodology", *Atlantic Economic Journal*, 19, (3), 1991, pp. 32-40
- [6]. Crouch, G. "The Study of International Tourism Demand: A Review of Findings", *Journal of Travel Research*, 33 (1), 1994, pp. 12-23
- [7]. Daniel, A, Ramos, F. "Modelling Inbound International Tourism Demand Portugal", *International Journal of Tourism Research*, 4, 2002, pp. 193-2009
- [8]. Dwyer, L, Burnley, I, Murphyand, P. Forsyth, P. "*Tourism – Immigration Interrelations*", Report Prepared for Bureau of Immigration Research, 1992
- [9]. Durbarry, R. "Tourism Expenditures in the UK: Analysis of Competitiveness using a Gravity-Based Model", Christel DeHaan Tourism and Research Institute, Nottingham University and Business School, 2000.
- [10]. Witt, S. Witt, C. "Forecasting Tourism Demand: A Review of Empirical Research", *International Journal of Forecasting*, 11, (3), 1995, pp. 447-475
- [11]. Oigenblick, L and Kirschenbaum, A. "Tourism and Immigration Comparing Alternative Approaches", *Annals of Tourism Research*, 29 (4), 2002, pp. 1086-1100
- [12]. Vanegas Sr, M. "Tourism Demand Response by Residents of Latin American Countries", *International Journal of Tourism Research*, 11, 2009, pp. 17-29
- [13]. Lim, C. "Review of International Tourism Demand Models", *Annals of Tourism Research*, 24 (4), 1977, pp. 835-849
- [14]. Witt, S. Witt, C. "Forecasting Tourism Demand: A Review of Empirical Research", *International Journal of Forecasting*, 11, (3), 1995, pp. 447-475
- [15]. Tinbergen, J. "*Shaping The World Economy*". New York: Twentieth Century Fund, 1962
- [16]. Rodrigue JP., "*The geography of transport systems*". London: Routledge; 2004.
- [17]. Malaysia Tourism Statistics, 2007