Economic Benefits of Agricultural Tourism: Appraisal and Prospects

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Abstract

According to Bowen (1989), when tourism becomes established in an agrarian economy, the common perception is that tourism will drive out agriculture, but with the emergence of corporate farming and smart farmers, there is a need to integrate the fate of growth of the agricultural sector with the industry and service sectors. Hence emerged a concept known as 'Agricultural Tourism' that integrates tourism with agriculture. Since the tourism sector has no boundaries, the integration of agriculture with tourism can be expanded in multiple ways. The inter linkage between agriculture and tourism may act as a catalyst in generating new economic opportunities, revenue generation, and in turn, contribute to the GDP growth of the economy. In the present paper, an effort has been made to assess empirically how the growth in agriculture and tourism can contribute to the overall growth of the economy. Multiple linear regression method was applied to assess the impact of agriculture and tourism on GDP growth.

Keywords: **GDP growth, agriculture-tourism, service sector, economic growth, revenue generation**

JEL Classification: L83, O40, Q13

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Agriculture provides direct employment to about 70% of the working people in the country, and contributes about 31% of the GDP and constitutes about 25% of the total value of India's exports. It forms the basis of many premier industries of India, including the cotton textiles, jute, and sugar industries. Being the largest source of employment and income to millions of people, it provides a vast market for our industrial products. It is because of this paramount significance of agriculture in India's economy that this sector has been and continues to be accorded priority in India's plans for economic development. Over the years, Indian agriculture, which is a primary sector, has showed a decreasing trend in its contribution to economic growth. There is a wide spread between agriculture, industry, and service sector growth patterns. Higher growth in the industrial and service sectors accompanied by lower growth in the agricultural sector has raised so many unanswered questions over the performance of the agricultural sector. The disparities in growth among the three major sectors has raised concerns over the policy issues. Tourism, in its many forms, operates widely in our country to provide employment and entertainment, and contributes significantly to the growth of the economy.

Eco-Tourism as we know, concentrates upon the environment friendly tours and travels to explore nature, its environment, and flora & fauna of every geographic region. Agri tourism is a novel concept, which integrates tourism with agriculture. Since the tourism sector has no boundaries, the integration of agriculture with tourism can be expanded in multiple ways. Agri tourism helps farmers in generating employment on a large scale and provides additional revenue to the skilled and unskilled workforce by expanding their agricultural activities in terms of the tourism perspective, which provides people an opportunity to experience the real enthralling and authentic contact with rural life, taste the local genuine food, get familiar with rural farm practices, rural peoples' lifestyle, culture, art and craft, and so forth during their visit. Therefore, developing agri tourism in the country will definitely promote growth in agriculture.

Literature Review

According to Bowen (1989), when tourism becomes established in an agrarian economy, the common perception is that tourism will drive out agriculture, but with the emergence of corporate farming and intellectuals of farmers,

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there is a need to integrate the fate of growth of the agricultural sector with industry and service sectors. According to Black and Nickerson (1997), in their study on the business of agritourism/recreation in Montana, the farm and ranch recreation business in Montana is a growing industry. While the majority of the farmers/ranchers are interested in fees for hunting and fishing as well as guiding and outfitting, there are an increasing number of ranchers who are interested in expanding into the dude ranch and working cattle ranch business. Diversifying into the farm/ranch recreation business provides the agricultural industry with additional income when prices for cattle and crops are in a flux and allows owners of large acreage to fully utilize what is already at their fingertips. With growing populations in Urban America, there is a need for open spaces ,a relaxed atmosphere, and a different way of life. The farmer/rancher can provide these opportunities simply because the resources are there.

According to Ramakumar and Shinde (2008), Indian agriculture has to face tremendous competition; crop growth has also weakened due to the uncertain climatic conditions. There is no minimum support price guarantee also. These changes have altered the form and practices of farming operations. Farmers are looking beyond traditional farming to generate income via various forms of direct on farm marketing, and farm based non-agriculture businesses. According to Taware (2010), agri tourism brings major primary sector agriculture closer to major service sector tourism. This convergence is expected to create a win-win situation for both the sectors. The tourism sector has the potential to enlarge, and has the capacity to absorb expansion in the tourism sector.

According to Gopal, Varma, and Gopinathan (2008), the development of agri-tourism in rural areas of Maharashtra is still in its nascent stage. Maharashtra has perfect opportunities to enhance its agri-tourism offer, and it also represents one of the few states, which unifies different climates, natural characteristics, and socio-cultural entities. Though there has not been much initiative by the State government for agri-tourism development, it has been successfully initiated through the farmers' efforts. According to Maruti (2009), Maharashtra has a great potential for the development of agro-tourism, because of natural conditions and different types of agri products, and also has a variety of rural traditions and festivals. More than 45% of the population in the State is living in the urban areas and they want to enjoy and gain insights into the rural life. Hence, there lies good opportunity to develop agro-tourism in Maharashtra. However, this business is faced with the problems of low awareness among the farmers and financing problems. The agriculture departments of the districts' agricultural universities should try and give an orientation about agro-tourism to the farmers and provide some innovative ideas regarding to the same. The government should try to provide optimum financial aid for the development of agro-tourism activities in Maharashtra by providing grants and institutional finance. Bank should provide optimum financial help for the agro-tourism activities in Maharashtra. Forming a union of the agro-tourism service providers is also another need of these farmers, which would help in developing the agricultural tourism network in India, including Maharashtra.

From the above-mentioned literature review, it is very much clear that the integration between agriculture and tourism will act as a catalyst for the growth of the rural economy, leading to the development of infrastructure and employment opportunities in the State.

Data and Methodology

The data set contains three variables - agriculture value added (annual % growth), tourism annual growth (annual %), and GDP growth (annual %) to test the statistical significance of agricultural growth and tourism growth on the GDP taken from the source of Indiastat.com. The time period of the study is from 1981-2011, and all observations are in annual growth percentages. The data variables were plotted on the graph to see their behavior of trend over the time period of the study. For the applicability of linear regression, all the data variables were tested for the linear relationships by using a simple plot between dependent and independent variables in the study. Furthermore, the following statistical tools were used to analyze the data variables :

- Descriptive statistics,
- Karl Pearson's coefficient of correlation,
- Multiple linear regression model.

Descriptive statistics are the univariate summary statistics for the data variables that includes sample size, mean, minimum, maximum, standard deviation, variance, range, sum, standard error of the mean, and kurtosis and skewness with their standard errors. These statistics are helpful in understanding central tendency and dispersion in the data variables. The higher the standard error, the less is the consistency in the performance of data variables. The Karl Pearson's coefficient of correlation (*r*) measures the magnitude of linear relationship between the two variables. The value of *"r"* may take from -1 to +1, indicating that the variables are perfectly negatively correlated and are perfectly positively correlated respectively. Depending on the value of *"r"* , the correlation between the variables was studied. If the value of *"r"* lies between 0 to 0.5, then the variables are said to have a low positive relationship, if the value of *"r"* lies between 0.5 to 0.75, then the variables are said to have a moderately positive relationship, and if the value of *"r"* lies between 0.75 to +1, then the variables are said to be highly positively correlated, and similar is the case in negative relationships.

According to Gujarati (2007), the multiple linear regression model, which consists of one dependent variable and more than one independent variable, is applicable for the data variables which have a linear relationship among them. The term "regression" literally means stepping back towards the average. In multiple linear regression, the average relationship between the variables is used to estimate the dependent variable for the given independent variables. The dependent variable (effect) is called as the study variable and the independent variables (cause) are called the auxiliary information. The assumption of linearity drives the regression model for estimation and forecasting of the dependent variable under study. The general equation of a multiple linear regression is as follows :

$$Y = A + B_1X_1 + B_2X_2 + \ldots\ldots + B_nX_n + U$$

Where,
Y is the dependent variable, the value of which is to be known,
$X_1, X_2, \ldots\ldots\ldots, X_n$ are the independent variables whose values are known,
$B_1, B_2, B_3, \ldots\ldots\ldots, B_n$ are the coefficients of X_1, X_2, X_3, $\ldots\ldots$, X_n respectively,
A is constant,
U is the error term.

The above multiple linear regression is based on the principle of least squares which assumes the following assumptions on error term "*U*". If the assumptions hold good, then the least square estimators are considered to be the best linear unbiased estimators (BLUE) of model parameters.

➲ The error term has a normal distribution with a mean of 0.

➲ The variance of the error term is constant across cases and is independent of the variables in the model. An error term with a non-constant variance is said to be heteroskedastic.

➲ The value of the error term for a given case is independent of the values of the variables in the model and of the values of the error term for other cases.

➲ For checking the model fit, ANOVA, *R*, *R*-Square, Adjusted *R*-Square are used.

➲ Analysis of Variance (ANOVA) was used to test the acceptability of the model from a statistical perspective by defining the model's ability to explain any variation in the dependent variable. However, it does not directly address the strength of that relationship. For that, *R*-Square and Adjusted *R*-Square are better measures in checking the model fit.

➲ *R*, the multiple correlation coefficient, is the linear correlation between the observed and model-predicted values of the dependent variable. Its large value indicates a strong relationship. *R*- Square, the coefficient of determination, is the squared value of the multiple correlation coefficient. It shows the amount of variation explained by the model. Adjusted *R*-Square - is the *R*-Square value adjusted for the degrees of freedom. If *R*-Square and Adjusted *R*-Square values are equal, then the model is considered to be the best fit.

Analysis and Results

➲ **Trends of Data Variables :** The tendency of the data to increase, decrease, or to become stable is well captured by its trend. The agriculture growth rate and tourism growth rate are linearly related to the GDP growth. The Figure

Figure 1. Linear Relationship of the Data Variables

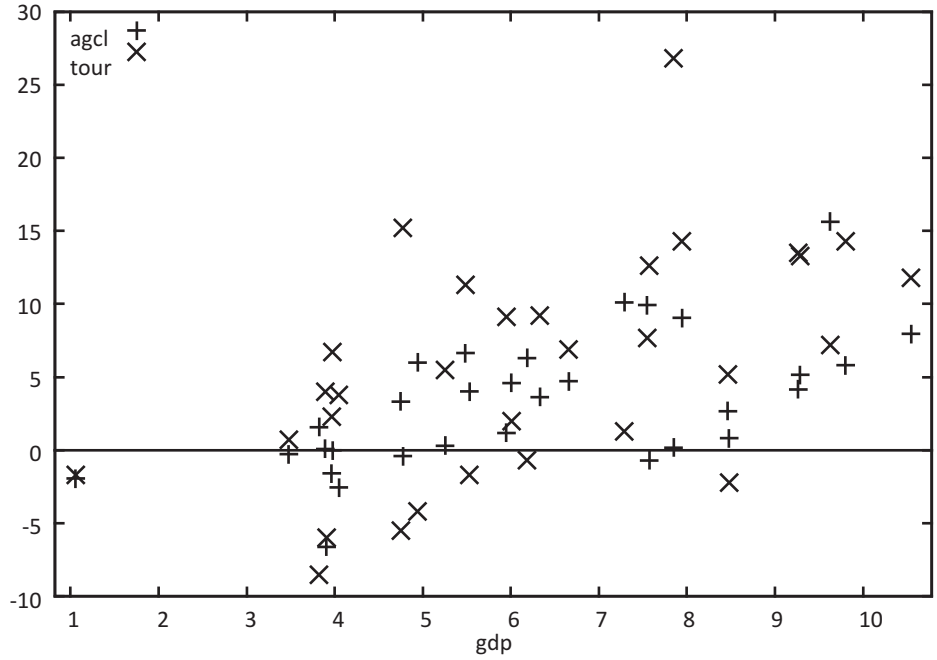

Figure 2. Trend of Data Variables

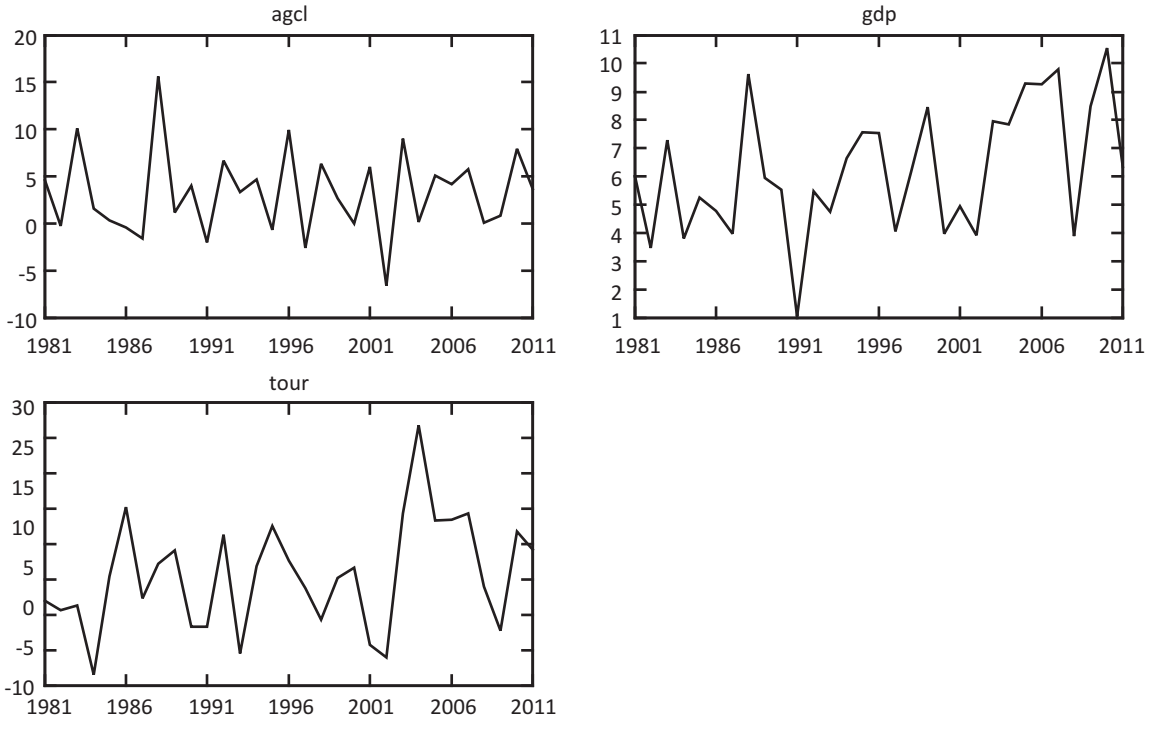

Table 1. Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Annual Agricultural Growth	31	-6.60	15.64	3.2191	4.54462	.489	.421	.755	.821
Annual Tourism Growth	31	-8.50	26.80	5.6194	7.74968	.381	.421	.383	.821
Annual GDP Growth	31	1.06	10.55	6.2479	2.28031	.027	.421	-.551	.821
Valid *N* (listwise)	31								

Table 2. Correlations

		Annual Agricultural Growth	Annual Tourism Growth	Annual GDP Growth
Annual Agricultural Growth	Pearson Correlation	1	.188	.621**
	Sig. (2-tailed)		.312	.000
	N	31	31	31
Annual Tourism Growth	Pearson Correlation	.188	1	.549**
	Sig. (2-tailed)	.312		.001
	N	31	31	31
Annual GDP Growth	Pearson Correlation	.621**	.549**	1
	Sig. (2-tailed)	.000	.001	
	N	31	31	31

** Correlation is significant at the 0.01 level (2-tailed).

Table 3. Correlations (Model Summary)

					Change Statistics					Durbin-
Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate	*R* Square Change	*F* Change	*df1*	*df2*	Sig. *F* Change	Watson
3	.820[c]	.673	.637	1.37439	.094	7.733	1	27	.010	2.160

c. Predictors: (Constant), Annual Agricultural Growth, Annual Tourism Growth, Time

d. Dependent Variable: Annual GDP Growth

1 depicts the linearity relationship of data variables that gives a valid reason to apply the multiple linear regression analysis to test the statistical significance of agriculture and tourism growth on the economy. The Figure 2 shows the trend of agricultural growth rate, tourism growth rate, and GDP annual growth rates. Though the magnitudes are different, all the data variables reflect the same pattern of ups and downs in the growth rates. In the year 1991, all the growth rates depict a downward trend, and subsequently, the years 2001 to 2003 showed an upward trend followed by mixed trends thereafter.

Descriptive Statistics and Correlation Matrix

From the Table 1, it is observed that for the study period (1981-2011), the average growth rate in agriculture was 3.22%, followed by tourism (5.62%), and GDP (6.25%). The minimum agriculture growth rate attained was in the negative (6.60%) followed by tourism with a negative growth rate of 8.50%, and GDP was with a minimum growth rate of 1.06%. The distribution of the data is low positively skewed with a leptokurtic curve (slightly peaked than the normal curve). In terms of variance, tourism growth has high variations than agriculture and GDP ; in terms of consistency, the GDP growth rate is more consistent than agriculture and tourism.

From the Table 2, the Karl Pearson's coefficient of correlation between the data variables shows that there exists significant correlations between GDP and agriculture growth rate (0.621) and GDP and tourism growth rate (0.549). The inter item correlation between agriculture growth and tourism growth is low positive (0.188) and non

Table 4. Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	*t*	Sig.	Tolerance	VIF
3	(Constant)	-157.591	58.339		-2.701	.012		
	Annual Agcl Growth	.279	.056	.555	4.947	.000	.961	1.040
	Annual Tourism Growth	.100	.035	.339	2.851	.008	.859	1.165
	Time	.081	.029	.324	2.781	.010	.890	1.124

Dependent Variable: Annual GDP Growth

Table 5. ANOVA

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	104.993	3	34.998	18.528	.000[c]
	Residual	51.001	27	1.889		
	Total	**155.994**	**30**			

c. Predictors: (Constant), Annual Agricultural Growth, Annual Tourism Growth, Time

d. Dependent Variable: Annual GDP Growth

significant. This low correlation might help in modeling the effects of agriculture and tourism growth on GDP growth rate.

Regression Model

Step wise linear regression method was used to model the effect of agriculture and tourism growth on the GDP growth rate. In step wise linear regression, the explanatory variables were entered sequentially in such a way that the model fit measure *R*-Square gets higher and higher. The Table 3 and Table 4 give the details of stepwise regression analysis and model fit measures that ended up with Model 3, which is giving the higher explanatory power of the model of around 67%. It was found that agriculture growth rate individually (sig.0.000) significantly affected the GDP growth rate ; similarly, the tourism growth rate individually (sig.0.008) significantly affected the GDP growth rate. Time (trend) also affected the GDP growth rate. The ANOVA table (Table 5) shows that agriculture and tourism growth rate including time jointly affected the growth rate of GDP.

The regression model can be written as :

GDP Growth Rate = -157.591 + 0.279 * Agcl Growth + 0.100 * Tourism Growth + *0.081 * Time

1% increase in agricultural growth corresponds to 0.28% increase in GDP growth rate ; similarly, one unit increase in tourism growth rate corresponds to 0.1% increase in the GDP growth rate. The trend affect is negligible. Since the model fit measures *R* Square and Adjusted *R* Square, which are approximately the same, it can be concluded to be the best model fit of the regression results. The Durbin Watson statistic value (2.160) rules out the possibility of autocorrelation in the regression results. All the colinearity statistics VIF values are less than 10, which implies that the regression model is free from the multicollinearity problem. However, this model may be further refined by removing the hetroskedasticity affect so that the higher explanatory power of the regression should be achieved. The Table 6 gives the heteroskedasticty corrected regression model, though there is not much value change in the regression coefficients. The *F* value, Durbin Watson value, and the *R*-Square value increased from 67% to 75%, and also, the better model fit measures were achieved as both the *R*-Square and Adjusted *R*-Square values are nearly equal.

Table 6. Heteroskedasticity Corrected, Using Observations from 1981-2011 (*T* = 31)

	Coefficient	Std. Error	*t*-ratio	*p*-value	
const	3.76684	0.350742	10.7396	<0.00001	***
index	0.0512587	0.0284622	1.8009	0.08289	*
agcl	0.289388	0.0428997	6.7457	<0.00001	***
tour	0.0979458	0.0235479	4.1594	0.00029	***

Statistics based on the weighted data:

R-squared	0.748486	Adjusted *R*-squared	0.720540
F (3, 27)	26.78331	*P*-value (*F*)	3.01e-08
rho	-0.035218	Durbin-Watson	2.043437

Dependent variable: GDP

Conclusion

From the regression model, it was found that about 75% of the variations in GDP growth rate were explained by the combined effect of agriculture growth rate and tourism growth rate. This paper has empirically proved that the growth in agriculture and tourism individually and jointly contribute to the growth rate of the GDP. An agrarian economy like India should exploit the opportunities naturally made available to it through innovation and creation of new business models that encourages new investment and fulfills our infrastructure needs.

Agri-tourism is a novel concept, which integrates tourism with agriculture. Since the tourism sector has no boundaries, the integration of agriculture with tourism can be expandable in multiple ways. Agriculture is the main occupation of our country and majority of the states have agriculture as their livelihood, and as we know the fate of agriculture in many of the Indian states, where farmers are forced to commit suicide after falling into the debt trap, the inter linkage between agriculture and tourism may act as a catalyst in generating new economic opportunities, and revenue generation, which in turn will contribute to the GDP growth of the economy.

Policy Implications and Scope for Further Research

The empirical evidence of the correlations and joint effect of agricultural growth rate and tourism growth rate on the GDP growth rate re-emphasize the need to integrate agriculture with tourism. In India, Maharashtra is the state which has initiated the amalgamation of agriculture based tourism in many parts of the State, which has successfully yielded the required results. Many of the states like Andhra Pradesh and Gujarat have attempted to pursue agricultural tourism. There is a need for a survey to educate farmers and identify the best tourist spots which have a high cultural heritage in agriculture and allied forms.

This study can be extended further by doing a detailed survey on ideally locating the potential agro- tourism sites in different states of the country. This is only possible through a sponsored program that aims at identifying the possible locations of agri tourism sites by conducting a feasibility study on related infrastructure, land, flora and fauna, education, potential employment opportunities, revenue generation and sharing, and new business models. There are many success stories in the West which have highlighted the importance of agriculture tourism in the current global economic prospects. To come out of the vicious circle of agricultural poverty, the concept of agri - tourism is a must for an agrarian economy like India.

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