

Tourism and Economic Growth in Nepal

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Abstract

Tourism has become an important economic activity in all the countries of the world. It creates various direct, indirect and induced effects in the economy. This paper attempts to confirm empirically about the positive impact of tourism in Nepal. It is based on Nepalese data of foreign exchange earnings from tourism and gross domestic product for the period between FY 1974/75 and 2009/10. Co-integration test has been done for ascertaining long run relationship and error correction method for short run dynamics. Granger Causality test has been applied to determine causal relationship between these variables. The evidence confirms the conventional wisdom that of tourism development, that tourism (represented by foreign exchange earnings) causes economic growth both in short and long run. The result also indicates bi-directional causality between these variables.

Key words: Foreign exchange earnings, tourism cointegration, time series analysis

JEL Classification: C 13, L 83, O 047

I. INTRODUCTION

Tourism comprises the activities of persons traveling to and staying in places outside, their usual environment for not more than one consecutive year for leisure, business and other purposes (WTO, 1999). Over the past several decades international tourism has gained distinct importance around the globe. World tourism recovered strongly in 2010 even exceeding the expectations. The tourists' arrivals grew by 6.7 percent in 2010 against the 4.0 percent decline in the previous year – the year hardest hit by the global economic crisis (UNWTO, 2011). Similarly, tourism receipt remained at US \$ 852 billion in 2009 (UNWTO, 2010). In Nepal, despite the belated start of formal tourism after the restoration of democracy in 1952, it gained remarkable growth over the years. In 1962, 6,179 tourists¹ travelled Nepal (MOTCA, 2010). It is estimated to be around one million in 2011 including the arrivals of foreigners by land. Nowadays, Nepal caters more than half million tourists and earns foreign currency equivalent of about NRs. 16,825 million. The sector provides employment for about 20 percent of economically active population and contributes about 3.0 percent on gross domestic product (GDP).

Tourism is one of the productive business activities directed for the production of the goods and services. It provides goods and services to the customers (visitors, generally

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1 Only foreign tourists excluding Indian tourists

foreigners) and employment and income to the locals. With this tourism business, enterprises and the people (related directly or indirectly) generate earnings from the operation of the tourism business activities. Further, tourism as an economic activity produces various direct, indirect and induced impacts in the economy. It ultimately increases the foreign exchange earnings, generates employment opportunity and increases income. Again, the resultant income flows being circulation in the economy, encourages for other economic activities to take place inducing many rounds of income. It also stimulates for the income and employment in other sectors of the economy (UN ESCAP, 2001).

Tourism has various economic, social, cultural and environmental effects on tourism destinations (Vanhove, 2005) and the effect can be both positive and negative. Several studies tried to measure economic impact of tourism and concluded about its significance for the economy. Nowadays the importance of tourism in economic development of many countries is well documented. However, there is a dearth of literature in Nepal about the economic impact of tourism.

The primary purpose of this article is to examine the relationship between tourism and economic growth of Nepal. It attempts to determine the relationship between earnings from tourism and GDP for the period between 1974/75 to 2009/10. With the use of co-integration technique, it tries to assess whether long-run relationship exists between tourism receipt and economic growth or not. In addition, it also inquires about the causal relationship between them and direction of causality. The remainder part of the study is organized as the literature review in section II and the methodology of analysis in section III. Section IV discusses the empirical results and Section V concludes the paper.

II. REVIEW OF LITERATURE

Tourism has burgeoned worldwide in the last two and half decades and outshined traditional industries to become one of the world's largest and fastest growing economic activities (Pao, 2005). It emerged with a general consensus that it not only increases foreign exchange earnings but also creates employment opportunities. It also stimulates growth of the various industries and business and by the virtue of this triggers overall economic growth. Despite of increasing importance of tourism, it has attracted relatively little attention in the literature in general and economic impact analysis in particular.

There are several models and software tools such as Multiplier model, Input-Output analysis, CGE (Computable General Equilibrium) model and soft-wares such as REMI, IMPLAN, BEA RIMS etc to be used in various perspectives. Multipliers measure the effect of expenditures spent into an economy or the final change in output in an economy relative to the initial change in visitor expenditure (Archer, 1982). Tourism multipliers are used to determine changes in output, income, employment, balance of payment due to change in the level of tourism expenditures in the area. They are particularly used to capture the secondary economic (indirect and induced) effects of tourism activity (Gautam, 2008b). In mathematical terms, the multiplier effect can be calculated as: $\text{Multiplier} = 1 / (1 - C + M)$; where C = Marginal propensity to consume and

M = Marginal propensity to imports. There are some common multipliers such as income multiplier, employment multiplier and government revenue multiplier to measure the extra income, employment and revenue respectfully created by an extra unit of tourism expenditures (Stynes, no date).

Likewise, Input-Output Model describes the flows of money between various economic sectors. It is a method of tabulating an economic system in a matrix form (I-O table) keeping the sales made by each sector in rows and purchase made in columns. A simplified I-O Model can be written as $X - AX = Y^*$; where X and Y are respective vectors of output and final demand and A is the matrix of technical coefficient. By restoring an identity matrix I to the equation, it can be written as: $(I - A) * X = Y$ or $X = (I - A)^{-1} Y$; where $(I - A)^{-1}$ is the "Leontief Inverse Matrix" or called "Inter-industry Interdependence Coefficient Matrix" (UN ESCAP, 2001; Pao, 2005; Stynes, no date). I – O results provide estimates with larger magnitudes whereas CGE model though has origins in I – O methodology, accounts for resource flows between the sectors and shows price effects too.

Meanwhile, the Tourism Satellites Account (TSA) is also used to measure the contribution of tourism in the national economy. It has a link to the existing System of National Accounts (SNA) and is developed as an extension or satellite of the I-O framework of the SNA. It provides an estimate of overall value added through tourism and thus ascertain the extent of tourism's contribution to gross domestic product. Though there are various economic impact models none of them can capture all dimensions and changes in the tourism industry and its actual impact in the overall economy. The choice of suitable model requires good judgment and considerable modification in the model. However, above mentioned review of models and concepts definitely provides a useful starting point for the economic impact analysis.

Ghali's (1976) study empirically examined the role of tourism in economic growth on Hawaii using expanded version of growth equation. Diamond (1977) analyzed the role of tourism in the economic development of the country in general and Turkey in particular. Jimenez and Ortuno (2005) though were based on country specific analysis, provided frameworks and ingredients for the economic impact analysis for similar cases ranging from developed to developing countries. The tourism impact analysis presented in the Zhang's (2001) paper demonstrated how regional analysis can be carried out by using an economic model. The model presented in the study can be applied in several other policy-oriented projects, such as agriculture, transport and taxation policy and all kinds of regional analysis.

Burger (1978), Khadka (1993), and Pradhananga (1993) assessed the economic impacts of tourism in Nepal using Input-Output Model whereas Shrestha (1998), Sharma (2001), and Upadhyaya (2004) analyzed economic impact of tourism using simple regression models in their research. Balaguer and Cantavella-Jorda (2002) examined the role of tourism in Spanish long-run economic development and tested tourism-led growth hypothesis in their study. Using quarterly data for the period from 1975 to 1997 and Granger Causality Test they concluded that economic growth has been sensible to

persistent expansion of international tourism. Another study by Zortuk (2009) showed the economic impact of tourism on Turkey's economy. It used quarterly data from 1990Q1 and 2008Q3 to investigate the relationship between tourism expansion and economic growth. Using Granger Causality Test based on VECM it discovered that unidirectional causality from tourism development to economic development exists between the two variables in Turkey.

Similarly, Khalil and et.al (2007) examined the role of tourism in economic growth of Pakistan. Using annual data for the period from 1960 to 2005, they identified empirically whether there is a unidirectional or bidirectional causal relation between tourism and economic growth. Using the concepts and methods of the co-integration and Granger Causality Test, their study explored the short-term dynamic relations as well as long-run equilibrium conditions and concluded about the existence of co-integration between tourism and economic growth in Pakistan.

The causal relationship between tourism earnings and growth in developing economies has been of considerable interest among contemporary economists because of its tremendous policy implications. Despite the increasing importance of tourism to achieve the national economic goal, economic analysis has attracted relatively little attention in the Nepalese studies. The basic approach of the paper is to assess the relationship of tourism receipt and economic growth variables to ascertain the relationship between tourism and economic expansion.

The present study is quite different from those mentioned above in terms of two dimensions viz., the first is coverage of empirical analysis in Nepalese perspective and the second is the extra matter that present study attempts to examine. In fact, the difference thus gained is the premises and the justification of the present study.

III. METHODOLOGY

To examine the role of tourism earnings on economic growth it is necessary to investigate whether tourism receipt causes economic growth or not. The model is specified as follows:

$$YR_t = \alpha_0 + ER_t + \acute{u}_t; \quad \dots\dots\dots (1)$$

where, YR represents level of real GDP at time t, ER refers to the level of real foreign exchange earnings from tourism at time t, \acute{u}_t is the error term and t indicates the time period.

First of all, unit root test has been carried out to each series individually in order to provide information about the data being stationary. Non-stationary data contain unit root. The existence of unit root makes the results of hypothesis test unreliable as it create the problem of spurious. There are various methods such as Dickey Fuller (DF), Augmented

Dickey Fuller (ADF), Durbin Watson test (CRDW), and Phillip-Perron (PP) to conduct unit root test. Here, Augmented Dickey-Fuller Test (ADF)² has been applied to test for the existence of unit root and to determine the degree of differences in order to obtain the stationary series of GDPR and RFXET. The result is derived using Johansen Co-integration Test.

Johansen’s methodology takes its starting point in the vector autoregression (VAR) of order p given by $y_t = \mu_t + A_t y_{t-1} + \dots + A_p y_{t-p} + \epsilon_t$ where y_t is an $n \times 1$ vector of variables that are integrated of order one – commonly denoted $I(1)$ – and ϵ_t is an $n \times 1$ vector of innovations. This VAR can be re-written as :

$$\Delta y_t = \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \Pi y_{t-p} + \mu_t + \epsilon_t \quad \dots\dots\dots (2)$$

Where, $\Pi = \sum_{i=1}^p A_i - I$ and $\Gamma_i = - \sum_{j=i+1}^p A_j$

In this test, the null hypothesis of r co-integrating vectors is tested against the alternative of $r+1$ co-integrating vectors. Thus, the null hypothesis $r = 0$ is tested against the alternative that $r = 1$ against the alternative $r = 2$, and so forth. Johansen proposes two different likelihood ratio tests of the significance of these canonical correlations and thereby the reduced rank of the Π matrix: the trace test and maximum eigenvalue test, as follows :

$$J_{\text{trace}} (r / p) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i)$$

$$J_{\text{max}} (r / r + 1) = -T \ln(1 - \hat{\lambda}_{r+1})$$

Where, T is the sample size and $\hat{\lambda}$ is the i :th largest canonical correlation.

It is also to note that the co-integration tests are very sensitive to the choice of lag length. Following Cartavella-Jorda and Shamin and et. al. after confirmation of the existence of co-integration between the variables in the equation, the Granger Causality test has been performed.

The traditional practice in testing the direction of causation between two variables is the Granger causality test. According to Granger, X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y. In other words, if a past value of X improves the prediction of Y with statistical significance, then we can conclude that X "Granger Causes" Y. The Granger causality test consists of estimating the following equations:

$$YR_t = \beta_0 + \sum_{t=1}^n \beta_{1i} YR_{t-i} + \sum_{t=i}^n \beta_{2i} ER_{t-1} + U_t \quad \dots\dots\dots (3)$$

2 The error in DF test might be serially correlated. The possibility ...

$$ER_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} ER_{t-i} + \sum_{i=1}^n \alpha_{2i} YR_{t-i} + V_t \quad \dots\dots\dots (4)$$

Where U_t and V_t are uncorrelated and white noise error term series. Causality may be determined by estimating Equations 3 and 4 and testing the null hypothesis that $\sum_{i=1}^n \beta_{1i} =$

0 and $\sum_{i=1}^n \alpha_{1i} = 0$ against the alternative hypothesis that $\sum_{i=1}^n \beta_{1i} \neq 0$ and $\sum_{i=1}^n \alpha_{1i} \neq 0$

for equations (3) and (4) respectively. If the coefficient of α_{1i} is statistically significant but β_{1i} is not statistically significant, then YR is said to have been caused by ER (unidirectional). The reverse causality holds if coefficients of β_{1i} are statistically significant while α_{1i} is not. But if both β_{1i} and α_{1i} are statistically significant, then causality runs both ways (bi-directional).

The evidence of co-integration allows using a vector error correcting modeling of the data to formulate the dynamic of the system. If both variables YR and ER are co-integrated then there is a long run relationship between them. Of course, in the short run these variables may be in disequilibria, with the disturbances being the equilibrating error. The dynamics of this short run disequilibrium relationship between these two variables can be described by an error correction model (ECM).

According to Engle and Granger, the Error Correction Model can be specified as follows for any two pairs of test variables.

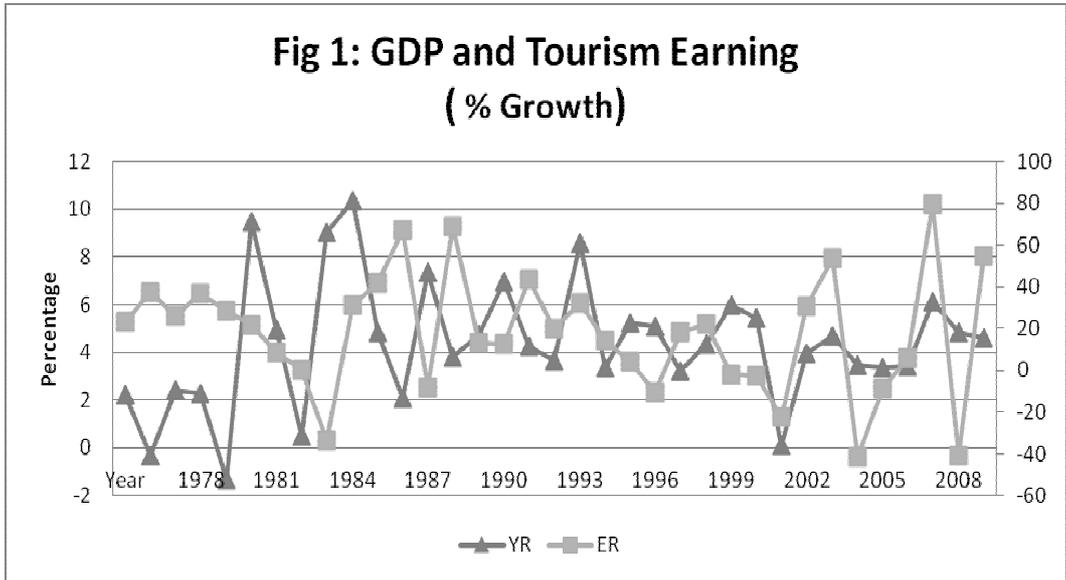
$$\Delta YR_t = + p_1 Z_{t-1} + \alpha_1 \Delta FR_t + U_{1t} \quad \dots\dots\dots (5)$$

$$\Delta FR_t = + p_2 Z_{t-1} + \beta_1 \Delta YR_t + U_{2t} \quad \dots\dots\dots (6)$$

Statistical significance tests are conducted on each of the lagged Z_t term in Equations (5) and (6). The coefficients of the Z_t reflect the short run disequilibrium in the model. The parameters, p_1 and p_2 , are the speed adjustment parameters in equation (5) and (6) when there is a discrepancy from long run equilibrium.

IV. EMPIRICAL RESULTS AND DISCUSSION

This paper utilizes annual data starting from 1975 to 2010. Out of two variables used in the model, earning from tourism (ER) is obtained from Tourism Statistics while GDP series (YR) is derived from Economic Survey, 2010/11. Figure 1 shows the annual growth rate for both variables.



The empirical analysis begins with identifying level of integration of each variables as regression with non-stationary time series data may lead to spurious result. Thus, the analysis proceeds for the unit root test (Augmented Dickey Fuller 1979, 1981) for both the variable YR and FR and results are presented in Table No. 2. The Augmented Dickey Fuller (ADF) Test results confirm that the time series data of the variables in the model are non-stationary in their levels. However these variables are stationary in their first difference.

Table 2: ADF TEST

Variable	ADF (based on SIC)		Decision
	Level	1 st Diff.	
YR	5.7811 (1.000)	-3.4581 0.0156)	I (1)
FR	-1.8420 (.3537)	-8.0274 (0.000)	I (1)

Note: Critical Values for 1 percent, 5 percent and 10 percent are -3.65, -2.95 and 2.62 respectively. The value inside the parenthesis is probability.

The result exhibited that both variables are stationary in first difference. Hence, one can estimate the long run relationship using Johansen Co-integration Test. Given the integration of these series is of the same order; it is desirable to test whether the series are co-integrated over the sample period. Table 3 shows the results of the Johansen co-integration test. The actual maximum Eigen value statistics λ_{max} , rejects the null hypothesis that there is no co-integration between the variables, i.e. $r = 0$ at the 95 and 99

percent confidence level. In favor of the alternative hypothesis that there is at least one co-integrating vector i.e. $r = 1$. The analysis indicated that there are two co-integrating equations at both 1% and 5% significance level. The observed trace statistics also confirms this finding at both 95 and 99 percent confidence level. The existence of co-integration implies that there is long-run relationship between the variables in our model during the review period. Likewise, such type of result is even valid for the equation in first difference. Hence, the integration between these variables supports the conventional wisdom and theoretical underpinnings that tourism earnings help to increase economic growth.

Table 3: Johnson's Co-integration Test
Lags interval (in first differences) 1 to 1

Null Hypothesis	Eigen-value	λ_{1max}	Critical Value 5% / 1%	λ_2 Trace	Critical Value 5% / 1%
$r = 0$	0.4234	18.722*	14.07 / 18.63	28.307**	15.41 / 20.04
$r \leq 1$	0.2456	9.585**	3.76 / 6.65	9.585**	3.76 / 6.65

Variables in the co-integrating vectors: YR and FR

*(**) denotes rejection of the hypothesis at the 5%(1%) level.

Both Max-eigenvalue and Trace test indicates 2 co-integrating relationships at both 5% and 1% significance levels.

The results of the Granger Causality Test are reported in Table 4. The Wald F-statistic for equation 3 (with a lag of one, two and three) is 0.02, 0.82 and 2.56 respectively which are statistically insignificant at 5 percent significance level. Likewise, the statistics for the same equation improves with the lag of 3, 4 and 5 as 2.56, 2.35 and 2.01 respectively. Thus it shows that the past values of tourist receipts do granger cause for the economic growth.

In equation 4 however, the result points for another strong relationship from YR to FR. The Wald F-statistic for equation 4 (with a lag of one and two) is 14.33 and 5.40 respectively which are statistically significant at 5 percent and 1 percent significance level. This simply indicates that past values of YR do granger cause tourism earnings.

Table 4: Granger Causality Tests
Sample: 1976 2010

Null Hypothesis:	Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 6
FR does not Granger Cause YR (Equation 3)	0.02 (0.90)	0.82 (0.45)	2.56 (0.08)	2.35 (0.08)	2.01 (0.14)	1.90 (0.45)
YR does not Granger Cause FR (Equation 4)	14.33 (0.00)	5.40 (0.01)	2.70 (0.16)	1.19 (0.34)	2.40 (0.05)	2.65 (0.01)

The value outside the parenthesis is F-Statistic and inside the parenthesis is probability.

To determine the short-run dynamics, error correction model is estimated. The focus of the Vector Error Correction analysis is on the lagged Z_t terms. These lagged terms are the residuals from the previously estimated co-integration equations. In the present case the

residual from two-lag specification of the co-integration equations were used in the Error Correction estimates. Lagged Z_t terms provide an explanation of short run deviations from the long run equilibrium for the equations. Lagging these terms means that the disturbance of the last period will impact the current time period.

Statistical significance tests are conducted on each of the lagged Z_t term in Equations (7) and (8). In general, finding statistically insignificant coefficients of the Z_t term implies that the system under investigation is in the short run equilibrium as there are no disturbances present. If the coefficient of the Z_t term is found to be statistically significant, then the system is in the state of the short run disequilibrium. In such a case the sign of the Z_t term gives an indication of the causality direction between the two test variables and the status (stability) of equilibrium, estimation results of Equations (7) and (8) are summarized in appendix Table I and Table II respectively.

$$\Delta ER = -0.38Z_{t-1} + 3335.89 - 0.37 \Delta ER_{t-1} - 0.13 \Delta ER_{t-2} - 0.09 \Delta YR_{t-1} - 0.11 \Delta YR_{t-2} \dots (7)$$

(-2.311)** (-1.672)*** (-0.562) (-1.237) (-1.593) (2.454)*

R-Square: 0.43 Adj. R-squared: 0.33 F-statistic: 4.09

$$\Delta YR = -2.09 Z_{t-1} + 20761.91 + 1.89 \Delta ER_{t-1} + 1.65 \Delta ER_{t-2} - 0.25 \Delta YR_{t-1} - 0.34 \Delta YR_{t-2} \dots (8)$$

(-5.046)* (6.107)* (3.425)* (2.844)* (-1.399) (-1.893)***

R-Square: 0.58 Adj. R-squared: 0.51 F-statistic: 7.61

Note: Values in the parentheses are t values and *, ** and *** indicate 1%, 5%, and 10% level of significance respectively.

In Equation (7) the error correction and second lag of economic growth are significant at 5% level. Similarly, in equation (8) the error correction term and both lag terms of change in tourism receipts are significant at 1 percent as well as second lag of economic growth is significant at 10 percent level. It depicts that the change in economic growth is explained by the change in foreign exchange receipts. In addition, it is clear from the estimate of equations (7) and (8) that both variables, YR (economic activities) and FR (tourism earning), respond to a short term deviation from long run equilibrium. Therefore, as both of the speed adjustment parameters, p_1 and p_2 , are negative and significant, indicate that both variables respond to the discrepancy from long run equilibrium.

Granger causality in a co-integrated system needs to be reinterpreted. In the above, co-integrated system Z_t granger causes YR and ER in both equations, since lagged values of the Z_t entering Equations (7) and (8) are statistically significant. When the results of estimation of Equations (7) and (8) are analyzed together, it is clear that a bi-directional causality exists between real gross domestic product and tourism receipts.

V. CONCLUSION

The analysis about the relationship between tourism earning and economic growth exhibited the significant relationship between the variables. Using the concepts and methods of the unit root test, co-integration, Granger causality test and error correction method, the study confirms that there exists short-term dynamic relationship as well as long-run cointegrating relationship between tourism income and GDP. It is consistent with the results of Balaguer and Cantavella-Jorda (2002) that used the data for Spain and also with Khalil et. al (2004) that used data for Pakistan.

In addition, the evidence seems to verify the notion that tourism growth granger causes economic growth and vice versa indicating a bi-directional causality between economic growth and tourism growth. It is clear that tourism growth increases economic activities and economic growth also facilitates for the expansion of tourism activities in the country. Our finding suggests that policy should be focused to develop tourism sector in order to achieve high economic growth.

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Appendix Table I: Error Correction Representation for the Equation (5)
Dependent Variable: ΔYR

Variables	Coefficients	t-values	Standard Error
Constant	20761.91	[6.10709]	
Z_{t-1}	- 2.087	[-5.04694]*	(0.41354)
$\Delta ER (-1)$	1.885	[3.42516]*	(0.55037)
$\Delta ER (-2)$	1.645	[2.84410]**	(0.57828)
$\Delta YR (-1)$	-0.254	[-1.39875]	(0.18172)
$\Delta YR (-2)$	- 0.3356	[-1.89274]	(0.17733)
R-Square	0.59	AIC	20.33981
Adj.R-squared	0.51	SC	20.61190
	F-statistic	7.61	

Note: Values in the parentheses are t values and *,** and *** indicate 1%, 5%, and 10% level of significance respectively.

Appendix Table II: Error Correction Representation for the Equation (6)
Dependent Variable: ΔER

Variables	Coefficients	t-values	Standard Error
Constant	3335.89	[-1.672]	
Z_{t-1}	- 0.382	[-2.311]*	(0.16534)
$\Delta ER (-1)$	0.37	[-0.562]	(0.22005)
$\Delta ER (-2)$	- 0.13	[-1.237]	(0.23121)
$\Delta YR (-1)$	- 0.09	[-1.593]	(0.07266)
$\Delta YR (-2)$	- 0.11	[2.454]*	(0.07090)
R-Square	0.43	AIC	18.50637
Adj.R-squared	0.33	SC	18.77847
	F-statistic	4.09	

Note: Values in the parentheses are t values and *,** and *** indicate 1%, 5%, and 10% level of significance respectively.