



IMPACT OF SELECTED SECTORS CONTRIBUTION TO OVERALL GDP OF THE INDIAN ECONOMY WITH REFERENCE TO AGRICULTURE, INDUSTRIAL AND SERVICE SECTOR

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ABSTRACT- The fastest-growing virus which has infected not just one or two countries but the entire world is coronavirus, commonly known as COVID-19 (SARS-CoV-2). This virus had caused massive human and economic loss in many countries. The covid-19 pandemics have disrupted the global economy and India is no different. The economic impact of the covid-19 pandemics in India has been largely disruptive. To understand the impact of pandemic Covid -19 on overall GDP, the researcher has considered three major sectors such as the economy, agriculture, industrial, and service. The main purpose of this paper is to analyze the contribution of the Agriculture, Industrial and Service sectors of Indian economy to the overall GDP of India and also identify the relationship between agricultural, industrial and service sectors and GDP of Indian Economy. The present study is based on secondary data collected from the Central statistical office data on GDP (Retrieved from <https://data.gov.in>) about agriculture, industrial, and service sectors of India. The researcher has used multiple regression analysis and Pearson's Correlation Coefficient. The researcher has found that the growth rate of contribution of the service sector has been increased since 2003-04. There is a strong positive relationship between the growth rate of the Agricultural Sector, the growth rate of the Industrial sector and the growth rate of the Service Sector with the growth rate of GDP. It has been also found that the growth rate of the Service Sector has a very high relationship between the growth rate of GDP as compared to the growth rate of the Agricultural Sector and the growth rate of the Industrial sector. This research recommends policymakers to concentrate their efforts on important areas of all economic sectors that may contribute more to GDP growth and so as to achieve economic growth.

Keywords: Covid-19, Indian Economy, Agricultural Sector, Industrial sector, Service Sector, GDP, Regression, Correlation.

INTRODUCTION

The Covid-19 pandemic has impacted the entire country. It has an impact on all the aspects of our life. The lockdown was the solution which was introduced to restrict this wide spreading diseases which adversely affected the economic growth of our country, India. Even before the pandemic, the Indian economy was slowing down with decreasing growth rates and decreasing effective demand. The Indian economy has certain underlying issues that have been aggravated by pandemics. Covid -19 has impacted on every sectors of an Indian economy. The India's economy is worth investigating because it is the seventh-largest in terms of purchasing power parity and the third-largest in terms of nominal GDP. Inflation is a major issue in the Indian economy. The Indian economy's growth and development sector is an important area of interest. India's foreign exchange reserves are also an important factor to consider. The rate of employment is a critical priority for the Indian economy.

Three Major Sectors of Indian Economy

Agricultural Sector

The Agricultural Sector includes goods produced through exploitation of resources. It involves converting raw materials into main goods. It serves as a foundation for all subsequent goods. In India, the primary sector is one that is highly dependent on the supply of resource in order to make commodities and carry out different procedures. It obtains the majority of our natural goods from agriculture, dairy, fisheries, and forestry. Agricultural is indeed the finest example to use in this situation. Dairy, fishery, and forestry are some of the other sectors in this area, although agriculture makes up the majority of it. This is why it is commonly referred to as the Agricultural Sector or Primary sector.

Industrial sector

The industrial sector processes that involve the transformation of natural materials into different forms or finished goods through manufacture and then consumption. The product must be created, which requires the use of a manufacturing process. Manufacturing might take place at a factory, a workshop, or even at home. For example, cotton fiber may be made of wool and textiles, and sugarcane can be used to manufacture sugar and refined sugar. The manufacturing process is commonly connected with the many kinds of manufacturing that develop as a result, this sector is also known as the Secondary Sector. The Industrial sector is Sometimes known as the Secondary Sector is usually split into two categories, small industrial and big industrial. Small industrial products are less capital-intensive and more consumer-oriented. e.g. Manufacturing of clothing, shoes, and furniture, among other things. The term big industrial refers to products that are either heavy or in term of their manufacturing process. It needs a large amount of money as well as advanced resources or facilities, such as big machinery and industrial equipment such as cranes.

Service Sector

The Service Sector economic activities contribute to the growth of the agricultural and industrial sectors. Those activities don't produce anything, but they help or assist the manufacturing process. Borrowing money from banks to help with manufacturing and business, for example, or items produced in the agricultural or industrial sector that need to be sold through retail stores would require transportation. Transportation, storage, communications, banking, insurance, trade, hospitality, tourism, entertainment, management consulting, and so on are all part of the Service sector. The service Sector is sometimes known as the Tertiary Sector because the activities involved in it generate services rather than products.

Measurement of an Economy

The calculation of GDP is made up of several components. GDP can be calculated using either the expenditure method (the sum of what everyone in an economy spent over a certain period) or the income approach (the total of what everyone earned during a particular period). Both methods should produce the same results. To calculate GDP by sector, a third method, the value-added approach, is used. The calculation of expenditure-based GDP gives both real (inflation-adjusted) and nominal values, whereas income-based GDP gives just nominal values. The expenditure approach is the most commonly used, and it calculates GDP by adding consumer spending, company expenditure, government expenditure, and net exports. Thus, $GDP = C + I + G + (X - M)$, where C represents consumer spending, I represents business spending, G represents government spending, X represents exports, and M represents imports.

Objective of the Study:

1. To analyze the contribution of the Agricultural, Industrial and Service sectors of Indian economy to the overall GDP of India.
2. To identify the relationship between Agricultural, Industrial and Service sectors and GDP of Indian Economy.

Research Methodology

Sources of Data: The present research is based on secondary data collected from Central statistical office Data on GDP (Retrieved from <https://data.gov.in>). The data is collected from secondary sources in the agricultural, industrial, and service sectors. Annual data is collected for a period of 20 years from 2000-01 to 2019-20.

Tools used in analysis: The present study aimed to investigate the relationship between GDP and Agricultural, Industrial and Service sectors of Indian economy using Coefficient of Correlation, Analysis of Variance, and the impact of economic factors on GDP using Regression Analysis.

Need of the study: The main objective of this research is to determine the relationship and impact of agricultural, industrial, and service sectors on the GDP of the Indian economy. This research helps in identifying the relationship between GDP and the agricultural, industrial, and service sectors, helping researchers to be aware of these factors that give early indicators of economic growth.

Scope of the study: The study will be limited to the agricultural, industrial, and service sectors as independent variables and "Gross Domestic Product (GDP)" as the dependent variable. Three independent variables are selected to see how they impact the Indian economy's GDP.

Table-1: Contribution of three Sectors in Overall GDP in India from 2000-01 to 2019-20

Annual Growth Rate %				
Year	GPD	Agricultural Sector	Industrial sector	Service Sector
2000-01	4.1	0.3	6.5	4.8
2001-02	5.4	5.5	2.7	6.3
2002-03	3.9	-4.9	7.1	6.4
2003-04	8	8.2	7.9	7.3
2004-05	7.1	1.1	10	8
2005-06	9.5	4.6	10.7	10.6
2006-07	9.6	4.6	12.7	9.5
2007-08	9.3	5.5	10.3	9.9
2008-09	6.7	0.4	4.7	10.7
2009-10	8.6	1.5	9.5	10.6
2010-11	8.9	8.3	7.6	8.8
2011-12	6.7	4.4	8.5	6.8
2012-13	5.4	1.4	3.6	7.9
2013-14	6.1	4.8	4.2	7.1
2014-15	7.2	1.2	6.7	9.6
2015-16	8	2.1	9.5	9
2016-17	7.9	6.8	7.5	8.5
2017-18	6.9	5	6	8.6
2018-19	6.6	2.7	7.5	7.6
2019-20	4.9	2.6	2.6	7.1

Source: <https://data.gov.in>

REVIEW OF LITERATURE

V, S., & M, B. (2021) the major goal of this study is to analyze the contribution of the Agricultural, Industrial and Service sectors of Indian economy to the overall GDP of India. The objective of this research is to determine the interrelationship among agriculture, industrial and service sector of Indian economy. The researcher has collected secondary data from for a period of 20 years from 2000-01 to 2019-20. The researcher has used regression analysis and correlation. Obtained from the results the researcher has found that a strong positive correlation between the GDP and agricultural, Industrial and Service sectors of Indian economy. The researcher has also found that service sector has more contribution to overall GDP.

Hari , K., & Reddy , P. (2019) the aim of research is to analyze and compare contributions of the three major sectors of the Indian economy (agriculture, industry, and services) to the overall GDP of India from 1990-91 to 2009-10. The researcher has found that the agricultural sector's contribution to overall GDP fell dramatically from 24.53 percent in 1990-1991 to 14.64 percent at the end of 2009-10. The researcher has determined that the performance of the three sectors significantly different.

Divya, K. H., & Devi, V. R. (2014) The main purpose of the study is to determine the relationship between selected economic variables and the GDP of the Indian economy. This study helps in the finding of the relationship between GDP and selected economic variables, providing researchers to be aware of these factors that give early warnings about the economy's growth. Secondary sources related to the selected economic variables were used to obtain data. Annual data was collected for 15 years, from January 1, 1997 to March 31, 2012. Regression analysis and correlation were used by the researcher. Based on the results, the research found that while inflation is highly correlated with GDP, it has very little impact on the economy's GDP. In addition, the research has found a negative relationship between GDP and Balance of Payments data (current account balance + capital account balance). The researcher concluded that the exchange rate, Sensex, and Balance of Payments are stronger predictors of an economy's growth.

Results & Discussion

Correlation Analysis

Table-2: Correlation Analysis

	GPD	Agricultural Sector	Industrial sector	Service Sector
GPD	1			
Agricultural Sector	0.580525384	1		
Industrial sector	0.73334117	0.110530419	1	
Service Sector	0.773911353	0.137506141	0.452623717	1

The above Correlation analysis shows that

The value of correlation coefficient between growth rate of GPD and growth rate of agricultural Sector is 0.580525384. It is evidence that there is significantly strong positive relationship between growth rate of GPD and growth rate of agricultural sector.

The value of correlation coefficient between growth rate of GPD and growth rate of industrial sector is 0.73334117. It is evidence that there is significantly very strong positive relationship between growth rate of GPD and growth rate of industrial sector.

The value of correlation coefficient between Growth rate of GPD and growth rate of service sector is 0.773911353. It is evidence that there is significantly very high strong positive relationship between growth rate of GPD and growth rate of service sector.

The value of correlation coefficient between growth rate of agricultural sector and growth rate of industrial sector is 0.110530419. It is evidence that there is significantly weak positive relationship between growth rate of agricultural sector and growth rate of industrial sector.

The value of correlation coefficient between growth rate of agricultural sector and growth rate of service sector is 0.137506141. It is evidence that there is significantly weak positive relationship between Growth rate of agricultural sector and growth rate of service sector.

The value of correlation coefficient between growth rate of industrial sector and growth rate of service sector is 0.452623717. It is evidence that there is significantly moderate positive relationship between Growth rate of Industrial sector and growth rate of service sector.

REGRESSION ANALYSIS

Regression analysis is a set of statistical procedures that determines the relationship between a dependent variable (also known as a "outcome variable") and one or more independent variables (also known as "predictors"). Regression analysis develops a regression equation in which the coefficient indicates the relationship between each independent variable and the dependent variable. You may also use the equation to make predictions. The advantage of regression analysis is that it helps in identifying which variables are most important, which may be ignored, and how those variables correlate to one another. Multiple Linear Regression analysis is used in this study to determine the relationship between a dependent and an independent variable.

For three independent variables, The Multiple Linear regressions equation is

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where,

Dependent variable (Y): Growth rate of GPD.

Independent Variable X_1, X_2, X_3 ,: Growth rate of agricultural sector, Growth rate of industrial sector, and Growth rate of service sector respectively.

β_0 = Intercept, β_1 = Coefficient of Growth rate of agricultural Sector, β_2 = Coefficient of Growth rate of industrial sector and β_3 = Coefficient of Growth rate of service Sector

Table-3: REGRESSION STATISTICS

Regression Statistics	
Multiple R	0.995625277
R Square	0.991269693
Adjusted R Square	0.98963276
Standard Error	0.174815447
Observations	20

Results showed that the multiple correlation coefficients R^2 is 0.995625277. This indicates that the very high strong positive correlation between growth rate of GDP and growth rate of agricultural sector, growth rate of industrial sector and growth rate of service sector.

The coefficient of determination, R^2 is 99.12% of the variation in the growth rate of GDP variable is explained by Growth rate of Agricultural Sector, growth rate of Industrial sector, and growth rate of Service Sector.

The standard error of the regression is 0.174815447, which is an estimate of the variation of the observed growth rate of GDP about the regression line.

Table-4: ANOVA

	df	SS	MS	F	Significance F
Regression	3	55.51903	18.50634	605.5654	1.12226E-16
Residual	16	0.488967	0.03056		
Total	19	56.008			

F-Test statistics: F-test statistics is a test of significance for overall regression analysis

To test Hypothesis at $\alpha = 0.05$ Level of significance

Null hypothesis: $H_0 : \beta_1 = \beta_2 = \beta_3 = 0$ (There is no significant relationship between the growth rate contributions of the three sectors in the overall GDP)

Alternative hypothesis H_1 : At least one of the β_i Coefficients is not equal to 0 ($i = 1, 2, 3$) (There is a significant relationship between the growth rate contributions of the three sectors in the overall GDP)

The dependent variable (Growth rate of GDP) is regressed on the predicted variable of growth rate of agricultural sector, Growth rate of industrial sector, and Growth rate of service sector.

The independent variables significantly predict Growth rate of GDP, $F(3,16) = 605.5654$, Significance F value is 1.12226E-16 (p-value) < 0.05 , Which is highly significant. Rejecting the null hypothesis at $\alpha = 0.05$ level of significance i.e accepting the alternative hypothesis at $\alpha = 0.05$ level of significance, it is an evidence that at

least one of the independent variable (Growth rate of agricultural sector, Growth rate of industrial sector, and Growth rate of service sector) has a significant relationship between dependent variable (Growth rate of GPD)

This indicates that at least one of the independent variable (Growth rate of agricultural Sector, Growth rate of industrial sector, and Growth rate of service sector) under study has a significant impact on growth rate of GPD.

Table-5: REGRESSION COEFFICIENT

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.290783377	0.20960153	-1.387315146	0.184367702	-0.735118772	0.153552017
Agricultural Sector	0.254492806	0.013040951	19.51489678	1.39682E-12	0.226847226	0.282138387
Industrial sector	0.282300693	0.016322216	17.29548804	8.87422E-12	0.247699141	0.316902245
Service Sector	0.53685192	0.027976374	19.18947484	1.80912E-12	0.477544657	0.596159183

t -test statistics: t-test statistics is a test of significance for each of individual independent variable.

To test Hypothesis at $\alpha = 0.05$ level of significance.

Null hypothesis: $H_0 : \beta_1 = 0$ (There is a no significant relationship between agricultural sector and growth rate of GPD)

Alternative hypothesis $H_1 : \beta_1 \neq 0$ (There is a significant relationship between agricultural sector and growth rate of GPD)

From the table of Regression Coefficient.

t-statistics value 19.51489678, P-value(1.39682E-12) < 0.05,

Rejecting the null hypothesis at $\alpha = 0.05$ level of significance i.e accepting the alternative hypothesis at $\alpha = 0.05$ level of significance, it is evidence that there is a significant relationship between agricultural sector and growth rate of GPD. This indicates that there is positive relationship between agricultural sector and growth rate of GPD.

Through it can be concluded:

β_1 Coefficient for between agricultural sector (X_1) is equal to 0.254492806. This means that for one per cent growth rate, increase in agricultural sector there is an increase in Growth rate of GPD by 25.44 per cent.

Null hypothesis: $H_0 : \beta_2 = 0$ (There is a no significant relationship between growth rate of industrial sector and Growth rate of GPD)

Alternative hypothesis $H_1 : \beta_2 \neq 0$ (There is a significant relationship between growth rate of industrial sector and growth rate of GPD)

From the table of Regression Coefficient.

t-statistics value = 17.29548804, P-value(8.87422E-12) <0.05,

Rejecting the null hypothesis at $\alpha = 0.05$ level of significance i.e accepting the alternative hypothesis at $\alpha = 0.05$ level of significance, it is evidence that there is a significant relationship between growth rate of industrial sector and growth rate of GPD. This indicates that there is positive relationship between Growth rate of industrial sector and growth rate of GPD.

Through it can be concluded:

β_2 Coefficient for growth rate of industrial sector (X_2) is equal to 0.282300693. This means that for one per cent growth rate, increase in growth rate of Industrial sector there is an increase in growth rate of GPD by 28.23 per cent.

Null hypothesis: $H_0 : \beta_3 = 0$ (There is a no significant relationship between growth rate of service sector and growth rate of GPD)

Alternative hypothesis $H_1 : \beta_3 \neq 0$ (There is a significant relationship between growth rate of service sector and growth rate of GPD)

From the table of Regression Coefficient.

t-statistics value = 19.18947484, P-value(1.80912E-12) <0.05,

Rejecting the null hypothesis at $\alpha = 0.05$ level of significance i.e accepting the alternative hypothesis at $\alpha = 0.05$ level of significance, it is evidence that there is a significant relationship between growth rate of service sector and growth rate of GPD. This indicates that there is positive relationship between growth rate of service sector and growth rate of GPD.

Through it can be concluded:

β_3 Coefficient for growth rate of service sector (X_3) is equal to 0.53685192. This means that for one per cent growth rate increase in growth rate of service sector, there is increase in growth rate of GPD by 53.68 per cent.

FINDINGS:

It is evidence that confirmed cases, active cases, recovered cases have coefficient of 0.254492806, 0.282300693 and 0.53685192 respectively and the following regression equation can be derived from the available data for predicting deceased cases.

Regression analysis equations for finding predicted growth rate of GPD.

$$\hat{Y} = -0.290783377 + (0.254492806)X_1 + (0.282300693)X_2 + (0.53685192)X_3$$

Where, \hat{Y} = Prediction of growth rate of GPD, X_1 = Growth rate of agricultural Sector, X_2 = Growth rate of industrial sector, X_3 = growth rate of service sector

OR

Prediction of growth rate of GPD = $-0.290783377 + 0.254492806$ (Growth rate of agricultural Sector) + 0.282300693 (Growth rate of industrial sector) + 0.53685192 (Growth rate of service sector)

CONCLUSION

In this research paper the researcher has analyzed and compared the contribution of the three major sectors i.e. Agricultural Sector, Industrial sector and Service Sector of Indian Economy to the overall GDP. The researcher has found through the multiple correlation coefficient that there is a very strong positive correlation between growth rate of GDP and agricultural sector, industrial sector and service sector. The researcher also found that there is positive relationship between the growth rate of agricultural Sector and growth rate of GDP that means for one per cent growth rate increase in agricultural sector; there is an increase in growth rate of GDP by 25.44 per cent. There is positive relationship between the growth rate of industrial sector and growth rate of GDP that means for one per cent growth rate increase in industrial sector; there is an increase in growth rate of GDP by 28.23 per cent. There is positive relationship between the growth rate of service sector and growth rate of GDP that means for one per cent growth rate increase in service sector; there is an increase in growth rate of GDP by 53.68 per cent. The conclusion through F-test, the researcher has found that the overall regression analysis model is good fit. The researcher can also predict growth rate of GDP by regression equation. The comparison of three major sectors the researcher has found that service sector has more impact on overall GDP of Indian economy to agricultural sectors and industrial sector. According the result of this research, policymakers should concentrate their efforts on important areas of all economic sectors that can contribute more to GDP growth.

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