INTERNATIONAL TOURIST ARRIVALS FROM CHINA TO MALAYSIA: AN EMPIRICAL ANALYSIS

N.S. M.Nasir[1], N. Kadir[2] and S. Nayan[3]

Faculty of Business Management[1]
Universiti Teknologi MARA (UiTM) Malaysia
43400 Shah Alam, Selangor, Malaysia

Department of Economics, Faculty of Business Management[2]
Universiti Teknologi MARA (UiTM) Malaysia
02600 Arau, Perlis, Malaysia

School of Economics, Finance and Banking[3]
College of Business, University Utara Malaysia
06010 Sintok, Kedah, Malaysia

ABSTRACT

In line with the Malaysia Tourism Transformation Plan 2020, this study attempts to investigate the determinants of tourism demand in Malaysia by tourists from China. Based on monthly time series data (1995 to 2013), the study employed co-integration and error correction technique in examining the determinants of tourism demand in Malaysia by tourists from China. The findings reveal that income is significant in determining international tourist arrivals from China. As for the alternative destination, the result shows that Thailand is a substitute destination whereas Singapore is a complement destination for Malaysia. Therefore, increase in the prices of tourism in Thailand will increase tourist arrivals from China to Malaysia while a decrease in the prices of tourism in Singapore will increase tourists' arrivals from China to Malaysia.

Keywords: similarity solutions; boundary layer; heat transfer; stretching cylinder

Introduction

Malaysia has long been one of the world's best-kept tourism secrets. It is an ideal tourism destination in many different respects since it offers a wide range of diverse attraction at relatively affordable prices. Lying just north of the equator, Malaysia is located at the south of Cambodia and Vietnam and north of Singapore and Indonesia. More than one thousand islands are part of Malaysia with some 38 designated as marine parks. Parts of the primeval rainforest are more than 100 million years old with a dazzling selection of birds and wildlife. Malaysia has superb golden beaches, lush vegetation, mountains and fabulous shopping allied to some magnificent hotels. This has made the country the fastest growing destination in South East Asia.

Tourism industry has been an important contributor to the Malaysian economy. Before its dependence in 1957, the Malaysian economy was heavily dependent on primary commodities mainly tin, rubber, palm oil and petroleum products. Tourism industry effects positively on the Malaysian economy through an increase in foreign exchange earnings, and employment opportunities. Many countries attempt to develop tourism sector and increase the number of incoming visitors because of several reasons, for instance, international tourists bring foreign currency to the host country. As with other countries in the world, tourism industry can be claimed as an important sector for the Malaysian economy. It has been identified as the second largest foreign exchange earning sector and helped to strengthen the economy.

Given the highlighted issues, the main objective of this study is to investigate the long-run relationship between tourism demand and factors that influence tourism demand in Malaysia by tourists from China using co integration tests and error correction models.

The present paper is organized as follows: section 2 provides the review of related literature. Section 3 outlines the data and methodology employed. Section 4 present results and discussions and section 5 concludes.

Literature review

Since the empirical works of Syriopoulos (1995) and Kulendran (1996), the number of international tourism demand studies using co integration analysis has grown considerably (Seddighi and Shearing 1997; Song and Witt 2000; Kulendran and Witt 2001; Lim and McAleer 2002; Song et al., 2003a, b; Dritsakis 2004). All these studies showed the importance of econometric models on tourism demand analysis. It represent a meaningful tool of elaborating strategies for destinations and providing researchers with valuable insights in which help tourists in making their decision about the destination choice. In traditional tourism demand analysis, the most popular method is Ordinary Least Aquare (OLS) , which has been used since 1960s. OLS is a static analysis method which rely heavily on the assumption of Classical Linear Regression Model (CLRM).

However, there are caution that should be considered when dealing with time series data by using static analysis since such analysis are using non-stationary series data which may lead to invalid regression estimation. In order to overcome the problem, the data used in regression should be stationary. Most researchers applied dynamic analysis after the mid 1990's in order to overcome the problem. Amongst the most popular methodologies in tourism field is the cointegration method. This method was introduced by Engle and Granger (1987) and has proved to be a useful tool in avoiding spurious regression when working with non stationary time series data in econometric modelling. Besides Engle and Granger, there were also other cointegration analysis approaches. Among them are Johansen and Juselius multivariate cointegration (1990) and Pesaran and Shin (1999) framework.

There are a large number of studies focusing on international tourism demand. For example, Algieri (2006) used the Vector Autoregressive (VAR) model to investigate the determinants of tourism demand in Russia. The result shows there is a long run co integration relationship between Russian tourism receipts, real exchange rates, world Gross Domestic Product (GDP) and air transport price. On the other hand, Song and Witt (2003) in investigating tourism demand in Thailand from seven major countries using the Autoregressive Distributed Lag (ARDL) model found that the September 11, 2001 incident in the US, the Iraq war in 2003, and the SARS epidemic in 2003 are significant in affecting international tourism demand to Thailand.

Moreover, Banerjee et al. (1993) in their study found that Error Correction Model (ECM) can be derived from ARDL through simple linear transformation. The ECM integrates the short run dynamics with the long run stability without losing the long run information. Besides, Kulendran and Witt (2001) in estimating international tourism by using various methodologies compared the least squares models with the co integration models. They found that result from co integration methods were more accurate than those generated by the least square regression. In the same vein, Li et al. (2005) reviewed 84 empirical studies of international tourism demand. The result showed that applications of advanced econometric methods improve the understanding of international tourism demand.

Further, Halicioglu (2004) in examining tourism demand for Turkey by using time series data found that total tourists arrivals into Turkey significantly affect by world income, relative prices, transportation cost and the result also revealed that income was the most significant variable. On the other hand, Salleh et al., (2008) studied Asian tourism demand for Malaysia found that tourism price, travel costs, prices of tourism substitutes and income were the major determinants of tourism demand for Malaysia. Besides, Kadir and Karim (2009) in their study on demand for tourism in Malaysia by tourists from UK and US indicates that price of tourism in Malaysia, price of tourism in substitute destination (Singapore, Thailand, and Philippines), and income of UK tourists are significantly in affecting international tourists arrival to Malaysia.

Methodology

Data

In examining international tourism demand from China to Malaysia, tourists arrivals from China (origin country) are chosen as a proxy for international tourism demand. The tourism demand models usually borrow from consumer theory which assumes that the optimal consumption level depends on the consumer's income, price of good, price or related goods and some other factors. The relation A = f(Y, P, T, ER) expresses tourists arrival (A) from origin country as a function of real income per capita (Y), tourism prices (P), transportation costs (T), and exchange rates (ER) between origin and destination currencies. This study employ monthly time series data (1995-2013).

This study used monthly time series for the period 1995-2013. The data for this study are obtained from Malaysia Tourism Promotion Board (2014), Annual report of Bank Negara Malaysia (various issues), and International Financial Statistics Database.

The selections of independent variables are based on previous empirical studies (Kulendran, 1996; Lee et al., 1996; Song and Witt 2000, Salman 2003 and Kadir and Karim, 2009). Usually, the tourism demand function is estimated in a log-linear single equation model, where both dependent and independent variables are expressed in logarithms form. It is usual to apply this transformation to economic variables as it reduces heteroskedasticity and makes the variables to be consistent. The use of logarithm enables the estimated coefficients to be interpreted as elasticities. Recent empirical studies that have adopted this functional form are Song and Witt (2000), and Dritsakis (2004). The following model is used to estimate the tourism demand by tourists from China to Malaysia:

$$\ln TAR_{jt} = \beta_0 + \beta_1 lnCPIMas_{it} + \beta_2 lnCPISgp_{it} + \beta_3 lnCPIInd_{it} + \beta_4 lnCPIThd_{it} + \beta_5 lnY_{jt} + \beta_6 REER_{ijt} + \beta_7 DAFC + \beta_8 DGEC + \varepsilon_{it} \quad (3.1)$$

where the sub index *j* is for countries, *t* is for time and ln denotes natural logarithm (log).

$\ln TAR_{it}$	= Log of the number of tourist from the country of origin,*j* to country *i*, Malaysia
$lnCPIMas_{it}$	=Log of relative tourism price in Malaysia for country of origin,*j* to Malaysia in year *t*.
$lnCPISgp_{it}$	= Log of the substitute price in Singapore for a tourists from country of origin *j* at time *t*.
$lnCPIInd_{it}$	= Log of the substitute price in Indonesia for a tourists from country of origin *j* at time *t*.
$lnCPIThd_{it}$	= Log of the substitute price in Thailand for a tourists from country of origin *j* at time *t*.
lnY_{jt}	= Log of industrial production index in country *j*.
$REER_{it}$	= exchange rate between the country of origin and Malaysia at time *t*.
$DAFC$	= Dummy variable: to capture the effect of for Asian financial crisis, taking the value of 1 if observation in 1997: 9 to 1994:12 and 0 if otherwise.
$DGEC$	= Dummy variable: to capture the effect of for Global economic crisis, taking the value of 1 if observation in 2007: 8 to 2008:12 and 0 if otherwise.

Unit root test

The first step in carrying out the co integration analysis is to conduct the unit root tests. The purpose of conducting unit root tests is to verify the stationary properties of the time series data and to avoid spurious regressions. A series (y_t) is said to be integrated of order 1 (unit root) denoted as I (1). If the series is stationary in level without having to be first differentiated, then it is said to be I (0). The augmented Dickey-Fuller test (ADF) is the most commonly used criteria in time series econometrics to test for the presence of unit roots. The ADF test then is based on the auxiliary regression of the form:

$$\Delta y_t = \alpha + \delta t + \beta y_{t-1} + \sum_{i=1}^{k} \psi_i \Delta y_{t-i} + u_t \quad (3.2)$$

The ADF tests for testing unit root in y_t, namely the logarithm of tourists arrival, relative prices of tourism, income, exchange rates, and costs, at time t; t denotes the deterministic time trend; Δy_{t-1} are the lagged first differences in order to accommodate serial correlation in errors, u_t; and α, δ, β and ψ are the parameters to be estimated. The null and alternative hypothesis for a unit root in y_t are :

$$H_0 : \beta = 0, \qquad H_1 : \beta < 0.$$

The number of lags in the ADF test is determined by using the Schwarz information criteria and an initial maximum lag length of 4 is used in the test. The criteria evaluate the significance of the fourth lag using the *t* statistic that is associated with the lag and sequentially reduce the lag until a significant lag is obtained.

Cointegration test

Co integration came to the attention of time series econometrics through the work of Engle and Granger (1987) and Johansen (1988) seminal papers. Co integration test is conducted to discover if there is any long-run relationship between two or more non-stationary time series. The existence of long run or equilibrium relationship among a set of non-stationary time series implies that their stochastic trends must be linked. Separately, the series may drifts or wander apart, but in the long run they will move together to restore equilibrium, since, equilibrium relationship means that the variable cannot move independently of each other. According to Enders (2004), this linkage among the stochastic trends necessitates that the variables are co integrated.

Co integration techniques have been successfully applied to model tourist data of a number of countries. Work by Lim and McAleer (2002) apply co integration method to model tourist arrivals from Malaysia to Australia. Their empirical results support a long-run equilibrium relationship among the international tourism demand, transportation costs and exchange rates. On the other hand, Kadir and Karim (2009) also used the co integration method to model demand for tourism in Malaysia by UK and US tourists and finds evidence supporting cointegration. Besides, Choyakh (2009) also finds evidence supporting co integration of tourism demand in Tunisia. Other studies that have also apply cointegration to model tourism demand includes work by; Algieri (2006) using Russia as a destination, Daniel and Ramos (2002) focused on Portugal, Dritsakis (2004) examined the case of Greece, Kulendran and Wilson (2000) and Lim and McAleer (2001a) focused on Australia, Narayan (2004) examined the case of Fiji, Salman (2003) focused on Sweden and Denmark as destination countries respectively. In this study, we shall apply the co integration test to model international tourism flow into Malaysia from China.

Error correction model

The error correction model help to capture the rate of adjustment taking place among the various variables to restore long-run equilibrium in response to short-term disturbances in the demand for tourism in Malaysia. It captures the dynamics of both short-run and long run adjustments (Banerjee et al., 1993).

$$\Delta \boldsymbol{Y_t} = \sum_{k=i}^{p-1} \Gamma_k \Delta Y_{t-k} + \Pi Y_{t-k} + \varepsilon_t \quad (3.3)$$

where *Yt* is a column vector of m variables, Γ and Π represent coefficient matrices, Δ is the first difference operator, while P represents the lag length. There exists no stationary linear combination of variables if Π has zero rank. If, however, the rank r of Π is greater than zero, then there exists r possible stationary linear combination.

According to Engle and Granger (1987), Π may be decomposed into two matrices α and β, such that $= \alpha\ \beta$. The co integration vector β has the property that $\hat{\beta}Y$ is stationary even though *Y*, is non-stationary. The co integration rank, r, can be formally tested using the maximum eigenvalue (λ_{max}) test and the trace test (λ_{tr}). The asymptotic critical values are provided in Johansen and Juselius (1990).

Thus, according to the Granger representation theorem, in the presence of a co integration relationship among variables, a dynamic error correction representation of the data exists. By following Engle and Granger (1987), we estimate the following short-run model:

$$\Delta \ln TAR_t = \beta_0 + \sum_{i=0}^{p} \beta_1 \ln CPIMas_{t-i} + \sum_{i=0}^{p} \beta_2 \ln CPISgp_{t-i} + \sum_{i=0}^{p} \beta_3 \ln CPIInd_{t-i} + \sum_{i=0}^{p} \beta_4 \ln CPIThd_{t-i} + \sum_{i=0}^{p} \beta_5 \ln Y_{t-i} + \sum_{i=0}^{p} \beta_6\ REER_{t-i} + \sum_{i=0}^{p} \beta_7\ DAFC_{t-i} + \sum_{i=0}^{p} \beta_8 \ln DGEC + \delta_1 EC_{t-1} + \mu_t \quad (3.4)$$

Where μ_t is the disturbance term; EC_{t-1} is the error correction term which is generated from Johansen multivariate procedure, and *P* is the lag length. The long-run relationship is captured by the lagged value of the long-run error correction term and is expected to be negative in reflecting how the system converges to the long-run equilibrium. Convergence assured when δ_1 is between zero and minus one.

Empirical results and discussions

In order to estimate the long-run relationship among the variables by using the co integration approach, firstly, we need to examine the stationary properties of the time series data in order to avoid spurious regression. The result of the ADF test for the tourists' arrivals from the China is depicted in Table 4.1.

Table 4.1 Augmented Dickey Fuller test (ADF) for China

Variables	Level	First-Difference	Conclusion
ln*TAR*	-2.232031[2]	-14.7716[1]**	*I*(1)
ln*CPIMas*	-2.0623[0]	-14.86143[0]**	*I*(1)

ln*CPISgp*	-1.8169[0]	-13.7405[0]**	*I*(1)
ln*CPIInd*	-2.2786[1]	-10.6455[0]**	*I*(1)
ln*CPIThd*	-1.0666[0]	-15.2754[0]**	*I*(1)
ln*Y*	-2.2117[2]	-15.0718[1]**	*I*(1)
REER	-2.2042[1]	-10.5552[0]**	*I*(1)
ln*OIL*	-1.2087[0]	-17.33713[0]**	*I*(1)

Note : The t-statistics refer to the ADF test. Figures in the square brackets indicate the lag length. The ADF test examines the null hypothesis of a unit root against the stationarity alternative.
** and * denote rejection of a unit root hypothesis based on MacKinnon(1991) critical values at 1% and 5% respectively. Figures in the square bracket indicate lag length. The ADF test examines the null hypothesis of a unit root against stationarity alternative.

Having established that the variables are integrated in the same order, which is $I(1)$, we proceed with the cointegration tests in order to test for cointegration among the series. The Johansen and Juselius (JJ) approach is employed to test either there is any cointegrated relationship or not among the selected variables. The results of the Johansen test are summarized in Table 4.2.

Table 4.2 Cointegration test

H_0	λ_{trace} test	5% CV	λ_{max} test	5% CV
r=0	207.3111*	159.5297	58.9122*	52.3626
r≤1	148.3989*	125.6154	48.84359*	46.2314
r≤2	99.5553*	95.7537	31.9991	40.0776
r≤3	73.5083*	69.8189	26.8405	33.8769

Note :
R stands for the number of cointegrating vectors
Column 1 lists the null hypothesis of zero, at least one, two, and three cointegrating vector; column 2 lists the trace statistics; column 3 lists the critical values for trace statistics at 5% level of significance; column 4 lists the maximum eigenvalue statistics; and column 5 lists the critical values for maximum eigen statistics at 5% level of significance.
*indicates statistical significance at 5% level.

The calculated Trace statistics and the maximum eigenvalue statistics reveal the existence of more than one cointegrating vector for the model. Thus, the hypothesis of no cointegrating vector is rejected at conventional significance level for China. Therefore, rejecting the null hypothesis of no cointegration between the $I(1)$ variables entails that the variables do not drift apart in the long run. Hence, there is a long run relationship.

Table 4.3 Error Correction Model for Tourism Demand in Malaysia by tourists from China

Variable	China
Constant	**0.0052*** (0.1824)**
$\Delta \ln TAR_{t-1}$	**-0.2052*** (-2.5853)**
$\Delta \ln CPIMas_{t-1}$	-0.6909 (-0.6105)
$\Delta \ln CPISgp_{t-1}$	**-8.7603** (-2.3018)**
$\Delta \ln CPIInd_{t-1}$	-0.006038 (-0.004234)
$\Delta \ln CPIThd_{t-1}$	**7.1033** (2.1508)**
$\Delta \ln Y_{t-1}$	**2.6054** (2.3622)**
$\Delta REER_{t-1}$	-0.4809 (-0.3856)
$\Delta \ln LOIL_{t-1}$	0.2053 (0.9165)
D_{AFC}	0.4552 (1.1283)

D_{GEC}	0.2894 (1.0520)
EC_{t-1}	**-0.3071***** **(-4.4871)**
R^2	0.2613
Adjusted R^2	0.1768
Jarque-Bera (and probability)	416.5636 (0.0000)
Durbin-Watson	1.95
Serial Correlation	2.39
LM	0.30

Note :

1. ***,**,* indicate significance level at 1%, 5% and 10% respectively.
2. The figures in parentheses are t-statistics

By using the information provided by the Johansen cointegration test, table 4.3 reports the results of an error correction model (ECM) that is constructed in order to obtain the short-run elasticities. The coefficient of the error correction term represents the speed of adjustment or disequilibrium towards long-run equilibrium state which meaning that how fast it is adjusting towards equilibrium. The Jarque-Bera statistics fails to reject the null hypothesis at 1% level of significance confirming the normality of residuals. In addition, the Breusch-Godfrey's Langrage Multiplier (LM) test statistics reject the existence of serial correlation and thus, we accept null hypothesis of no correlation exists between variables at 5 per cent level of significance.

The Error Correction Terms (EC_{t-1}) is significant and has the expected negative signs. The EC_{t-1} results show that adjustment capacity is very fast. The estimated speed of adjustment is -0.3071 and is statistically significant. The negative values of the coefficients ensure the series are not explosive and in the long run, so equilibrium can be attained.

The lagged dependent variable have a negative and significant effect on tourist arrivals from China to Malaysia. It may be due that tourists from China make periodic interstate or intrastate trips for holiday, business or visiting relatives and friends. Thus, this suggest a negative reaction to previous demand. Our findings is however in line with Allen and Yap (2009). If they have travelled in the recent past, they are unlikely to travel again in the near future. This issues however requires further exploration.

In terms of tourism price in competing destinations, the tourism price is only significant and has correct sign for Singapore and Thailand. The positive sign for Thailand indicates that tourists from China regarded Thailand as substitute destination for Malaysia. An increase in prices of tourism Thailand will increase tourists' arrival to Malaysia. On the other hand, the price of tourism in Singapore is negatively significant in affecting tourists' arrival from China. This shows that tourists regarded Singapore as a complementary destination for Malaysia. Therefore, increase in tourism demand in Singapore will also increase the demand for tourism in Malaysia. The demand for tourism in Malaysia and Singapore can be considered as a package. Tourists from China will visit Malaysia and Singapore at the same time. The negative sign is however contradict to Kadir and Karim (2009) and Kusni et al. (2013). They found that Singapore is a substitute destination for Malaysia.

The level of income in tourists' country of origin (China) also plays a positive and significant role in influencing their decision to visit Malaysia. The estimated income elasticities is 2.6054. This indicates that a 1% increase in the income of tourists' country of origin will increases 2.6054 per cent of tourists' arrival to Malaysia. Therefore, the demand for tourism in Malaysia by tourists from China is considered as a luxury goods.

Conclusions

In this study, we employed the co integration and error correction models to estimate tourism demand model for Malaysia by tourists from China.

The results of the co integration point out that there is a relationship between tourist arrivals and its determinants. Having all the variables are co integrated, allowed for the application of error correction models to determine short run elasticity. The result of the error correction model shows that income and price of tourism in the competing destinations (Singapore and Thailand) are significant in affecting tourist arrivals from China. The estimated coefficient of income elasticity is positive and more than 1 (Ey > 1). This suggests that the demand for tourism in Malaysia is regarded as a luxury good by tourists from China.

In terms of competing destinations, tourism price in Singapore and Thailand are significant in influencing tourist arrivals from China. The results also reveals Thailand is a substitute destination for Malaysia whereas Singapore a complement destination. It is recommended that Malaysia through Malaysia Tourism Board establish tourism partnership program with Singapore. In addition, tourism policy makers and planners in Malaysia should keep a close watch on the prices of tourism in the substitute destinations (Thailand).

References

Algieri, B. (2006). An econometric estimation of the demand for tourism: the case of Russia. Tourism Economics, 12(1), 5- 20

Banerjee A, Dolado JJ, Galbraith JW, Hendry DF (1993) Cointegration, error correction, and the econometric analysis of non-stationary data. Oxford University Press, Oxford

Daniel, A, Ramos, F (2002). "Modelling Inbound International Tourism Demand Portugal", International Journal of Tourism Research, 4, pp. 193-2009

Dritsakis N (2004) Cointegration analysis of German and British tourism demand for Greece. Tourism Manage 22:111 119

Enders, W., (2004). Applied Econometric Time Series. 2nd ed. New York: John Wiley & Sons, 439

Engle RF, Granger CWJ (1987) Cointegration and error correction: representation, estimation and testing. Econometrica 55:251–276

Johansen S (1988) Statistical analysis of cointegration vectors. J Econ Dyn Control 12:231–254

Johansen S, Juselius K (1990) Maximum likelihood estimation and inference on cointegration with napplications to the demand for money. Oxf Bull Econ Stat 52:169–210.

Halicioglu, F. (2004). An ARDL Model of Aggregate Tourism Demand for Turkey, Global Business and Economics Review 2004 Anthology, pp. 614-204.

Kadir, N., & Karim, M. Z. A. (2009). Demand for tourism in Malaysia by UK and US tourists: A cointegration and error correction model approach Advances in Tourism Economics (pp. 51-70): Springer.

Kulendran, N. (1996). "Modelling Quarterly Tourism Flows to Australia." Tourism Economics, 2: 203-22.

Kulendran, N, Wilson, K (2000). "Is there a relationship between international trade and international travel", Applied Economics, 32, pp. 1001-1009

Kulendran N, Witt SF (2001) Cointegration versus least squares Regression. Ann Tourism Res 28(2):291–311.

Kusni, A., Kadir, N., & Nayan, S. (2013). International tourism demand in Malaysia by tourists from OECD countries : A panel data econometrics analysis, Procedia Economics and Finance, Elsevier, Vol.7 pp.28-34.

Lee, C.-K., Var, T. & Blaine, T. W. (1996), Determinants of inbound tourist expenditures, Annals of Tourism Research 23, 3, 527-542

Lim C, McAleer M (2002) A cointegration analysis of annual tourism demand by Malaysia for Australia. Math Comput Simul 59:197–205.

Li, G., Song, H., and Witt, S.F. (2005), 'Recent developments in econometric modeling and forecasting', Journal of Travel Research, Vol 44, pp 82–99.

Pesaran MH, Shin Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. Chapter 11 in Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium, Strom S (ed.). Cambridge University Press: Cambridge

Salman AK.(2003) Estimating tourist demand through cointegration analysis: Swedish data. Curr Issues Tourism 6(4):323– 339

Mohd Salleh, N.H., Law, S.H., Ramachandran, S., Shuib, A., and Mohd Noor, Z., (2008). Asian Tourism Demand For Malaysia: A Bound Test Approach, Contemporary Management Research, 4(4), 351-368.

Syriopoulos, T. (1995). "A Dynamic Model of Demand for Mediterranean Tourism." International Review of Applied Economics, 9: 318-36

Seddighi, H. R., and D. F. Shearing. (1997). "The demand for tourism in North East England with special reference to Northumbria: an empirical analysis". Tourism Management 18:499-511.

Song H, Witt S (2000) Tourism demand modeling and forecasting. Elsevier, Oxford.

Song H, Wi Song H, Wong KF, Chon KK (2003) Modeling and forecasting the demand for Hong Kong. Tourism Hospitality Manage 22:435–45.