ROLE OF TOURISM IN LONG TERM ECONOMIC GROWTH IN PAKISTAN

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ABSTRACT: Tourism activities are multi-pronged with mostly positive impact on any economy. This study attempts to investigate the role of tourism in the long run economic development in case of Pakistan. The tourism led growth hypothesis is confirmed through autoregressive distributed lag (ARDL) and vector error correction model econometric framework using a time series data for the years that span from 1975 to 2005. The study explores the potential contribution of tourism to economic growth and development. The combination of results pointed a stable long run relationship among tourism, exchange rate and economic expansion in the Pakistan economy. The results show that receipts from the tourism industry significantly contribute to the current level of gross domestic product and the economic growth of Pakistan economy both in short run and long run. Our findings imply that Pakistan could enhance its short-run economic growth by strategically strengthening its tourism industries.

Key wards: Tourism, Exchange Rate, Economic Growth, Aautoregressive Distributed Lag Model (ARDL), ECM.

1. INTRODUCTION

Tourism has played a major role in the economic development of many Asian countries. In addition, tourism industry has become a fundamental source of employment in most developing countries given that it is mostly a labour-intensive sector; on the other hand tourism has allowed to finance machinery and technology imports which were needed to faster the economic growth and expansion. It should be argued that tourism brings in foreign exchange which can be used to import capital goods in order to produce goods and services, leading in turn to economic growth (McKinnon, 1964). In other words, it is possible that tourists provide a remarkable part of the necessary financing for the country imports. If these imports are capital goods or basic inputs for producing goods in any area of the economy, then, it can be said that earnings from tourism are playing a

fundamental role in economic growth and development of the economy. Even, nontourist regions would also benefit from it, as a result of the distribution of a country's wealth.

In the field of tourism, Pakistan offers many allures in the developing world. The historical and cultural heritage of the nation presents a testimony for glory of this ancient land, the country inherits numerous tourist attractions at Swat, Kalam, Malam Jaba, Shangla, Balakot, Ayubia, Murri, Chitral, Gilgit, Naran and Kaghan valleys, and other mountains ranges, historical and archaeological places in the other parts of the country. There are few places on the earth that posses the majesty and grandeur of the northern region of Pakistan. Northern Pakistan remains a land of contrasts, unique in its legacy of landlocked civilization and blessed as no other destination with an amazing array of some of most beautiful valleys, lakes, rivers and mountains. The junction of four of the world most formidable mountain ranges Karakoram, Hindukhsh, Himalayas, and Pamirs forms a unique point in the northern areas. It has climbers, trekkers, mountaineers and hikers and unheeding rock, the flow of countless glacial streams. Few areas in the world offer such a unique blend of breathtaking natural beauty and a rich diversity of culture, socioeconomic traditions, history and lifestyle as in the Hindukush-Himalayan region of Pakistan. Furthermore Pakistan has a tremendous potential in the fields of echo and safari tourism, which attracts millions of tourists annually.

For the countries in South Asia, like China, India and Pakistan, foreign tourism is overwhelming. The North West Frontier Province (NWFP) and Northern Areas in Pakistan, attracts a tremendous number of foreign tourists annually. Between 1990 and 1992, foreign tourist arrivals in Pakistan have increased, but the annual growth rate in domestic tourism remained at 3.5 percent. In Pakistan, the growth rate between 2002 and 2004 remained at 19.5 per cent. The arrival of foreign tourists is increasing day by day in these areas. Pakistan achieved a record growth in tourist arrivals of 798260 from all tourist generating markets, which is 23.3% increase from the previous year (2004). Pakistan's share in the region increase from 8.6 percent in 2004 to10.1 percent in 2005. In the world tourist arrivals Pakistan's share is 0.10 percent compared to south region share of 10.1 percent in 2005. Tourism in Pakistan has potential, the tourist travels are in the continuous line that about 42 million domestic visitors traveled with in the country in 2005. Nearly 90 percent tourist traveled by road, 8.5 percent by rail and only 1.8 percent traveled by air. Tourism industry has played a significant role in the socio-economic development, and is promising future growth potentials in the country.

A strong argument is made for a policy focus on tourism for local community development and supportive institutional mechanisms for capacity building in close association with the private sector. Once these are in place, tourism can become a major vehicle for economic development.

The main objective of the study is to investigate the contribution of tourism to the economic growth of Pakistan economies with typically using more comprehensive and recent technique of Bounds Test or Autoregressive Distributive Lag Model (ARDL) proposed by Pesaran et al (2001) over the period 1975-2005. The contribution of our work to the empirical literature is that we provide evidence of the extent to which the tourism industry can spur economic growth. This will identify that whether there exist a stable long run relationship between economic expansion and tourism growth or not. The above arguments would justify the inclusion of tourism in a growth model in order to test for their relationship. The remainder of this paper is organized as follows. In section II and III relevant literature and data description is presented respectively. Section IV describes the methodology and model. Section V makes reference to employed methodology and discusses the empirical results and section VI provides the main conclusion and policy implications.

2. RELEVANT LITERATURE

International tourism would contribute to an income increase at least in two additional ways as the export-led growth hypothesis postulates. In the first place, it enhances efficiency through competition between local firms and the ones corresponding to other international tourist destinations (Bhagwati and Srinivasan, 1979; Krueger, 1980), and in the second place, it facilitates the exploitation of economies of scale in local firms (Helpman and Krugman, 1985). Taking into account that a large proportion of a tourist's expenditure is spent on the consumption of nontraded goods and services in the host country, there exist factors, which can have either a positive role or an unfavourable impact on economic growth. Shan and Wilson (2001), has observed in their empirical analysis of Australia and China economies a strong relationship between international trade and international travel. In the case of Korea, economic growth has attracted much business travels, it suggests that economic expansion leads to tourism growth. Many studies have attempted to identify the causal relationship between international trade

(especially exports growth) and economic expansion, (Bahmani-Oskooee & Alse, 1993; Chow, 1987; Jin, 1995; Marin, 1992; Shan & Sun, 1998; Xu, 1996). They have estimated a strong correlation between international trade and economic development. There is strong bidirectional causality between export growth and economic growth; furthermore tourism growth and economic growth have a strong causal relationship. Nontraded goods and services are not exportables in the traditional sense because their price is not determined in the international market, but in the local market. Obviously, tourists' consumption of nontraded goods and services has an impact on the relative price and availability of the nontraded goods and services for the domestic consumer. As the price in the tourist receiving country is determined by forces of foreign demand, local demand and supply, then, a model with monopoly power in price determination may be constructed to analyse the impact of tourism. In the static framework, there are at least two analytical papers which examine the relationship between tourism and welfare. In the first paper, Hazari and Ng (1993) show that in a monopoly power framework, tourism may be welfare reducing. In the second paper, Hazari and Kaur (1995) argue that in a Komiya (1967) type first-best model, tourism is always welfare improving.

Recently, Hazari and Sgro (1995) developed a dynamic model in which a favourable impact of a buoyant world demand for tourism would have a positive effect on the long-run growth of a small economy. This favourable impact is generated by tourism behaviour as a time-saving device which allows domestic population to consume now rather than later due to the requirement of a lower saving rate.

3. DATA DESCRIPTION

This empirical analysis considers annual data for Pakistan for the period of 1975 to 2005. In this paper we have used Tourism Receipts (TOUR), Gross Domestic Product (GDP) and Real Exchange rate (ER) data in local currency to analyze the dynamic relationship among these variables. Table 1 presents summery statistic of the data. GDP data is obtained from Economic Survey of Pakistan. Tourism receipts and Real Exchange rate data has been taken from various issues of Tourism Year Book, Ministry of Tourism, Pakistan and International Financial Statistics (IFS) respectively.

Table 1

Descriptive Statistics and Correlation Matrix

Variables	GDP	TOUR	ER
Mean	14.73116	7.947142	3.161960
Median	14.80868	8.091490	3.086487
Maximum	15.46405	9.316321	4.108576
Minimum	13.91166	5.796890	2.292535
Std. Dev.	0.457748	0.862189	0.673322
Skewness	-0.252773	-0.898010	0.070786
Kurtosis	1.875442	3.422395	1.568406
Jeraq-Bera	1.963602	4.396970	2.673111
Probability	0.374636	0.120971	0.262749
Observations	31	31	31
Correlation Matrix	GDP	TOUR	ER
GDP	1.000000	0.932000	0.970897
TOUR	0.932000	1.000000	0.364379
ER	0.970897	0.364379	1.000000

The boxplot figure shows that the LGDP and LTOUR series have almost the same confidence interval, while the confidence interval of LER series is some what wider. There are some out layers in the LTOUR series but they lie inside the outer fence and cannot influence the results of the estimated model. Most of the data lie inside the first and third quartiles.

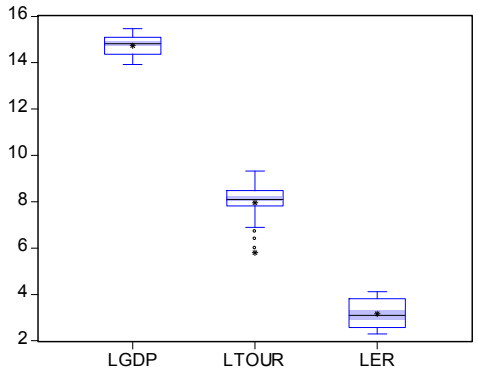


Figure 1. Group Boxplot of Data

4. METHODOLOGY AND MODEL

The hypothesis that tourism in Pakistan is one the determinants of long term economic growth is tested. The model includes gross domestic product (GDP), tourism receipts (TOUR) and exchange rate (ER). Based upon the assumption that Pakistan is a small open economy, these are the minimum and more relevant variables that have been considered. In econometric terms the equation is as follows.

$$\ln(GDP)_t = \beta_0 + \beta_1 \ln(TOUR)_t + \beta_2 \ln(ER)_t + \varepsilon_t \qquad (1)$$

All the variables are expressed in natural logarithms so that they may be consider elasticities of the relevant variables. GDP is the gross domestic product, TOUR is the annual international tourism receipts and ER is the real exchange rate, used as a proxy variable for external competitiveness. ε_t is white noise error term which represents omitted factors left out by the deterministic part of the model.

To analyze the long run relationship between the economic growth and certain relevant variables i.e. tourism receipts and real exchange rate, we have employed autoregressive-distributed lag bound test approach to cointegration analysis. The ARDL modeling approach popularized by Pesaran and Pesaran (1997), Pesaran and Smith (1998), Pesaran and Shin (1999), and Pesaran et al. (2001) has numerous advantages. The main advantage of this procedure is that it can be applied regardless of the stationary properties of the variables in the sample and the model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modeling framework (Laurenceson and Chai 2003, p.28). Moreover, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation (Banerjee et al. 1993, p.51), which allows for inferences on long run estimates, which is not possible under alternative cointegration procedures (Sezgin and Yildirim, 2002). ARDL method has additional advantage of yielding consistent estimates of the long run parameters that are asymptotically normal irrespective of whether the variables are I(0), I(1) or mutually integrated, since there is no need for unit root pre-testing but we think it is still important to complement the estimation process with unit root test in order to ensure that none of the variables are integrated of higher order i.e. I(2) as it will violate the assumption of bounds testing procedure. ARDL is adopted because it is simple, as opposed to other multivariate co integration techniques such as Johansen Juselius, it allows the co integration relation to be estimated by OLS once the lag order of the model is identified.

It also shows that appropriate lags in the ARDL are corrected for both residual correlation and endogeniety. Indeed, one of the important advantages of ARDL procedure was that the estimation is possible even when the explanatory variables are endogenous (Alam and Qazi, 2003). Hence ARDL provides robust and efficient results in small & finite sample data sizes.

In view of the above advantages to illustrate the ARDL modeling approach the following unrestricted error correction version of the ARDL model is given by:

$$\Delta \ln(GDP)_t = \alpha_0 + \sum_{i=1}^{n} \beta_i \Delta \ln(GDP)_{t-i} + \sum_{i=1}^{n} \delta \Delta \ln(TOUR)_{t-i} + \sum_{i=1}^{n} \eta_i \Delta \ln(ER)_{t-i} + \lambda_1 \ln(GDP)_{t-1} + \lambda_2 \ln(TOUR)_{t-1} + \lambda_3 \ln(ER)_{t-1} + \varepsilon_t \quad (2)$$

The first part of the above equation with β_i, δ_i and η_i represents the short run relationship in which Δ is the first difference operator whereas the parameters λ_1, λ_2 and λ_3 show the long run dynamics of the model. The equation indicates that growth in stock returns tends to be influenced and explained by its past values so it involves other disturbances or shocks.

The ARDL approach involves three steps for estimating the long-run relationship. The first step is to examine the existence of long–run relationship among all variables in the equations under estimation. We run the second step only if we find a long-run relationship in the first step (Narayan, et al. 2004). So in order to test the long run relationship (Equation 2) should be conducted by imposing restrictions on estimated long run coefficients of the variables. The null and alternative hypotheses are as follows:

H_0: $\lambda_1 = \lambda_2 = \lambda_3 = 0$ (**no long run relationship**)

H_1: $\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq 0$ (**long run relationship exist**)

The calculated F-statistics in this procedure has a nonstandard distribution. Thus, the calculated F-statistic is compared with two sets of critical values tabulated by Pesaran et al. (2001) i.e. to conduct bound testing for the above-described equation. If the

calculated F-statistic is larger than the upper bound critical value, then the null hypothesis of no cointegration is rejected irrespective of whether the variables are I(0) or I(1). If it is below the lower bounds, then the null hypothesis of no cointegration cannot be rejected. However, if the test statistic falls between these two bounds, the result is inclusive. When the order of integration of the variables is known and all the variables are *I(1)*, the decision is made on the upper bound. Similarly, if all the variables are *I(0)*, then the decision is made based on the lower bound.

Once cointegration is established, lag length is selected for each variable. The ARDL method estimates $(p+1)^k$ number of regressions in order to obtain optimal lag length for each variable, where p is the maximum number of lag to be used and k is the number of variables in the equation. The model can be selected using the model selection criteria like Schwartz-Bayesian Criteria (SBC)[1].

In the second step, if there is evidence of long-run relationship (cointegration) of the variables, the following long-run model (equation 3) is estimated,

$$\ln(GDP)_t = \alpha_1 + \sum_{i=1}^{n} \beta_i \ln(GDP)_{t-i} + \sum_{i=1}^{n} \delta_i \ln(TOUR)_{t-i} + \sum_{i=1}^{n} \psi_i \ln(ER)_{t-i} + \varepsilon_i \qquad (3)$$

If we find the evidences of long run relation, then in the third step the error correction model will be estimated. The error correction model result indicates the speed of adjustment back to the long run equilibrium after a short run disturbance. The standard error correction model (ECM) involves estimation of the following equation.

[1] The ARDL - AIC (Akaike Information Criterion) and the ARDL - SBC (Schwarz-Bayesian Criterion) estimators have very similar small-sample performances with the ARDL-SBC performing slightly better in the majority of the experiments. This may reflect the fact that the Schwarz-Bayesian Criterion is a consistent model-selection criterion, whereas the Akaike is not.[Pesaran MH, Shin Y., (1999), "An autoregressive distributed lag modeling 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. pp 374.]

$$\Delta \ln(GDP)_t = \gamma_1 + \delta_1(ECM)_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta \ln(GDP)_{t-i} + \sum_{i=1}^{n} \beta_i \Delta \ln(TOUR)_{t-i}$$

$$+ \sum_{i=1}^{n} \eta_i \Delta \ln(ER)_{t-i} + \varepsilon_i \qquad (4)$$

To ascertain the goodness of fit the ARDL model, the diagnostic test and the stability test are conducted. The diagnostic test examines the serial correlation, functional form, normality and hetroscidastisity associated with the model. The structural stability test is conducted by employing the cumulative residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ).

5. EMPIRICAL RESULTS

The underlying assumption of ARDL procedure that each variable in equation (1) is I(1) or I(0). If any variable is integrated of higher order then the procedure is not applicable. Thus, it is still important to perform unit root tests to ensure that none of the variable in equation (1) is I(2) or higher order. All the variables are first tested for stationarity with intercept and trend using the Augmented Dickey- Fuller (ADF) and Phillips and Perron (1988). The results in table 2 show that all the three variables are integrated of order one, i.e. I(1).

Table 2

Unit Root Estimation Results

VARIABLES	Level		First Difference	
	Intercept and Trend	No of Lags	Intercept and Trend	No of Lags
	Augmented Dickey- Fuller (ADF)			
ln (GDP)	-2.683	0	-8.041*	0
ln (TOUR)	-2.828	0	-5.972*	0
ln (ER)	-2.353	0	-4.786*	0
	Phillips and Perron (PP)			
ln (GDP)	-2.511	1	-8.772*	2
ln (TOUR)	-2.854	1	-5.948*	2
ln (ER)	-2.416	1	-4.786*	0

Note: *, ** represents the level of significance at 1%,5% respectively having critical values of-4.310, -3.574 with intercept & trend.

The order of autoregressive lags (p) is selected such that it produces non-auto correlated OLS residuals. As the results presented in table 2 show that variables are integrated of same order i.e. one, thus we can apply ARDL methodology to our model. The above table shows [both the test results (ADF and Philips Perron)] that all the three variables GDP, TOUR and ER are not stationary in their level form, but are stationary at the first difference i.e. I(1).

The first step of ARDL procedure is to estimate equation (2) and test for the presence of long-run relationship (cointegration) amongst the variables of equation (1). Bahmani-Oskooee and Bohal (2000) have shown that the results of this first step are sensitive to lag length (p) selected in equation (2). The lag length is determined by the Schwarz-Bayesian criteria (SBC). On the basis of SBC, appropriate order of ARDL model is one. The next step is to estimate equation (2) by varying lag length (p) from 0 to 1 and compute F-statistics for the joint significance of lagged levels of variables. The computed F-statistics for each order of lags are given below in table 3.

Table 3

Bound Test F-Statistics

Lag Order	F-Statistics	Bound Test Critical Values at 5%	
		I(0)	I(1)
0	F(3, 25) = 2.075	5.377	5.963
1	F(3, 21) = 6.471*		

Note: The relevant critical value bounds for F-statistic (an unrestricted intercept & trend) are taken from tables Case IV in *Narayan (2005)* at 1% and 5% level of significance. The two sets of critical values provide critical value bounds for all classifications of the regressors into purely I (1), purely I (0) or mutually cointegrated. However, these critical values are generated for sample sizes of 500 and 1000 observations and 20000 and 40000 replications respectively. Given the relative small sample size we have reported the critical values reported by Narayan (2005).

* indicates that computed statistic falls above the upper bonds value.

Examination of results in table 3 shows that test results vary with the order of lags in the model. When the order of lags in equation (2) is 1, computed F-statistic 6.471 is above their upper bounds 5.963 and the null hypothesis of no cointegration amongst the variables in equation (2) is rejected at 5% significance level. Thus, there exists a long-run relationship amongst the variables in equation (1). The total number of regression estimated following the ARDL method in equation (2) is $(1+1)^3$ =8. We can now proceed to second stage of estimation. In the next stage, we select the optimal lag length for ARDL model to determine the long-run coefficients of the model. With maximum order of lag set to 1, lag selection criteria SBC was used to select the appropriate order of ARDL model.

Table 4

Estimated long run coefficients using the ARDL approach

ARDL(1,1,1) selected based on Schwarz Bayesian Criterion			
Dependent Variable: ln (GDP)			
Variables	**Coefficient**	**t-values**	**Prob-values**
C	9.047	3.332	0.002
ln (GDP) $_{t-1}$	0.379	1.977	0.060
ln (TOUR) $_{t}$	0.569	3.652	0.001
ln (TOUR) $_{t-1}$	0.048	1.976	0.060
ln (ER) $_{t}$	0.341	2.025	0.032
ln (ER) $_{t-1}$	-0.216	-1.099	0.283
TREND	0.046	2.788	0.010
R^2 = 0.901		F-Statistics =(4,29) 65.923[.000]	
Adjusted-R^2= 0.887		Durbin-Watson stat =1.6830	
Akaike info criterion= -3.086		Schwarz criterion= -2.759	

Note: * &**represents the level of significance at 1%, 5% respectively.

The empirical results of the long-run model, obtained by normalizing on gross domestic product (GDP), are presented in Table 4. The most significant factor in determining the impact on GDP in Pakistan is the tourism receipts (TOUR) with the coefficient of 0.569.

The interpretation of the elasticity of economic growth with respect to tourism receipts is; a 1% of a sustained growth rate in foreign exchange earnings from tourism would imply an estimated increase of almost 0.6% percent domestic real income in the long run. This is a significant fact.

As in most empirical research about the influence of exports on the economic growth, the external competition has a relevant role when analyzing a possible long-run relationship. Therefore, the estimate of the corresponding elasticity would indicate that in general, an increase of the economy competitivity with regard to industrialized countries would have had significant effects on its economic growth rate.

Table 5

Error correction Model (ECM) representation for the selected ARDL-model

ARDL(1,1,1) selected based on Schwarz Bayesian Criterion			
Dependent Variable: ln Δ (GDP) $_t$			
Variables	**Coefficient**	**t-values**	**Prob-values**
Constant	15.456*	8.928	[0.000]
Δ ln(GDP) $_{t-1}$	0.047	-1.234	[0.229]
Δ ln(TOUR) $_{t-1}$	0.907*	3.922	[0.000]
Δ ln(ER) $_{t-1}$	0.182	1.153	[0.261]
ECM_{t-1}	-0.242**	-1.915	[0.051]
R^2 =0.42888		F-Statistics = (5, 23) 3.4544[.018]	
Adjusted-R^2=0.30473		Durbin-Watson stat =2.3069	
Akaike info criterion= 46.1905		Schwarz criterion=42.0886	

Note: * &**represents the level of significance at 1%, 5% respectively.

Examination of error correction model in table 5 shows that tourism receipts has the strongest positive effect on economic growth in the short run and statistically significant. The short-run effect of other variables i.e. exchange rate and lag gross domestic product on GDP in Pakistan is weak and statistically insignificant at even 10% significance level.

The coefficient of ECM term has correct sign (negative) and highly significant. It confirms a long run relationship between the variables in equation (1). The Coefficient of the ECM term suggests that adjustment process is quite moderate

The coefficient of ECM is equal to (-0.242) for short run model, which imply that deviation from the long-term equilibrium is corrected by 24.2 percent over the each year at 5% level of significance.

Next, we examine the stability of short-run and long-run coefficients. Following Pesaran and Pesaran (1977), we use Brown et al. (1975) stability testing technique. This technique is also known as cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests. The CUSUM and CUSUMSQ statistics are updated recursively and plotted against the break points. If the plots of CUSUM and CUSUMSQ statistics stay with in the critical bonds of 5% level of significance, the null hypothesis of all coefficients in the given regression are stable and can not be rejected. It shows that statistics CUSUM and CUSUMSQ are within the critical bonds, indicating that all coefficients in the ARDL error correction model are stable. The CUSUM and CUSUMSQ plot to check the stability of short run and long run coefficients in the ARDL model are given in appendix 1.

6. CONCLUSION AND POLICY IMPLICATIONS

This study indicates that there is a stable long run relationship between tourism growth and economic expansion. The earnings from tourism affect positively the economic development and expansion in the economy. The strong impact of tourism activity, according to the magnitude of the estimated parameter reveals the existence of important long run multiplier effects.

Tourist expenditure represents an injection of ' new money ' into the economy (Frechtling 1987, Fletcher 1994a, Archer & Cooper 1995). The expenditure injection is regarded as having three types of impacts - direct, indirect and induced.

The direct impacts are reflected in the increased sales revenues of firms catering to tourist needs for different goods and services. Some of these firms are within, and others are outside, what may be regarded as ‘the tourist industry’. These firms and

organizations, in turn, purchase goods and services from various suppliers within and outside of the destination region.

Indirect effects result from 'flow-on' when direct suppliers purchase inputs from other firms in the region which, in turn, purchase inputs from other firms and so on. Almost every industry in the economy is affected to some extent by the indirect effects of the initial tourist expenditure.

Induced effects arise when the recipients of the direct and indirect expenditure - owners of firms and their employees - spend their increased incomes. This, in turn, sets off a process of successive rounds of purchases by intermediate firms, plus further consumption, adding to Gross Domestic Product and employment.

Given the indirect and induced effects of tourist expenditure, the ultimate increase in income within the destination may exceed the initial expenditure increase. Tourism economists have thus tended to focus upon the so called 'multiplier effects' of tourism expenditure.

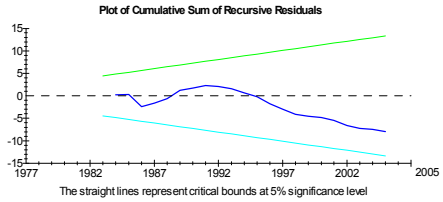
Finally, the significant impact of tourism on Pakistan economy justifies the necessity of Public intervention aimed, on the one hand, at promoting and increasing tourism demand and, on the other hand, providing and fastering the development of tourism supply.

The study has a significant policy implications, a long-term policy perspective regarding the role of tourism is expected to play in the overall development process of the area and the type of tourism that may be desirable in particular mountain environments needs to be articulated. A long-term perspective is needed because the benefits from tourism can be maximized only through a coordinated set of complementary sectoral policies. This perspective is essential also because tourism development requires investments in infrastructure as well as in the production apparatus of tourist areas. Tourism planning and development have to be conceived in the context of overall development in an area. The linkages of major economic sectors in the economy — agriculture, horticulture, forestry, energy, transportation, hostelling, infrastructure and law & order situation etc — which have been ignored in past, that resulting in an inefficiency and failure to integrate tourism with the local economy, high leakages and wastage of resources. Since the

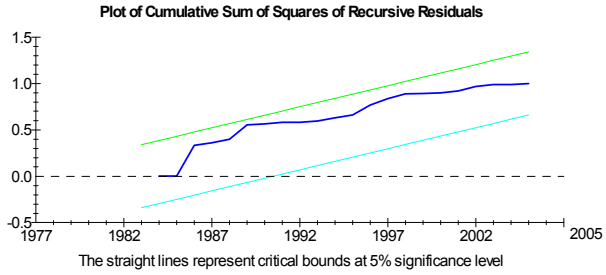
demands of the tourism sector need to be better appreciated if tourism is to develop in an integrated fashion.

Appendix-1

Plot of Cumulative Sum of Recursive Residuals



Plot of Cumulative Sum of square of Recursive Residuals



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