Tourism Economics in Saudi Arabia: PP-VAR Approach

Mohammed Moosa Ageli

King Saud University, Riyadh, Saudi Arabia

1 April 2013

Tourism Economics in Saudi Arabia: PP-VAR Approach

Mohammed Moosa Ageli
Assistant Professor of Economics

King Saud University
Riyadh, Saudi Arabia
mageli@ksu.edu.sa

ABSTRACT— ***In This paper investigates the nexus relationship between tourism expenditure and Non Oil economic growth in Saudi Arabia over the period 1970-2012. Using Phillips and Perron (PP) unit root test-VAR approach with several techniques including Unit root tests, Johansen's co-integration test, Granger Causality test and Vector Error Correction Model (VECM). We used time series econometrics techniques to examine the causal relationship between tourism expenditure and economic growth in the Saudi economy. The findings reveal that there is a bilateral causality and positive long-run relationship running from Non Oil-GDP to tourism expenditure. The results obtained from the analyses show that there is a positive relationship between tourism spending and economic growth in Saudi Arabia. The development of tourism sector will thus have a positive impact on the growth of the Saudi economy. Also, the results show that, in Saudi Arabia, the model of tourism expenditure is found to hold for Non Oil-GDP.***

Keywords— Tourism Expenditure, PP-VAR Approach, Phillips and Perron (PP) unit root test, Co-integration test, Vector Error Correction Model (VECM), Granger Causality, Economic Growth, Saudi Arabia

1. INTRODUCTION

The tourism sector is one of an important and future sector in Saudi Arabia. The tourism sector has grown as dramatically as has the rest of the Saudi economic sectors was not homogeneous. According to the main economic theory of developing countries, Saudi Arabia fits into this classification. The causality relationship between tourism expenditure and economic growth shows a clearly causality in all countries. Devoting a large proportion of government expenditure to the tourism sector would leave other important sectors like education and health with less financial resources.
The ultimate goal of the paper is to examine the causality relationship between tourism expenditure and Real Non Oil GDP in Saudi Arabia. The objectives are:

1) To examine the causality between these two variables.
2) To apply the unit root test whether the variables are non-stationary.
3) To apply the johansen's co-integration analysis to examines of a long-run equilibrium relationship.
4) To determine how tourism expenditures affected Non Oil economic growth in Saudi Arabia.

Therefore, the following hypotheses are:

H0: tourism expenditure has no significant impact on Real Non Oil GDP in Saudi Arabia.
H1: tourism expenditure has significant impact on Real Non Oil GDP in Saudi Arabia.

In addition, as part of the time-series analysis, the stationary properties of the data using the ADF test Real Non Oil GDP and other variables were conducted. Followed by an analysis to test whether the variables are co-integrated. Finally, we have used the Error Correction Model (ECM) to discuss the short run adjustment to equilibrium.

The paper is organized as follows: section two, presents some empirical results of relevant theoretical and empirical literature on the relationship between tourism expenditure and economic growth or output input methods. In section three of this paper, the tourism expenditure model presented. Section three, investigates the data and empirical results and analysis by using identified methods. In addition, section four, presents results of the analysis by using time series techniques, while section five, concludes the paper and presents the finding.

2. LITERATURE REVIEW

Previous economic studies have performed some case studies on this topic, thus this paper will review some important related studies on the issue of tourism sector development and economic growth in economic history.

Albqami (2004) found that service sector received "highest income and employment impact" although output impact was relatively lower compared to transportation sector. He estimated the economic impact analysis of tourists' expenditure on Saudi economy by using input-output model. The input-output transaction table of 1997 was disaggregated into nine sectors where tourism sector was included as one of the sectors. The study found that the impacts of tourist expenditure on output, income, and employment were measured at direct and indirect level.

Bashir and Ahmad (2005) investigated the relationship between the tourism expenditure and a profile of West Asian tourists and growth in Malaysia, by using static closed input-output model. The study found that hotel and restaurants, entertainment, wholesale and retail trade and business services sectors received greater economic gains from tourism. The results revealed that accommodation, shopping, and food and beverages were the three sectors where West Asian tourists made larger expenditure, and suggested that West Asian tourists would revisit Malaysia if they had the opportunity to explore the emotional and experiential aspect of tourism. Finally, there is a conducting research in identifying the major short and long haul inbound markets for the betterment of Malaysian tourism industry.

Moreover, Kasman and Kasman (2004), found that there exists unidirectional causality running from tourism towards the economic growth. Brau et al. (2007) investigated the relative economic performance of countries that have specialized in tourism over the period 1980-2003. They found that tourism could be a growth-enhancing factor, at least for small countries. In other words, small countries are likely to grow faster only when they are highly specialized in tourism. They found that, it would be preferable to use selection criteria to separate the whole sample into different subsets in which tourism may significantly affect economic growth. Dritsakis (2004) examined the impact of tourism on economic growth of Greece. He concluded that there is a strong unidirectional causality runs from international tourism receipts to economic growth.

In another study, Archer and Fletcher (1996) analyzed the relationship between tourism expenditure and the generation of income, government revenue, and supporting employment and the balance of payments. They are using input-output model to the Seychelles island economy. They found that impact varies by 'visitors' origin'.

In the same line, Yan and Wall (2002) examined the prospects of domestic and international tourism using a traditional type I input-output model of Chinese economy for the year 1992. This study estimated the impact of tourism on other sectors of the economy and revealed that tourism had insignificant impact on the results of primary sectors as a consequence of weaker linkages of tourism with the primary sectors of Chinese economy. Their study found that the availability of secondary commodities created constraints on tourism development in China.

A study by Sun and Stynes (2004) analyzed the economic impacts of tourism expenditure in Michigan for the year 2001, by using the Input-output analysis which was carried out to measure tourism expenditure impacts on personal income, employment, and value-added. The findings show that the tourisms spend a big amount, which generated a good benefit in total as personal income, and give a clear indicator as value-added and generated high employments.

3. ECONOMETRIC METHODOLOGY AND DATA

The study will cover Saudi Arabia for the period from 1970 to 2012. The data sources are the Saudi Arabia Monetary Agency (SAMA, 2012). (TOUREX) is measured by the Tourism Expenditure as a percentage of GDP, for economic growth, it is measured by Real Non Oil GDP (RNGDP). All the data used in the study were transformed into logarithm. The data used in this study consist of the following variables (table 1).

Table 1: Variables Definitions

Variable	Definition
RNGDP	Real Non Oil Economic Growth
TOUREX	Tourism Expenditure as % of GDP

In this study we have to use the model (equation 1):

$$LTOUREX = a + b\ LRNGDP \qquad (1)$$

3.1 Unit Root Tests

The most widely used Unit Root analysis test is Augmented Dickey-Fuller (ADF) (1981) and in order to specify the empirical model properly, an important step is to test for unit roots and stationary. Consequently, it was implemented using the Phillips and Perron (PP) test (1988). The ADF and PP tests assume the series are non-stationary, by estimating the following equation (2):

$$\Delta Y_t = a_0 + a_1 T + a_2 Y_{t-1} + \sum_{i=1}^{k} a_i Y_{t-1} + e_t \qquad (2)$$

Where ΔY = the first difference of the series; Y_t is the series under consideration (GDP, government expenditures, or government revenues); t is the time trend, k is the number of lag and e_t is a stationary random error (white noise residual). According to Charemza and Deadman (1992: 135) "the practical rule for establishing the value of [Ψ] ... is that it should be relatively small in order to save degrees of freedom, but large enough not to allow for the existence of autocorrelation in e_t. For example, if for [Ψ] =2 the Durbin-Watson autocorrelation statistic is low, indicating first order autocorrelation, it would be sensible to increase m with the hope that such autocorrelation will disappear". The simple formula in Dickey-Fuller tests establish whether β = 1 in the model (3):

$$Y_t = \beta Y_{t-1} + \varepsilon_t \qquad (3)$$

By deducting Y_{t-1} from each side of the equation in re-writing (4), the following form is established:

$$\Delta Y_t = \Omega Y_{t-1} + \varepsilon_t \qquad (4)$$

$$(\Omega = \beta - 1)$$

Testing the hypothesis with β = 1 is equivalent to testing the hypothesis Ω = 0 (Enders, 1995:221). The hypothesis is:

$$H_0: \Omega = 0$$
$$H_1: \Omega \neq 0$$

These procedures are applied to each data time series in order to examine their stationary properties by conducting the tests in levels and first difference. It should be noted that failing to reject the null (H0) hypothesis implies unit root process. However, if the outcome indicates that the series is stationary after the first difference; the series integrated of order one I(1), then the process is continued with the co-integration test.

In testing tourism expenditure, the non-stationary property of the series must be considered first. There are many alternative tests available to examine whether the series are stationary or non-stationary. If the variables under investigation are stationary, this means that the variables do not have unit roots, then the series said to be 1(0). If the variables under investigation are non-stationary in its level form, but stationary in its first-difference form, which means that the variables do have unit roots, then they are said to be 1(1). In recent years, the many macroeconomic time series are non-stationary which means that they contain unit roots that cause many econometric problems.

To test the relationship between tourism expenditures and Non Oil economic growth in the case of Saudi Arabia; we used Augmented Dickey Fuller (ADF) (1979, 1981) and Phillips and Perron (PP) (1988) methods to test the unit root (equation 5).

$$\Delta y_t = \alpha + \beta y_{t-1} + \sum_{t-i}^{k} \Delta y_{t-i} + \varepsilon_t \qquad (5)$$

3.2 Co-integration Test

In the time-series modeling, the co-integration test is carried out if there exists a stationary linear combination of non-stationary random variables. The aim of this test is to examine whether the data demonstrate a long-run relationship. In brief, this test refers to the situation where multiple series integrate of order (d), or in other words, I(d) where (d) represent the number of unit roots contained in the series. These can combine to produce series integrated of order (k), where k can range from zero to d-1.

According to Engle and Granger (1987), the two series are said to be co-integrated of order (d,b) if Y_t is integrated of order (d) and there exists a vector, β, such that $\beta' Y_t$ is integrated of order (d-b).
An example of two co-integrated series behaves as in equation (6).

$$Y_t = \alpha + \beta X_t + \varepsilon_t \qquad (6)$$

If the residuals (et) from the regression are I(0), then Xt and Yt are said to be co-integrated and non-stationary. However, the linear combination is stationary. Thus, the series need to be in integration of the same order for co-integrated to be possible. In this research, the co-integration test is used to substantiate the econometric process in relation to each of the model tested. Co-integration tests used to test the relationship between economic growth and tourism expenditure.

Granger (1980, 1988) was the first to propose a connection between non-stationary series and long-run equilibrium. The purpose of conducting co-integration is to explore whether the data exhibit a long-run relationship. Engle and Granger (1987) developed and introduced the theory of co-integration. Johansen (1988), and Johansen and Juselius (1990) presented that the variables under investigate are performed for each version of Wagner's Law to search for the existence of a long-run equilibrium relationship between the two variables GE and Non Oil GDP.

3.3 Granger Causality Test

Granger Causality test is used for testing the long-run relationship between tourism expenditure (TOUREX) and Real Non Oil GDP (RNGDP) will be tested using time series data of Saudi Arabia data for the period 1970-2012. The Granger procedure is selected because it consists the more powerful and simpler way of testing causal relationship assuming that the two series contain all the information necessary for prediction X Granger-causes Y if lagged X's helps predict Y (Granger, 1988) equations (7), (8).

$$x_t = \alpha_0 + \sum_{i=1}^{r} \beta_{xt-i} x_{t-i} + \sum_{i=1}^{s} \beta_{yt-i} y_{t-i} + \varepsilon_t \quad (7)$$

$$y_t = \alpha_0 + \sum_{i=1}^{r} \beta_{yt-i} y_{t-i} + \sum_{i=1}^{s} \beta_{xt-i} x_{t-i} + \varepsilon_t \quad (8)$$

Thus, equation 7 and 8 are used to test whether (Y_t) Granger causes (X_t). For equation 7 and 8, the hypotheses to be tested are:

$H_0: \beta yt \quad i \quad 0$, for $i = 1, 2, \ldots\ldots\ldots\ldots, k$
$H_1: \beta yt \quad i \neq 0$. for at least one i

Consequently, equation 8 is used to test whether (X_t) Granger causes (Y_t). For variables under investigate in our study, we tested individually for the causality between the dependent variables tourism expenditure TOUREX and Non Oil GDP (equation 9 and 10). But before doing that we have to check for the time series properties and especially co-integrating properties of the time series involved. As Oskooee and Alse (1993: 536) pointed out, "Standard Granger or Sims tests are only valid if the original time series from which growth rates are generated are not co-integrated."

$$RNGDP_t = \alpha_0 + \sum_{i=1}^{r} \alpha_{xt-i} RNGDP_{t-i} + \sum_{i=1}^{s} \alpha_{yt-i} TOUREX_{t-i} + \varepsilon_t \quad (9)$$

$$TOUREX_t = \beta_0 + \sum_{i=1}^{r} \beta_{yt-i} TOUREX_{t-i} + \sum_{i=1}^{s} \beta_{xt-i} RNGDP_{t-i} + \varepsilon_t \quad (10)$$

3.4 Error Correction Model (ECM)

When variables are co-integrated, a mechanism is required to correct their state, for which Engle and Granger (1987) provide such a procedure known as the 'Error-Correction Models' (ECM). The aim of ECM is to determine whether co–integration exists between two variables; there must be Granger causality in at least one direction, but the most valuable aspect is that co-integration does not reflect the direction of causality between the variables. The ECM is expressed as in equation (11) and (12):

$$\Delta RNGDP_t = \alpha_0 + \alpha_1 ECT_{t-i} + \sum_{i=1}^{r} \alpha_{xt-i} \Delta RNGDP_{t-i} + \sum_{i=1}^{s} \alpha_{yt-i} \Delta TOUREX_{t-i} + \varepsilon_t \quad (11)$$

$$\Delta TOUREX_t = b_0 + b_1 ECT_{t-i} + \sum_{i=1}^{r} b_{xt-i} \Delta TOUREX_{t-i} + \sum_{i=1}^{s} b_{yt-i} \Delta RNGDP_{t-i} + \varepsilon_t \quad (12)$$

Where (ECT_{t-1}) is the error correction term lagged one period, is equivalent to $e_t \quad Y_t \quad \alpha \quad \beta X_t$, which represents the disequilibrium residual of a co-integration equation (Fasana and Wang, 2001).

According to Enders (1995: 376), the causality in the ECM is applied in three stages:

(a) Joint Hypothesis:

$H_0: \beta_1 \quad 0$, $H_0: \delta_1 \quad 0$. for all (i) in equation (11),
$H_0: \beta_2 \quad 0$, $H_0: \mu_1 \quad 0$, for all (i) in equation (12);

(b) Test the significance of (δ_1) and (μ_1) to check for the possibility of short run causality;

(c) Analysis of the direction of the (β's) to see if they infer a long-run equilibrium relationship.

4. EMPIRICAL RESULTS

In this paper, the empirical results introduced strong evidence in support of the relationship between tourism expenditures and Real Non Oil GDP in the case of Saudi Arabia.

4.1 Unit Root Tests

Unit-root tested for Augmented Dickey-Fuller (ADF) and Phillips and Perron (PP) tests as summarized in the table 2. According to the results, each variable for the period 1970–2012 indicates that the series are non-stationary in level but stationary after the first difference.

Table 2: Unit Root Tests for Real Non Oil GDP

Variables	ADF (0)	PP (0)	ADF (1)	PP (1)	Result
L (Real Non Oil GDP)	–1.8562	-0.052	–5.4882	-6.4320	I (1)
L (TOUREX)	–2.5371	-1.6721	–4.5332	-2.4375	I (1)

Table 2, presents the stationary tests results showing that the variables are non-stationary in levels, but become stationary with the first difference; in other words, they are integrated in order one, when their first differences 1(1) are stationary. These results are consistent with the standard theory, which assumes that most macroeconomic variables are not static, but become stationary in the first difference (Enders, 1995).

4.2 Co-integration Test

In the next step, the co-integration test is applied to examine a long-run relationship between the variables by using the OLS test, and the results of which are illustrated in Table 3 for Real Non Oil GDP.

Table 3: Co-integration Results for Non Oil GDP, 1970–2012

Dependent Variables	Coefficient	T-Stat	Probability	R^2	DW
L (TOUREX)	2.341	41.33	0.003	0.920	0.885

Table 3 presents the co-integration test results for the time-series data 1970–2012 used in this study. They show that there is a long-run relationship between tourism expenditure (TOUREX) and economic growth (GDP) for Real Non Oil GDP in Saudi Arabia. The variable used for the period 1970–2012 indicates that the series are non-stationary in level, but stationary after the first difference, which suggests that they are I (1). The following section tests and reports the findings after the co-integration test for Real Non Oil GDP using the Johansen co-integration test. The existence of a co-integration vector is pointed out by a trace test since the t-test value exceeds the critical value of 5% level of significance. This means that co-integration tests are statistically significant at 5% level of significance for determining the long-run relationship between all variables. Otherwise, there is a long-run equilibrium relationship between Real Non Oil GDP and tourism expenditure.

In order to investigate co-integration test, the study utilizes the procedure developed, Engle and Granger (1987) developed and Johansen and Juselius (1990) to conduct the Vector Auto-Regression (VAR)-based co integration test. The Johansen procedures propose two test statistics for testing the number of co-integrating vectors, a Trace test (Tr) and a Max-Eigen value test statistics. Table 4 shows that there is a long-run equilibrium relationship between Real Non Oil GDP and tourism expenditure at 5% levels. Thus, the null hypothesis of co-integration is rejected with respect to Non Oil real GDP because the trace statistics values are greater than the critical value of 5%. Co-integrated relationships exist with respect to Real Non Oil GDP in the case of Saudi Arabia, an even stronger result indicating that the tourism expenditure and Real Non Oil GDP are subject to an equilibrium relationship in the long run.

Table 4: Johansen Co-integration Test Results with Real Non Oil-GDP

Hypothesized No. of CE(s)	Eigen value	Trace Statistic (TR)	Critical Value 5%	Prob
None	0.2744	24.223	15.41	0.0000
At most 1	0.2016	8.7431	3.76	0.0000

The Johansen and Juselius (1990) test reveals a co-integration relationship in all versions. Therefore, Granger-Causality in the framework of the Error Correction Model is applied.

4.3 Granger Causality Test

For supporting tourism expenditure model for Real Non Oil GDP, causality analysis is considered to apply for testing the directions of the variables. Granger causality tests used to confirm the causality direction between the variables. In the long run, we found statistically significant evidence in favor of GDP Granger-causing the share of tourism expenditures in GDP. The result of causality test indicated that the existence of strong feedback causality for all variables of tourism expenditure model in the long run.

In relation to the aims of research, the analysis showed clear evidence and consistent results across the model of tourism expenditure that there is a significant or causal relationship between, tourism expenditure and Real Non Oil GDP, in the case of Saudi Arabia. The results established for the causality from tourism expenditures (TOUREX) to economic growth. The findings reveal that there is a bilateral causality and positive long-run relationship running from Non Oil-GDP to tourism expenditure.

Table 5: Standard Granger Causality Test Results

Null Hypothesis	F-Stat	Prob
LRNGDP does not Granger Cause LTOUREX	4.5532	0.028
LTOUREX does not Granger Cause LRNGDP	2.8721	0.174

4.4 Error Correction Model (ECM)

The next section extends the analysis into Error Correction Mechanism (ECM) in order reveal the short-run adjustment. Thus, the model of tourism expenditure has found to hold for Real Non Oil GDP in table 6 in the case of Saudi Arabia.

Table 6 shows a strong and positive causality that runs from Non Oil-GDP to TOUREX this product of empirical analysis indicates that the variables used in each of the models TOUREX, and Real Non Oil GDP is statistically significant at the 5% level. Thus, in Saudi Arabia, the model of tourism expenditure is found to hold for Real Non Oil GDP.

Table 6: Causality with ECM Test with Real Non Oil GDP

Variables	ECT_{t-1}	T-stat
L (TOUREX)	-0.591	-3.851
L (Real Non Oil GDP)	-0.199	-1.944

5. CONCLUSION

Our major aim in this paper was to investigate the relationship between tourism expenditure (TOUREX) and Real Non Oil economic growth (RNGDP) using annual data for period 1970 to 2012.

In extending the analysis, the unit root test in the form of Augmented Dickey-Fuller is utilized to examine stationary of the time-series of all the variables. The results indicate that the levels of all series are non-stationary, and hence all the variables are co-integrated at the first order [I (1)].

The results suggest that there is a co-integrating relationship between tourism expenditure and Real Non Oil GDP, and holds in the case of Saudi Arabia through the co-integration analysis. Therefore, the equilibrium relationship indicates that the major determinant of tourism expenditure in Saudi Arabia, in the long run, is national income.

The econometric analysis further employs the Granger causality test in order to verify the causality and its direction between the variables. The results demonstrate statistically significant evidence in favor of Non Oil GDP for the long-run relationship. In addition, it is found that Granger-causing the share of tourism expenditure in GDP. This finding is consistent with the expectation of the model of tourism expenditure. The findings reveal that there is a bilateral causality and positive long-run relationship running from Non Oil-GDP to tourism expenditure.

Lastly, by using the Error Correction Model (ECM), it is established that the variables of the model of tourism expenditure are significant for Real Non Oil GDP in the case of Saudi Arabia. This suggests a short-run adjustment process towards long-run equilibrium.

In conclusion, the development plan must take into account how the function of each group complements the functions of the others. Finally, this study represents only a first step that opens new possibilities of research. Further research will be needed in order to analyze not only the effect of socio-economic variables.

6. ACKNOWLEDGEMENT

I must express my gratitude to Mr. Mousa Zaidan, whose guidance; and constructive comments were invaluable. His efficient contribution, experiences in this filed in Saudi Arabia helped me to develop this paper into its final form. Many thanks, to "Saudi Commission for Tourism and Antiquities" (SCTA) for all information's and data, King Saud University, finally, to all whose names do not appear here and without whom this study would not have been possible.

7. REFERENCES

[1] Albqami, R. (2004) "Economic Impact of Tourism Sector on Saudi Arabian Economy," Brussels, International Conference on Input-output and General Equilibrium, discussion paper (www.ecomod.net/conferences/ iioa2004/).

[2] Archer, B. & J.E. Fletcher (1996) "The Economic Impact of Tourism in The Seychelles," *Annals of Touris Research*, vol. 23, pp. 32-47.

[3] Bashir, M. S., and Ahmad, N. (2005). Multiplier effects of Malaysia's tourists expenditure patterns [online]. Available: http://pkukmweb.ukm.my/miora/BIOM/multeffect.pdf [2011, August 13].

[4] Brau, R., A. Lanza, and F. Pigliaru, (2007). How fast are small tourism countries growing? Evidence from the data for 1980-2003, Tourism Economics, 13:603-13.

[5] Charemza, W. W. and D. F. Deadman. (1992). New Directions in Econometric Practice. Edward El gar.

[6] Dickey, D. A. and Fuller, W. A. (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root", *Journal of the American Statistical Association*, 74, pp. 427-431.

[7] Dickey, D. A. and Fuller, W. A. (1981), "Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root", *Econometrica*, 49, pp. 1057-1072.

[8] Dritsakis, N. (2004), "Tourism as a Long-run Economic Growth Factor, An Empirical Investigation for Greece", Tourism Economics, 10: 305-316.

[9] Enders, W. (1995). Applied Econometric Time Series, (1ed). Wiley, J. and Sons, Inc. New York.

[10] Engle, R. F. and Granger, C. W. J. (1987), "Co-Integration and Error Correction: Representation, Estimation, and Testing", *Econometrica*, 55, pp. 251-276.

[11] Fasana, U. and Q. Wang, (2001). "Fiscal Expenditure Policy and Non-Oil Economic Growth: Evidence from GCC Countries," *IMF Working Paper* 01/195 (Washington: International Monetary Fund).

[12] Granger, C. W. J. (1980). "Testing for Causality", *Journal of Economic Dynamics and Control*, 2, pp. 329-352.

[13] Granger, C. W. J.(1988). Some Recent Developments in a Concept of Causality. *Journal of Econometrics*, 39, pp. 199 – 211.

[14] Johansen, S. (1988), "Statistical Analysis and Cointegrating Vectors", *Journal of Economic Dynamics and Control*, 12: 231-254.

[15] Johansen, S. and Juselius, K. (1990), "Maximum likelihood estimation and inference on cointegration, with applications to the demand for money", *Oxford Bulletin of Economics and Statistics*, 52: 169-210.

[16] Kasman, A. and Kasman, S. K. (2004), "Cointegration and causality between tourism revenues and economic growth", *İktisat İşletme ve Finans*, 19: 122-131.

[17] Oskooee, B. M. and Alse, S. (1993). "Export Growth and Economic Growth: An Application of Co- integration and Error Correction Modelling," *The Journal of Developing Areas*, (27), pp. 535-542.

[18] Phillips, P. C. B. and P. Perron (1988), "Testing for a Unit Root in Time Series Regression," *Biometrika* , 75(2), 335–346.

[19] SAMA. Annual Report. The Saudi Arabia Monetary Agency (2001 to 2012).

[20] Sun, Y. Y., & Stynes, D. J. (2004). Economic impact of the pictured rocks national lakeshore and the estimation Errors. Proceedings of the 2004 North-eastern Recreation Research Symposium, NE, 326, 98-102.

[21] Yan, M & G. Wall (2001) "Economic Perspectives on Tourism in China," *Tourism and Hospitality Research*, vol. 3, pp. 257-275.

