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MODELLING TOURISM DEMAND FROM UNITED KINGDOM TO MALDIVES: A COINTEGRATION ANALYSIS

HUSSAIN AUZAR, YASMIN BANI* AND SURYATI ISHAK

Faculty of Economics and Management, Universiti Putra Malaysia, Malaysia.

**Corresponding author: nor_yasmin@upm.edu.my*

Abstract: Maldives depends heavily on tourism industry. According to 2016 Tourism Yearbook, the demand for international tourism remains robust despite political and economic conflicts around the world. In 2015, tourist arrivals grew at a pace of 4% exceeding the long-term average (3.8%) for the sixth consecutive years (Ministry of Tourism, Maldives, 2016). Europe has been one of the major market generators for Maldives tourism since 1990's. At the end of 2015, United Kingdom was the third largest market with 7.5% market share behind Germany and China. The aim of this paper is to examine the short run and long run demand for tourism to Maldives by United Kingdom. Using quarterly data from 2006Q1 to 2016Q4, the paper examines the significance of the Gross Domestic Product (GDP) of United Kingdom, tourism price and cost, as well as exchange rate in determining the important factors for tourist arrivals. The paper employs a cointegration approach that is the bounds testing approach within the ARDL framework which has been used previously in tourism demand model. The findings are consistent with the theory and existing literature whereby income, tourism price and transportation cost are important determinants for tourism demand in Maldives.

Keywords: Tourism demand, Maldives, United Kingdom, ARDL, Cointegration Analysis.

Introduction

Countries around the world find that the jobs creator and the world's largest industry is the tourism industry. According to the United Nations World Tourism Organization (UNWTO), tourism contributes 10% of the world's Gross Domestic Product (GDP). International tourism is the world's largest and fastest growing sector accounting for 30% of the world's services exports and approximately 7% of total exports for goods and services. In 2015, the number of tourist arrival is 1,235 million which is an increase of 46 million from the previous year.

Tourism generates employment opportunities in the sector itself as well as many other industries. The expenditure by international tourists on goods and services in tourism destination amounted to $1,220 billion which corresponds to an increase of 2.6% from 2015 (UNWTO, 2016). This will lead to increase in worldwide employments which also include the jobs indirectly supported by the tourism sector. With the changes and increase in the income of the local people and increases in international tourist arrivals throughout the world, the demand of travelling for leisure and recreation has increased quickly. The UNWTO shows that the outbound tourism has been increasing since 1995 and will continue to rise until 2030. It is expected that tourist arrivals will reach 1.8 billion by 2030 with an increase of 3.3% between 2010 and 2030 (UNWTO, 2016). The Americas and the Asia and Pacific both recorded an impressive 8% and 9% increase in international tourist arrival in 2016 and it is expected that the growth in both regions to be around 4-5% annually.

Well known for its traditional hospitality and ultimate 'one island one resort' luxury holiday destination, Maldives is a popular tourist destination for developed countries' residents. The sunny side of life with its sand and the sea under the glorious sun which everyone adores is one of many qualities alluring tourists around the globe to this small island. Tourism contributes more than one quarter of Maldives's Gross

Domestic Product (GDP). In 2015, it provides 70% of the receipts from foreign exchange and generates 39% of the government revenue making the sector as the leading employment generator in this country. For the past 10 years, tourist arrivals have been increasing steadily with a growth of 10% annually. However, during the period of December 2004 to late 2005, the number of arrivals has decreased by 36% due to the tsunami. Despite the significant loss, the number of arrivals increase to 52.3% after 2005 (Ministry of Tourism, Maldives (MOT), 2015).

Europeans countries are the most important and highest market for tourists to Maldives. At the end of 2015, the number of arrivals from these countries accounted for 53.7% of total tourists (MOT, 2015). Among the European countries, United Kingdom (UK) is one of the key markets in the Maldivian tourism industry since 2007 representing more than 7.3% of total visitors. According to the report by Travel Daily UK (2015), the number of UK tourist arrivals in Maldives has increased to 3.6% in the first eight months of 2015 compared to 2014. The peak season will be around the European winter months where the tourists will fly abroad to escape the cold weather.

Given the importance of the industry to the Maldivian economy as well as the growth of tourist, we aim to model the demand for tourism using the cointegration analysis to analyze tourist arrivals from UK to Maldives. Specifically, we will analyze the significance of a set of tourism demand determinants. In existing literature, time series models such as the Box-Jenkins ARIMA model is used to explain the patterns and level of tourist arrivals (Dritsakis & Athanasiadis, 2000; Lim & McAller, 2001; Dritsakis, 2004). These models have been criticized as they are empirically derived but do not have explicit economic content. Thus, modeling tourist arrival using cointegration analysis allows for a simultaneous modeling with prior knowledge of the expected signs of the variables analyzed (Dritsakis & Athanasiadis, 2000; Lim & McAller, 2001; Dritsakis, 2004).

The paper is organized as follows: Section 2 briefly review the related literature and Section 3 describes the data and empirical model adopted in this study. Section 4 discusses the results and the final section concludes the study.

Tourism

Existing literature on tourism demand uses time series and forecasting methods to examine and predict the demand for international tourists. Some studies use panel data and focus on developed countries like Australia, Japan and Greece (Lim & McAleer, 2001; Dritsakis, 2004; Asemota & Bala, 2012). Others focus Asian countries like Thailand, Singapore and Malaysia (Kadir & Karim, 2009; Habibi *et al*., 2009; Kusni *et al*., 2013; Song *et al*., 2003). Although Maldives's tourism is the main contributor for its economic growth, studies that focus on Maldives as destination country are limited and scarce. The existing studies on Maldives focus more on the volatility and uncertainty of tourism demand although analyzing the determinants of international tourism is important for policy improvement and formulation. There is a need to examine and understand the factors that determine the number of international tourists to Maldives; hence, this study fills in the gap.

Shareef and McAleer (2007) study is probably the first paper that studies tourism demand in Maldives. The paper examines the uncertainty of monthly tourist arrivals from eight major markets in January 1994 until December 2003. Specifically, the paper focuses on estimating the conditional correlations to test whether there is specialization, diversification or segmentation in the tourism demand shock from those eight countries. Another paper from Shareef and McAleer (2008) models the country spillovers effects of weekly international tourist arrival between Maldives and Seychelles using four different types of spillover. The empirical results show that there is a strong influence of weekly tourist arrivals from German and French to Maldives in the both time frames. However, the British tourist arrivals affect both countries only in the long run. The above-mentioned

studies employ the Generalize Autoregressive Conditional Heteroskedasticing (GARCH) model to analyze the volatility and uncertainty of the time series in Maldives tourism. Riza and King (2010) estimate a single equation model in which tourism demand depends on a set of macroeconomics factors. The countries examined are the five largest markets to Maldives over the period 1988Q1 to 2003Q4. The results show that travel to Maldives is a luxury good while war and terror have adverse effect on tourist arrivals in three sampled countries.

Different approaches and variables have been used to model or analyze the determinants of international tourism. Most published papers use time series data while few of them utilize dynamic panel data model. Muchapondwa and Pimhidzai (2011) for example, use ARDL approach to examine the determinants of tourist arrival to Zimbabwe in 1998 to 2005. Transport costs and changes in global income have significant impact on tourism demand. The authors suggest that the authorities should improve the facilities and infrastructure as well as invest in good marketing policy to promote Zimbabwe to the rest of the world. Lim and McAleer (2001) on the other hand use cointegration approach to investigate the long run quarterly tourist demand in Australia by Hong Kong and Singapore tourists for the period of 1975 to 1996. Two different periods are considered for the two countries and several proxies for incomes of tourist are examined to analyze the relationship. They concluded that there is a long run equilibrium relationship between international tourism demand and the factors examined in both countries.

Similarly, Dritsakis (2004) analyze the demand for German and British tourists in Greece. Using a set of macroeconomic variables which includes income and tourism prices, the author finds that there exists a long run relationship between international tourist arrivals and the examined macroeconomics factor within the time period considered. Narayan (2004) examines the demand for Fiji's tourism using ARDL from 1970 to 2000. The results demonstrate that income, relative hotel and substitute destination price have long run relationship between tourist arrivals. Asemota and Bala (2012) study the determinants of tourism demand in Japan from five Western countries (Canada, United Kingdom, Germany and Australia) from 1962 to 2009 using cointegration and error correction model approach. From the study, it can be concluded that GDP per capita in the origin country is the most significant factor that determine the demand for tourism in the short and long run.

A growing number of studies focus on the demand for tourism in developing countries. For example, Lelwala and Gunaratne (2008) study tourist arrivals from United Kingdom to Sri Lanka. The study does not find any short run relationship, but income of United Kingdom and exchange rate are positively related in the long run. In a recent study, Hor (2015) uses the same approach to study the factors that determine the demand for tourist in Cambodia from 12 countries using annual time series from 1994 to 2013. Among the twelve countries examined, only five countries show a long run relationship between the price level, unemployment rate and population growth and tourism demand. Lin *et al*. (2015) take a different approach by examining the demand for outbound Chinese tourists to 11 international destinations and forecasting the relationship up to the year 2020. Two important factors were identified from the study, which are the income level and the cost of staying at an international tourism destination.

In addition to the above approach, some papers use panel data model because of its advantage. Panel data incorporates both time series and cross-sectional data. This approach reduces multicollinearity problem and increases the degrees of freedom. Thus, this method is suitable to forecast tourism demand when both time series and cross-sectional data are available. Garin-Munoz (2006) studies the demand for international tourist to Canary Islands over the period 1992 until 2002. This study considers 15 countries and concludes that income, relative price and cost of travel between the countries are important factors that determine the numbers of tourist arrivals. Another evidence of panel

data is the study on the demand of international tourist in Romania by Surugiu *et al*. (2011). Using Fixed Effect and Tobit model, the paper analyzes the effect of GDP, trade, population and price on tourist inflow from 23 European countries for the period of 1997 until 2008. It concludes that all the variables considered are important determinants of tourism demand. Massidda and Etzo (2012) use dynamic panel data method to determine the factors that affect Italian domestic tourism demand. The authors find that relative prices and GDP per capita are the main determinants for Italian tourism. In addition, Southern tourists concern more on GDP and environmental quality compared to Northern tourists.

Data and Emperical Model

As analyzed by Song and Li (2008), most tourism demand modelling use secondary data to analyze the relationship. Authors choose various variables relevant to the objectives of study and background. However, the most popular measure of tourism demand is tourist arrival. According to the World Bank (2017), tourist arrival measured "the number of tourists who travel to a country other than their usual residence and outside their usual environment for less than a year" (WDI, 2017). The variable has been used by existing studies for example, Lim and McAleer (2001); Dritsakis, (2004) and Asemota and Bala (2012). There are also studies that use tourism expenditure such as Li *et al.* (2004, 2006) and tourism revenue such as Akal (2004), but this study uses the number of tourist arrivals as other tourism demand variables are difficult to obtain and incomplete for Maldives.

To analyze the tourism demand to Maldives from UK, we employ an empirical model that follows Lim and McAleer (2001), Dritsakis (2004), Narayan (2004) and Lin *et al*. (2015). The relationship can be illustrated by the function below:

$$TD = F(Y,TP,TC,ER) \qquad \text{Equation 1}$$

The above function describes that Tourism demand (TA) is determined by four different factors; income (Y), tourism price (TP), transportation cost (TC) and exchange rate (ER). The formulated functional form model is then converted to a log-linear model specified below:

$$LTA = \mu_0 + \beta_1 LY + \beta_2 LTP + \beta_3 LTC + \beta_3 LER + \varepsilon_t \qquad \text{Equation 2}$$

The variables are expressed in logarithms to capture multiplicative time series effects as suggested by Dritsakis (2004). We are interested in the quarterly demand; thus, the sample period will be from 2006Q1 to 2016Q4.

Income: The income variable is the real GDP per capita for the origin country (UK) in constant 2010 price. Income of the origin country is an important determinant in tourism demand as higher income will induce more vacations and leisure, thus increasing the number of tourists. It has also been included in existing literature mentioned briefly in the literature review. Hence, we expect a positive relationship between income and tourism demand.

Tourism Price: Tourism prices is the cost of goods and services spent by UK tourists in Maldives and are proxied by relative prices. The relative price is calculated as the ratio of the Consumer Price Index (CPI) of Maldives and UK. The logarithm of relative price is the difference between the logarithm of CPI in Maldives and UK for the sample period.

$$LTP = log\left[\frac{CPI(Maldives)}{CPI(UK)}\right]$$

$$= log\ CPI\ (Maldives) - \log\ CPI\ (UK) \qquad \text{Equation 3}$$

Tourism price determines the cost of living for UK tourists in Maldives during their visit. If the cost is high, the number of tourists will decrease. Thus, we expect a negative relationship between tourism price and demand which follows the law of demand.

Transportation Cost: Transportation cost refers to total expenses for transportation from origin country to the destination. This is usually measured or proxied by airfares between origin country and Maldives. Since Maldives is only accessible by air from UK, airfares is the most suitable variable. However, due to the unavailability of economic airfares between UK and Maldives, we must choose different variable to proxy transportation cost. Following Garin-Munoz (2006) and Salleh *et al*., (2007), we use the price of crude oil to represent transportation expenses. We expect a negative relationship like tourism price.

Exchange Rate: The exchange rate is the price of destination country in terms of country of origin. The inclusion of exchange rate is to account for changes of tourism demand due to appreciation or depreciation of tourists' currency. If the Pound Sterling appreciates against Maldivian Rufiyaa, it will induce more trips, hence we expect a positive relationship between the variables. The exchange rate is calculated as:

$$ER = \frac{Cost\ of\ Maldivian\ Rufiyaa}{GB\ Pound\ Sterling} \quad \text{Equation 4}$$

There are also other determinants that are considered as important factors affecting the demand of tourism in existing literature such as substitute destination price, natural disaster, marketing expenditure or consumer preferences. However, the above-mentioned variables are hard to measure and if available, the data is insufficient for our analysis. Therefore, we are not considering these variables. The exclusion of these variables does not affect the goodness of fit of our model as shown by the value of R^2.

This study adopts the Autoregressive Distributed Lag (ARDL) method of estimation for the cointegration introduced by Pesaran *et al*. (2001) to test the existence of the short and long run relationship between the variables. The ARDL is chosen because our sample is small (44 observations) and it can incorporate both stationary (I (0)) and non-stationary (I (1)) variables in one regression. However, in order to have a better model, the dependent variable should be I (1) and none of the variables are I (2). The ARDL cointegration test should be performed first and the constructed error correction model for the unrestricted UECM) error correction to obtain the shortrun elasticities will be as follows:

$$\begin{aligned}\Delta LTA = {} & \mu_0 + \sum_{i=1}^{n}\beta 1\, i\, \Delta LTA_{t-i} + \sum_{i=0}^{n}\beta 2\, i\, \Delta LY_{t-i} \\ & + \sum_{i=0}^{n}\beta 3\, i\, \Delta LTP_{t-i} + \sum_{i=0}^{n}\beta 4\, i\, \Delta LTC_{t-i} \\ & + \sum_{i=0}^{n}\beta 5\, i\, \Delta LER_{t-i} + \alpha_1 LTA_{t-i} + \alpha_2 \\ & LY_{t-i} + \alpha_3 LTP_{t-i} + \alpha_4 LTC_{t-i} + \alpha_5 \\ & LEXR_{t-i} + \varepsilon_t\end{aligned}$$

Equation 5

If the variables are cointegrated, then we can proceed to the long run and short run estimations. The long run model is as follows:

$$\begin{aligned}\Delta LTA = {} & \rho_0 + \sum_{i=1}^{n}\rho 1\, i\, \Delta LTA_{t-i} + \sum_{i=0}^{n}\rho 2\, i\, \Delta LY_{t-i} \\ & + \sum_{i=0}^{n}\rho 3\, i\, \Delta LRP_{t-i} + \sum_{i=0}^{n}\rho 4\, i\, \Delta LTC_{t-i} + \\ & \sum_{i=0}^{n}\rho 5\, i\, \Delta LEXR_{t-i} + \eta_t\end{aligned}$$

Equation 6

The optimal lag length in Equation (6) is selected using Schwartz Bayesian Criterion (SBC) as suggested by Pesaran *et al*. (2001). In the presence of cointegration, the following ARDL Error Correction Model (ECM) is estimated:

$$\begin{aligned}\Delta LTA = {} & \eta_0 + \sum_{i=1}^{n}\eta 1\, i\, \Delta LTA_{t-i} + \sum_{i=0}^{n}\eta 2\, i\, \Delta LY_{t-i} \\ & + \sum_{i=0}^{n}\eta 3\, i\, \Delta LRP_{t-i} + \sum_{i=0}^{n}\eta 4\, i\, \Delta LTC_{t-i} + \\ & \sum_{i=0}^{n}\eta 5\, i\, \Delta LER_{t-i} + \gamma_{ECM} + \vartheta_t\end{aligned}$$

Equation 7

The coefficient of the error correction model (γ) measured the speed of adjustment. The ECM is the residuals obtained through the application of the cointegration model. The speed of adjustment will explain the time taken by the system to return to the long run equilibrium after a random shock. The expected sign should be negative to indicate convergence.

Results and Discussion

Unit Root Test

Before testing for the cointegration of the variables in the model, a stationary test is necessary. Thus, we conduct the unit root test to examine the stationarity of the variables. We use the Augmented Dickey-Fuller (ADF) test and the Phillip Perron (PP) test for robustness. The ADF and PP tests should suggest that all variables are integrated at level (I (0)) or order one (I (1)) to validate the use of ARDL method.

Table 1 presents the ADF and PP test results for tourist arrival, GDP per capita, tourism price, transportation cost and exchange rates. The ADF and PP test statistics show that all the variables are non-stationary at level. However, all the variables become stationary after first differencing at 1% level of significance. This result indicates that the series are integrated at the same order, namely order one or I (1).

ARDL Bound Test

We proceed to test the joint null hypothesis of the variables in order to establish the long run equilibrium relationship among them. Our null hypothesis is given as H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ while the alternative hypothesis is Ha: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 \neq 0$. The null hypothesis suggests the absence of cointegration while the alternative indicates the existence of cointegration among variables.

Table 1: Unit Root Test

Panel A: Unit Root Test for Variables in Level				
	Augmented Dickey Fuller (ADF)		**Phillips Perron (PP)**	
Variables	**Intercept**	**Intercept and Trend**	**Intercept**	**Intercept and Trend**
LTA	-1.911)	-1.884	-9.128	-8.812
	(0.324)	(0.644)	(0.000)***	(0.000)***
LGDP	-0.316	-2.478	0.065	-1.637
	(0.914)	(0.337)	(0.959)	(0.7614)
LTP	-1.678	-0.844	-1.680	-0.907
	(0.435)	(0.953)	(0.434)	(0.946)
LTC	-1.800	-2.012	-1.970	-2.091
	(0.376)	(0.575)	(0.300)	(0.536)
LER	-2.210	-2.158	-1.686	-1.655
	(0.206)	(0.500)	(0.431)	(0.754)
Panel B: Unit Root Test for Variables in First Difference				
	Augmented Dickey Fuller (ADF)		**Phillips Perron (PP)**	
Variables	**Intercept**	**Intercept and Trend**	**Intercept**	**Intercept and Trend**
LTA	-2.908	-2.568	-10.138	-9.904
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
LGDP	-3.280	-3.359	-3.249	-3.359
	(0.022)**	(0.071)*	(0.024)**	(0.071)*
LTP	-6.596	-7.021	-6.632	-7.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
LTC	-5.350	-5.316	-5.542	-5.971
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
LER	-4.545	-4.553	-4.383	-4.394
	(0.000)***	(0.000)***	(0.001)***	(0.006)***

Note: The values in brackets are p-values. ***significant at 1% level, **significant at 5% level, *significant at 10%

In order to establish the existence of cointegration between tourist arrivals and the independent variables, we estimate the value of F-statistics of the model and compare with the critical bound′s values of Narayan (2005). Cointegration exists if the value of the F-statistics is greater than the value of upper bound. The outcome is inconclusive if the F-statistics falls between the upper and the lower bounds value. The value of F-statistics (16.079) in Table 2 is higher than the upper bound value (6.250) of Narayan (2005) table which is significant at 1% level. Therefore, it indicates that the variables are cointegrated.

Long Run and Short Run Coefficients

The long run and short run coefficient estimates are presented in Table 3 and Table 4. From Table 3, we can see that in the long run, the GDP of UK has a positive impact on tourist arrivals in Maldives and the result is significant at 5% level. The result indicates that a 1% increase in income of British residents, the number of British tourists to Maldives will increase by approximately 0.703%. This implies that when there is an increase of income, British tourists would increase their leisure consumption by having a vacation in Maldives. The result is also consistent with the law of demand for normal good; higher income will lead to higher demand. The finding also corroborates existing literature for example Riza and King (2010), Dristakis (2004), Narayan (2004) and Asemota and Bala (2012) among others.

Tourism price is negative and significant which imply that increase in tourism cost in Maldives decreases tourism demand by UK residents. Specifically, a 1% increase in cost will lead to a decrease of 0.557% in UK tourist arrival. This is also consistent with law of demand as price of goods and services increase, the demand of that goods and services will decrease. Existing literature that find similar findings are Garin-Munoz (2006), Salleh *et al*. (2007), Muchapondwa and Pimhidzai (2011) and Liu *et al*. (2015) among others.

Another significant determinant for Maldives tourism demand by UK residents is transportation cost. This is consistent with Garin-Munoz (2006) and Salleh *et al*. (2007) where the cost is negatively related to tourist arrival. If tourists have to spend more on transport, then it will discourage them to travel abroad. However, the elasticity for transportation cost

Table 2: Bound Test

F-statistic:		
16.079 [0.000]* **	Bound Critical Values (unrestricted intercept and no trend)	
Significance Level	**I(0)**	**I(1)**
1%	**4.428**	**6.250**
5%	3.202	4.544
10%	2.660	3.838

Table 3: Longrun Elasticities

Lag Structure	**(4,0,1,4,2)**	
Dependant Variable	**LTA**	
Independent Variables	**Coefficient**	**t-statistic [p-value]**
LGDP	0.703	2.707[0.012]**
LTP	-0.557	-5.503[0.000]***
LTC	-0.072	-1.746[0.094]*
LEXR	-0.099	-1.223[0.233]
Constant	7.221	6.300[0.000]***

Note: ***significant at 1% level, **significant at 5% level, *significant at 10% level

is lower than tourism price. A 1% increase in transportation expenses decrease the demand by 0.072%. Finally, the exchange rate does not have significant impact on UK tourist arrival.

The result of the error correction model is presented in Table 4. It indicates that in the short run, income of UK residents does not have significant impact on tourism demand. The effects of tourism price and transportation cost are the same as in the long run. Increases in costs will lead to the decrease in number of tourists. Exchange rate is still insignificant in the short run. The lagged error correction term (ECM_{t-1}) is -0.695 which is negative and significant at 1% level. This confirmed the cointegrating relationship and suggest that the speed of adjustment of the variables to converge from short run to long run equilibrium is 69.5%.

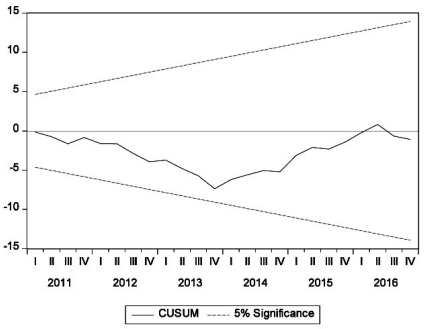
We conduct several diagnostic tests to confirm the stability and reliability of the model. The results are displayed in Table 4 below. The table shows that we do not reject the null for serial correlation which suggests that the model is free from autocorrelation. The regression also passed the remaining tests where the model is correctly specified, homoscedastic and the residuals are normally distributed. The stability test which is based on the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) is illustrated in Figure 1 and Figure 2. To ensure the model is stable, the residuals must be between the straight lines of the critical bounds of 5% significance level. Thus, we can conclude that the model specified in this paper is stable over the sampled period.

Table 4: Error Correction Model and Diagnostic Tests

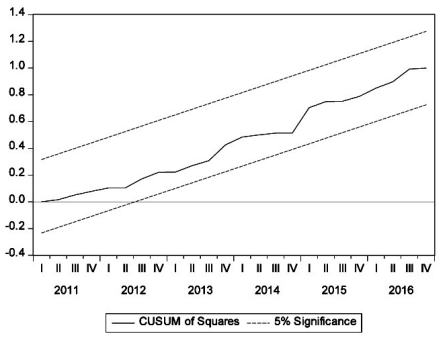
Variables	**Coefficient**	**t-statistic[p-value]**
ΔLTA_{t-1}	0.441	3.119 [0.005]**
ΔLTA_{t-2}	-0.154	-1.724[0.098]**
ΔLTA_{t-3}	-0.406	-6.456[0.000]***
ΔLY	0.506	2.623[0.018]***
ΔLTP	-1.007	-2.380[0.026]**
ΔLER	-0.401	-0.453[0.622]
ΔLER_{t-1}	0.736	-0.564[0.071]
ΔLTC	-0.084	-1.938[0.065]*
ΔLTC_{t-1}	-0.108	-2.523[0.019]**
ΔLTC_{t-2}	-0.017	-0.407[0.688]
ΔLTC_{t-3}	-0.208	-5.359[0.000]***
ECM_{t-1}	-0.695	-9.477[0.000]***
	Diagnostic Tests	
Normality (Jacque Bera)	0.284	0.868
Serial Correlation (Breusch-Godfrey)	1.051	0.316
Heteroskedasticity (Breusch-Pagan-Godfrey)	0.933	0.544

Stability

CUSUM
(Figure 1)



CUSUMSQ
(Figure 2)



Note: ***significant at 1% level, **significant at 5% level, *significant at 10% level

Conclusion

The relationship between tourism demand and other macroeconomics variables have received considerable attention in empirical research. As tourism is the main and important industry in Maldives, it is of interest to analyze the determinants of tourism demand by one of the main source markets namely United Kingdom. Using bounds testing approach to cointegration, we examine the relationship between income, tourism cost, exchange rate and UK tourist arrival in Maldives during Q12006 to Q42016. The approach allows us to estimate and test the short run and long run equilibrium of the relationship. We conclude that there are three main determinants of tourism demand for UK tourists. In the long run, the results suggest that income in the country of origin is positively related to the demand for tourism in Maldives with an elasticity of approximately 0.702%. Increase in tourism price is negatively related to tourist arrival which demonstrates that UK tourists hold their vacation when the cost becomes higher. Transportation cost is also significant where an increase in this cost would lead to decrease in the number of UK tourist′s arrival. The results are similar in the short run. Higher price and cost discourage UK tourists to travel to Maldives, while higher income would induce more leisure, thus increasing the number of tourists. On the other hand, exchange rate is insignificant in both time frames, suggesting that there is no impact of exchange rate on number of tourists. The findings of this study could be used as references to evaluate tourism demand to Maldives for other major growing markets. In addition, this study can also be a fundamental guide for policy makers as well as tourism operators in Maldives for future planning. However, it should be noted that this study has its own limitation. We do not consider other costs, airfares and substitute price destination which could have significant influence on the specified model. In addition, the study focuses

specifically on quarterly tourist arrivals since tourism in Maldives is seasonal. Hence, future research on Maldivian tourism may want to focus on other travelling and holiday expenses as well as expanding the analysis to annual tourism demand.

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