



INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE AND MANAGEMENT

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JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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CO-INTEGRATION AND CAUSAL RELATIONSHIP BETWEEN GDP AND AGRICULTURE SECTOR

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ABSTRACT

Agriculture in India is one of the most important sectors of its economy. It is the means of livelihood of almost two thirds of the work force in the country. One of the biggest success stories of independent India is the rapid strides made in the field of agriculture. From a nation dependent on food imports to feed its population, India today is not only self-sufficient in grain production but also has substantial reserves. The main objective of the present research work is to study the co-integration between Gross Domestic Product (GDP) and Agricultural Sector and to study the causal relationship between Gross Domestic Product (GDP) and Agricultural Sector. In the present study, the stochastic properties of the variables is analysed by employing Unit Roots Test. In this context, the widely used technique is Augmented Dickey Fuller (ADF) (1979) test. Since, both the variables are integrated to same order I(1), co-movement between the Agriculture Sector and GDP has been tested by the Johansen's Trace and Maximum Eigen value test. Johnson's co-integration test indicates that there is an existence of Co-integration between GDP and Agriculture Sector. Hence, it can be inferred that the agriculture sector and GDP have long-run equilibrium relationship between them. Granger Causality test has been conducted with 1 to 5 years of lags. Granger causality test has provided different results for different lags. With 2 years of lags and 3 years of lags, there is an existence of causal relationship in both the directions between GDP and agriculture sector at 10% level of significance.

KEYWORDS

Agriculture Sector, Co-integration test, GDP and Granger Causality test

INTRODUCTION

Agriculture in India is one of the most important sectors of its economy. It is the means of livelihood of almost two thirds of the work force in the country and according to the economic data for the financial year 2009-10, agriculture accounts for nearly 15% of India's GDP. About 43 % of India's geographical area is used for agricultural activity. Though, the share of Indian agriculture in the GDP has steadily declined, it is still the single largest contributor to the GDP and plays a vital role in the overall socio-economic development of India. One of the biggest success stories of independent India is the rapid strides made in the field of agriculture. From a nation dependent on food imports to feed its population, India today is not only self-sufficient in grain production but also has substantial reserves. Dependence of India on agricultural imports and the crises of food shortage encountered in 1960s convinced planners that India's growing population, as well as concerns about national independence, security, and political stability, required self-sufficiency in food production. This perception led to a program of agricultural improvement called the Green Revolution. It involved bringing additional area under cultivation, extension of irrigation facilities, the use of improved high-yielding variety of seeds, better techniques evolved through agricultural research, water management, and plant protection through judicious use of fertilisers, pesticides and cropping practices. All these measures had a salutary effect and the production of wheat and rice witnessed quantum leap.

To carry improved technologies to farmers and to replicate the success achieved in the production of wheat and rice, a National Pulse Development Programme, covering 13 states, was launched in 1986. Similarly, a Technology Mission on Oilseeds was launched in 1986 to increase production of oilseeds in the country and attain self-sufficiency. Pulses were brought under the Technology Mission in 1990. After the setting up of the Technology Mission, there has been consistent improvement in the production of oilseeds. A new seeds policy has been adopted to provide access to high-quality seeds and plant material for vegetables, fruit, flowers, oilseeds and pulses, without in any way compromising quarantine conditions. To give fillip to the agriculture and make it more profitable, Ministry of Food Processing Industries was set up in July 1988. Government has also taken initiatives to encourage private sector investment in the food processing industry.

AGRICULTURE GROWTH RATE IN INDIA GDP

India GDP means the total value of all the services and goods that are produced within the territory of the nation within the specified time period. The country has the GDP of around Rs. 4464081 crores in 2009-10, and this makes the Indian economy the twelfth biggest in the whole world. The growth rate of India GDP is nearly 8% in 2009- 2010. The Agriculture Sector has always been an important contributor to the India GDP. This is due to the fact that the country is mainly based on the agriculture sector and employs around 60% of the total workforce in India. Agriculture Growth Rate in India GDP, in spite of its decline in the share of the country's GDP plays a very important role in the all round economic and social development of the country. The Growth Rate of the Agriculture Sector in India GDP grew after independence for the government of India placed special emphasis on the sector in its five-year plans. The Green revolution took place in India and this gave a major boost to the Agriculture Sector for irrigation facilities, provision of agriculture subsidies and credits, and improved technology. This in turn helped to increase the Agriculture Growth Rate in India GDP. The agricultural yield increased in India after independence but in the last few years it has decreased. This in its turn has declined the Growth Rate of the Agriculture Sector in India GDP. Agriculture Growth Rate in India GDP has slowed down for the production in this sector has reduced over the years.

FACTORS CAUSING LOW AGRICULTURAL PRODUCTION IN INDIA

The Agriculture Sector has had low production due to a number of factors such as illiteracy, insufficient finance, and inadequate marketing of agricultural products. Further the reasons for the decline in Agriculture Growth Rate in India GDP are that in the sector the average size of the farms is very small which in turn has resulted in low productivity. Also the Growth Rate of the Agriculture Sector in India GDP has declined due to the fact that the sector has not adopted modern technology and agricultural practices. Agriculture Growth Rate in India GDP has also decreased due to the fact that the sector has insufficient irrigation facilities. As a result of this, the farmers are dependent on rainfall, which is however very unpredictable.

LITERATURE REVIEW

Salih Turan Katircioglu (2006) suggest that agricultural output growth and economic growth as measured by real gross domestic product growth are stationary at their levels, thus, they are naturally co-integrated. They are in long run equilibrium relationship. And secondly, there is feedback relationship between these variables that indicates bidirectional causation among them in the long run period¹. **Salih katircioglu (2006)** investigates possible co integration and causal relationship between economic growth and sectoral growth in North Cyprus mainly including agriculture, industry and services sector. Results of this study reveal that agriculture is still the backbone of the North Cyprus economy. It is in a long run equilibrium relationship with growth and gives direction to industry as it provides raw materials to that sector. However, it does not give any direction to the economic growth as measured by real Gross Domestic Product (GDP) growth rate². **Titus O. Awokuse (2009)** by taking advantage of recent developments in time series econometric methods re-examines the question of whether agriculture could serve as an engine of growth. Results from the empirical analysis provide strong evidence indicating that agriculture is an engine of economic growth. Furthermore, the authors find that trade openness has a positive effect on GDP growth³.

OBJECTIVES OF THE STUDY

The main objective of the study is to analyse the long-term equilibrium relationship between Agriculture sector and Gross Domestic product (GDP). In the present study, causal relationship between Agriculture sector and Gross Domestic product is also studied.

METHODOLOGY OF THE STUDY

PERIOD OF STUDY

The study covers a period of 59 years from 1951-52 to 2009-10.

SOURCES OF DATA

The present study is based on secondary data. Data on GDP and Agricultural production has been collected from various issues of "Handbook of Statistics on Indian Economy" published by Reserve Bank of India. Apart from this, various journals, magazines, text books and articles have been referred to get the relevant information.

FRAMEWORK OF ANALYSIS

Real Gross Domestic Product and Agriculture & Allied activities production at constant prices has been considered at factor cost on annual basis from 1951-52 to 2009-10. For the present study, Natural logarithmic values of GDP and Agriculture Sector are considered. First of all, to fulfill the research objectives, descriptive statistics like mean, median, standard deviation, skewness, Kurtosis, Jarque-bera statistic etc., are carried to show the nature and basic characteristics of the variables used in the analysis. Correlation is the next step to move towards the objectives of this study and finding any relationship between the natural logarithmic values of GDP and Agriculture Sector. Then the formal investigation is carried out by examining the stochastic properties of the variables by using Unit Roots Test to test the stationarity of the variables. In this Context, the widely used technique is Augmented Dickey Fuller (ADF) (1979) test. If the calculated Augmented Dickey Fuller (ADF) Statistic is less than its critical value, then the variable is said to be stationary or integrated to order Zero i.e., I(0). If this is not the case, then ADF test is performed on the first difference of variable. If two variables i.e., Log(GDP) and Log(Agriculture Sector) are both integration of same order, then the next step is to find out whether they are co-integrated. This has been done by using Johansen's Co-integration Approach. Then the causal relationship between GDP and Agriculture has been tested by applying Grangers Causality test.

DESCRIPTIVE STATISTICS OF NATURAL LOGARITHMIC VALUES OF GDP AND AGRICULTURE SECTOR

TABLE 1: DESCRIPTIVE STATISTICS

Descriptive Statistics	Log (GDP)	Log (Agriculture Sector)
Mean	13.53948	12.48423
Median	13.37222	12.41799
Maximum	15.31157	13.38765
Minimum	12.34598	11.74191
Std. Dev.	0.819131	0.471341
Skewness	0.509183	0.328653
Kurtosis	2.279571	1.998651
Jarque-Bera	3.825379	3.527093
Probability	0.147683	0.171436
Observations(N)	59	59

As shown in table 1, Mean natural logarithmic value of GDP is 13.539 with a standard deviation of 0.819 and Mean natural logarithmic value of Agriculture Sector is 12.484 with a standard deviation of 0.471. It clearly indicates that variation in the distribution of GDP is more than that of Agriculture sector. Comparatively higher positive skewness in the case of natural logarithmic value of GDP indicates longer right tail of the distribution of GDP. Kurtosis of GDP is higher than the kurtosis of Agriculture sector indicating higher abnormal peaks in the distribution of GDP values in the given period. Jarque-Bera statistic tests the null hypothesis that the given data has normal distribution. In the present case, the 'p' value of Jarque-Bera statistic is more than 0.10 which indicates that both the variables i.e., natural logarithmic values of GDP and Agriculture sector have normal distribution.

STUDY OF CORRELATION BETWEEN GROSS DOMESTIC PRODUCT AND AGRICULTURE SECTOR

TABLE 2: CORRELATION BETWEEN GROSS DOMESTIC PRODUCT AND AGRICULTURE SECTOR

Variables	Observations	Pearson Correlation	'p' value
Log(GDP) & Log(Agriculture Sector)	59	0.996	0.001

As shown in table 2, correlation between GDP and Agriculture Sector is very strong and statistically significant at 1% level of significance which is indicated by Pearson's correlation coefficient of 0.996 with a 'p' value of 0.001.

TESTING THE STATIONARITY OF VARIABLES

TABLE 3: AUGMENTED DICKEY-FULLER TEST

Variables	ADF Test at Levels		ADF Test at First difference	
	Test Statistic	Critical Values	Test Statistic	Critical Values
Log(Agriculture sector)	-1.991974	1% level -4.127 5% level -3.490 10% level -3.174	-8.047673	1% level -4.131 5% level -3.492 10% level -3.175
Log(GDP)	0.842694		-5.532956	

To see the order of integration of the variables i.e., Agriculture sector and GDP, Augmented Dickey-Fuller test has been employed. Table 3 reveals that at the levels both the variables are non-stationary, because the test statistic value is less than the critical value. The results indicate that both the variables are

stationary at the first difference. Since, both the variables are integrated to same order I(1), then the next step is to find out whether they are co-integrated. The co-integration between the Agriculture Sector and GDP has been tested by the Johansen's Trace and Maximum Eigen value test.

STUDY OF CO-INTEGRATION BETWEEN GDP AND AGRICULTURE SECTOR

TABLE 4: PAIR-WISE CO-INTEGRATION BETWEEN GDP AND AGRICULTURE SECTOR (TRACE TEST)

Null Hypothesis	Alternative Hypothesis	Eigen Value	Test Statistic	Critical Value	
				95% Confidence Level	90% Confidence Level
$r=0$	$r>0$	0.295015	26.30719	15.49471	13.42878
$r<=1$	$r>1$	0.105911	6.381171	3.841466	2.705545

TABLE 5: PAIR-WISE CO-INTEGRATION BETWEEN AGRICULTURE SECTOR AND GDP (MAXIMUM LIKELIHOOD TEST)

Null Hypothesis	Alternative Hypothesis	Eigen Value	Test Statistic	Critical Value	
				95% Confidence Level	90% Confidence Level
$r=0$	$r=1$	0.295015	19.92602	14.26460	12.29652
$r<=1$	$r=2$	0.105911	6.381171	3.841466	2.705545

Table 4&5 provides the statistical results of Johnson's trace statistics and maximum eigenvalue statistics assuming linear deterministic trends in data with intercept. Trace test statistic has the null hypothesis of no co-integrating relations ($r=0$) against the general alternative of $r>0$. As indicated table 4, the calculated value i.e., Trace test statistic value is more than critical value at 95% & 90% level of confidence. it can be concluded that there is an existence of two Cointegrating equations. The maximum eigenvalue test makes the confirmation of this result. Thus, the agriculture sector and GDP have long-run equilibrium relationship between them.

STUDY OF CAUSAL RELATIONSHIP BETWEEN GDP AND AGRICULTURE SECTOR

TABLE 6: PAIR WISE GRANGER CAUSALITY TEST BETWEEN GDP AND AGRICULTURE SECTOR

Null Hypothesis	Years of Lags	Observations	F-Statistic	Probability
$\Delta \text{Log(GDP)}$ does not Granger Cause $\Delta \text{Log(Agriculture Sector)}$	1	57	1.23657	0.2711
$\Delta \text{Log(Agriculture Sector)}$ does not Granger Cause $\Delta \text{Log(GDP)}$			2.29254	0.1358
$\Delta \text{Log(GDP)}$ does not Granger Cause $\Delta \text{Log(Agriculture Sector)}$	2	56	2.80945	0.0696
$\Delta \text{Log(Agriculture Sector)}$ does not Granger Cause $\Delta \text{Log(GDP)}$			6.49459	0.0031
$\Delta \text{Log(GDP)}$ does not Granger Cause $\Delta \text{Log(Agriculture Sector)}$	3	55	2.24282	0.0953
$\Delta \text{Log(Agriculture Sector)}$ does not Granger Cause $\Delta \text{Log(GDP)}$			3.72573	0.0173
$\Delta \text{Log(GDP)}$ does not Granger Cause $\Delta \text{Log(Agriculture Sector)}$	4	54	1.97835	0.1140
$\Delta \text{Log(Agriculture Sector)}$ does not Granger Cause $\Delta \text{Log(GDP)}$			3.69968	0.0109

The study has applied Granger causality test proposed by C.J. Granger (1969). Granger proposed that if causal relationship exists between variables, they can be used to predict each other. Since the Agriculture sector and GDP have become stationary at first difference, granger causality test is conducted on first differenced natural logarithmic values of Agriculture sector and GDP. As shown in table 6, when one year lagged data is used to predict causality, there is no causal relationship between Agriculture Sector and GDP in both the directions. Granger causality test, with two years and three years lagged data, has exhibited causality in both the directions indicating that GDP will granger cause agriculture sector and Agriculture sector will granger cause GDP. When four years lagged data is used to predict the causality, the causal relationship is unidirectional indicating that the Agriculture sector granger cause GDP, but GDP does not granger cause agriculture sector.

CONCLUSIONS

As revealed from the present study, there is a strong positive correlation between GDP and Agriculture Sector. Johnson's co-integration test indicates that there is an existence of Cointegration between GDP and Agriculture Sector. Hence, it can be inferred that the agriculture sector and GDP have long-run equilibrium relationship between them. When Granger causality test is conducted with 2 years of lags and 3 years of lags, there is an existence of causal relationship in both the directions between GDP and agriculture sector at 10% level of significance. It indicates that GDP granger cause agriculture sector and at the same time agriculture sector granger cause GDP.

REFERENCES

- Salih Turan Katircioglu, (2006) "Causality between agriculture and economic growth in a small nation under political isolation: A case from North Cyprus", International Journal of Social Economics, Vol. 33 Iss: 4, pp.331 – 343.
- Salih Katircioglu "Co-Integration and Causality Between GDP, Agriculture, Industry and Services Growth in North Cyprus: Evidence from Time Series Data, 1977-2002" *Review of Social, Economic & Business Studies*, Vol.5/6, 173 – 187.
- Titus O. Awokuse "Does Agriculture Really Matter for Economic Growth in Developing Countries?" Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Milwaukee, WI, July 28, 2009.

BIBLIOGRAPHY

- Dev, S.Mahendra and C.Ravi (2003), "Macroeconomic Performance: Performance and Policies", in Rao, CH H and Dev, S.Mahendra (2003), "Andhra Pradesh Development: Economic Reforms and Challenges Ahead", Centre for Economic and Social Studies, Hyderabad
- Reddy, D.N. (2006), "Economic Reforms, Agrarian Crisis and Rural Distress", 4th annual Prof. B.
- Sen A (1996), "Economic Reforms, Employment and Poverty: Trends and Options", Economic and Political Weekly, Vol.31, No35, 36 and 37.
- Humphries, H., Knowles, S., 1998. "Does agriculture contribute to economic growth? Some empirical evidence." *Applied Economics* 30(6): 775-781.
- Hwa, E.C., 1988. "The contribution of agriculture to economic growth: some empirical evidence." *World Development* 16(11): 1329-1339.

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