



## IMPACT OF MACROECONOMIC VARIABLES ON THE ECONOMIC GROWTH OF INDIA

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### ABSTRACT

Gross domestic production (GDP) is a very strong measure to check the economic health of a country. Higher the GDP represents the growth of an economy and vice-versa. That's why every country tries to maximize the growth of GDP. The present study is conducted to analyze the impact of macroeconomic variables on the Indian economy. Various key indicators of Indian economy such as inflation, Government total expenditures, Imports, Government gross debt, Current account balance (CAB) and Total investment have been taken into account to find the influence of these factors on the economic growth of the country for the period from 1991-92 to 2016-17. By taking GDP as the dependent variable, multiple regression analysis has been applied and it is found that Expenditure and Gross Debt have a negative impact on the economic growth. On the other hand, Inflation, Import, Current account balance (CAB) and Investment have a positive impact on the economic growth (GDP) of India. Also, it is noticed that Import, CAB and Investment have a positive and significant impact on GDP.

**KEYWORDS:** Gross domestic production, Economic Growth of india.

### INTRODUCTION

GDP is one of the most widely used measures to gauge the economic health of a country. It represents the total value of all goods and services produced by people and companies in a country within a specific time period such as quarterly or annually. It doesn't matter whether they are the citizen or not, residential companies or foreign-owned companies. If they are situated within the boundaries of the country, then the government will include their production in GDP. Higher the GDP represents the growth of an economy and vice-versa. Because of this, every country wants to maximize the growth of GDP. Besides, GDP is used by government and policy-makers in order to economic planning and policy formulation. As it is discussed earlier that GDP presents the economic health of the country and as such it helps the investors to manage their portfolios. Additionally, a positive GDP growth portrays good signals for the economy and vice-versa. Apart from these, economists analyze GDP to ascertain whether the economy is in recession, depression or boom. Therefore, it is right to say that GDP is the best way to check the economic health of the country.

### Components of GDP:

GDP is calculated from the standard formula given below:

$$\text{Gross Domestic Production} = C + I + G + (X - M)$$

Where:

C = Personal Consumption Expenditure

I = Business Investment

G = Government Spending

X = Export

M = Import

**GDP Growth Rate:** GDP growth rate is the percentage increase in the GDP as compared to previous quarter or year. It tells us whether the economy of a country is growing more quickly or more slowly as compared to previous quarter or year. Generally, slow economic growth rate usually leads to layoffs and unemployment and high rate of growth creates employment opportunities in the country.

So, it would be appropriate to say that GDP is one of the strong measures as well as the best way to measure the economic growth of a country. But there are many macroeconomic factors affecting the economic growth of the country. So, it is of great importance to identify, understand and analyze the impact of various these factors on the GDP. Besides, in order to resist negative shocks and maintain financial stability, it is very important to identify the factors adversely influencing the economic growth of the country. Therefore, the determinants of GDP have attracted the interest of economists, policy-makers and so on. Thus, in the present study, an effort is made to investigate the impact of macroeconomic variables on economic growth (GDP) of the Indian economy.

### REVIEW OF LITERATURE

**Aziz & Azmi (2017)** investigated the relationship between GDP growth and the factors such as Inflation, FDI and Female Labor Force participation in Malaysia for the period from 1982-2013 using Ordinary Least Square Method (OLS) and Augmented Dickey-Fuller (ADF). The study found that FDI and Female Labor Forces had a positive impact but inflation had the negative impact on GDP growth. However, it was found that there was only FDI which significantly influenced GDP growth. **Chirwa & Odhiambo (2016)** found that in developing countries the key macroeconomic determinants of economic growth were foreign aid, foreign direct investment, fiscal policy, investment, trade, human capital development, demographics, monetary policy, natural resources, reforms and geographic, regional, political and financial factors. While, in developed countries, the key macroeconomic determinants of economic growth were physical capital, fiscal policy, human capital, trade, demographics, monetary policy and financial and technological factors. **Bhat & Laskar (2016)** analyzed the impact of macroeconomic variables such as interest rate and inflation rate on the dependent variable namely- GDP of India by using multiple regression analysis for the period from 1998-2012. It was found that there was a negative relationship between GDP and interest rate and positive relationship between inflation and GDP of India during the study period. **Bhunia (2016)** found long-run causality from economic growth to inflation and interest rates in India for the period 1992-2015. Also, the study found a unidirectional causal movement from economic growth to interest rates. **Tamilselvan & Manikandan (2015)** investigated the impact of FDI on the gross domestic production (GDP) of India for the period 1991-2014. Regression analysis had been used to analyze the data. The study found a positive impact of FDI on GDP of the country. **Mehta (2015)** found a long-run cointegrating relationship between GDP, exports and imports in India for the period from 1976 to 2014. The study also found the evidence of unidirectional causality running from GDP to export. Besides, the study revealed that there was no causality between GDP and imports. **Jain et al. (2015)** found a significant effect of FDI, Net FII equity and import on GDP components in India by using multiple regression analysis for the period 2000-2001 to 2011-2012. Also, there was no significant effect of Net FII debt on GDP components. Besides, it was also found that there was no significant effect of export on GDP (Manufacturing, Industry) components but Service had a significant effect. **Nawaz et al. (2014)** investigated the impact of the inflation rate, FDI, literacy rate, exchange rate and interest rate on the economic growth (GDP) of Pakistan for the period from 1998-2013. The study found that inflation rate, FDI and interest rate had a significant positive relationship with GDP except one inflation rate which had a significant negative relationship with GDP. Besides, exchange rate and literacy rate had an insignificant positive relationship with GDP. **Divya & Devi (2014)** measured the influence of inflation, exchange rate, foreign exchange reserves, FII's, SENSEX, balance of Payments and current fiscal deficit on the GDP of Indian economy for the period from 1998-2012. The study found that exchange rate, SENSEX and

balance of payment had the significant impact on GDP. **Kumar (2014)** investigated the impact of FDI on economic growth of India for the period 1991-2010 by using regression analysis. The study found a significant impact of FDI on the economic growth of the country. **Ibrahim & Muthusamy (2014)** examined the role of FDI in Indian economy. The study found a positive relationship of FDI with exports and foreign exchange reserve of the country for the period 2003-04 to 2012-13. In addition, the study found that FDI in India has significantly improved. **Kira (2013)** analyzed the factors affected the GDP of Tanzania by using Keynes model for the period 1970 to 2009. The study found that GDP was influenced by consumption (Government final expenditure and household final expenditure) and exports. Also, it was found investment and imports had no significant influence on GDP. **Antwi et al. (2013)** examined the long-run relationship between macroeconomic variables and economic growth of Ghana by using Johansen approach for the period 1980 to 2010. The study found that long-run economic growth (real GDP per capita) in Ghana was largely explained by physical capital, foreign direct investment, foreign aid, inflation and government expenditure. It was also observed that economic growth was not affected by short-term changes in the labour force. **Jayathileke & Rathnayake (2013)** found a long run negative and significant relationship between the economic growth and inflation in Sri Lanka for the period from 1980-2010. Whereas no statistically significant relationships were found between the variables in China and in India, a negative and significant short-run relationship was found for China. The causality results revealed that there was a unidirectional causality that runs from the economic growth to the inflation in China. **Ndambiri et al. (2012)** explored the determinants of economic growth in the 19 sub-Saharan countries of Africa for the period 1982-2000. Generalized Method of Moments (GMM) was used and it was found that physical capital formation, a vibrant export sector and human capital formation significantly contributed to the economic growth. However, government expenditure, nominal discount rate and foreign aid had the significant negative impact on economic growth. **Agrawal & Khan (2011)** investigated the effect of FDI on economic growth of China and India for the period 1993-2009. Various macroeconomic variables were taken into account for the study. By taking GDP as dependent variable, Ordinary Least Square method of regression was applied to the data and it was found that China's growth was more affected by FDI, than India's growth. **Ayyoub et al. (2011)** analyzed the impact of inflation on economic growth (GDP) of the Pakistan for the period from 1972-73 to 2009-10 by employing the method of Ordinary Least Squares. It was found that there was a significantly negative relation between inflation and economic growth in Pakistan. **Abbas et al. (2011)** investigated the impact of FDI and inflation on the dependent variable namely-GDP of SAARC countries by applying multiple regression model for the period from 2001-2010. It was found that there was a positive and significant relationship between GDP and FDI, while an insignificant relationship between GDP and inflation. **Mallik & Chowdhury (2001)** examined the relationship between inflation and GDP growth for four South Asian countries viz. Bangladesh, India, Pakistan and Sri Lanka for the period 1957-1997. By using the cointegration and error correction models it was found that there was a long-run positive relationship between GDP growth rate and inflation for all of these countries.

### RESEARCH PROBLEM

GDP is a very strong measure to gauge the economic health of a country. Higher the GDP represents the growth of an economy and vice-versa. That's why every country tries to maximize the growth of GDP. Therefore, it is of great importance to determine the factors that adversely affect the economic growth of the country in order to prevent the negative shocks, maintain financial stability, sustainable growth and boost the economic growth of the country. Therefore, in the study, an effort is made to identify the factors that negatively influencing the economic growth of the country. This work would be helpful to the Government of India at the time of making policies because the government can consider all those affecting variables and take suitable actions.

### OBJECTIVES OF THE STUDY

- (1) To find the factors affecting the economic growth of Indian economy.

(2) To find the impact of key macroeconomic variables on the economic growth (GDP) of India.

### RESEARCH METHODOLOGY

The main purpose of this study is to investigate the relationship between the key macroeconomic variables of Indian economy and the economic growth (GDP) of the country. The study is descriptive and analytical in nature based on secondary data which has been collected from World Economic Outlook (WEO) database on Indian economy published by International Monetary Fund (IMF). The frequency of dataset is annual and covers the time period of 1991-92 to 2016-17. Simple multiple regression analysis has been used to find the impact of these macroeconomic variables on the economic growth (GDP) of the country.

**Table 1**  
**Variables**

Sr. No.	Variables	Notation
<b>Independent Variables</b>		
1.	Inflation (% Change)	Inflation
2.	Government Total Expenditure (% of GDP)	Expenditure
3.	Volume of Import of Goods and Services (% Change)	Import
4.	Government Gross Debt (% of GDP)	Gross Debt
5.	Current Account Balance (% of GDP)	CAB
6.	Total Investment (% of GDP)	Investment
<b>Dependent Variable</b>		
1.	Gross Domestic Production at Constant Price (% Change)	GDP

**Source:** Compiled after reviewing the literature

The empirical model is developed as follows:

$$\text{GDP} = \alpha + \beta_1 \text{Inflation} + \beta_2 \text{Expenditure} + \beta_3 \text{Import} + \beta_4 \text{Gross Debt} + \beta_5 \text{CAB} + \beta_6 \text{Investment} + \epsilon$$

Where:

**Dependent Variable** = GDP at Constant Price (% Change)

**Independents Variables**= Inflation, Government Total Expenditure, Import, Government Gross Debt, Current Account Balance (CAB) and Total Investment

$\alpha$  = constant

$\beta_1$ ...  $\beta_6$ = Estimated regression coefficients

$\epsilon$  = Error term

### ANALYSIS OF DATA

This section of the research comprises of empirical results of multiple regression analysis. The section contains the summary of regression analysis, ANOVA and Coefficient table.

**Table 2**  
**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	<b>.804<sup>a</sup></b>	.646	.534	1.49505	<b>2.419</b>

- a. Predictors: (Constant), Investment, Inflation, Import, Expenditure, Gross Debt, CAB
- b. Dependent Variable: GDP

Table 2 represents the summary of regression analysis. Here, we can see that the value of R is .804 which shows that the Predictors have 80.4 % influences on the output. In case of this, value of R Square is .646 this means that the predictors account for 64.6 % variation in the dependent variable. The Durbin-Watson test value 2.419 indicates that there is no autocorrelation likely to distort the conclusion.

**Table 3**  
**ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	77.417	6	12.903	5.773	<b>.001</b>
1 Residual	42.468	19	2.235		
Total	119.885	25			

- a. Dependent Variable: GDP
- b. Predictors: (Constant), Investment, Inflation, Import, Expenditure, Gross Debt, CAB

Table 3 here shows the output, which contains an Analysis of Variance (ANOVA). The sum of Square here is 77.417; the value of Residual of Squares is 42.468 and represents the total difference between the model and observed data. From the value of F-ratio which is 5.773 here, we can conclude that the value of F is highly significant and our ability to predict the Outcome Variable is much better. Here, the Sig. (p-value) is .001 which is less than alpha (.05), which indicates that the model is significant.

**Table 4**  
**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	18.305	7.047		2.597	.018		
Inflation	.041	.140	.057	.291	.774	.488	2.049
Expenditure	-.590	.361	-.364	-1.633	.119	.375	2.669
Import	.073	.032	.367	2.267	<b>.035</b>	.712	1.404
Gross Debt	-.100	.096	-.245	-1.035	.314	.334	2.993
CAB	1.071	.431	.717	2.482	<b>.023</b>	.223	4.475
Investment	.394	.099	1.060	3.965	<b>.001</b>	.261	3.833

- a. Dependent Variable: GDP

Here the table 4 is concerned with the parameters of the model. We can define the equation here as follows:

$$\text{GDP} = 18.305 + .041 \text{ Inflation} - .590 \text{ Expenditure} + .073 \text{ Import} - .100 \text{ Gross Debt} + 1.071 \text{ CAB} + .394 \text{ Investment}$$

The results of Variance Inflation Factor (VIF) are all below 10 and Tolerance values (Tol) are greater than 0.1 as shown in Coefficients table which implies that there is no problem of Multicollinearity in the model. Also, it is found that Expenditure and Gross Debt have a negative impact on the economic growth of India which illustrates that both of these variables and GDP moves in opposite direction, as these variables increase then GDP decrease and vice-versa. Besides, Inflation, Import, Current account balance (CAB) and Investment have the positive impact on the economic growth (GDP) which illustrates that all of these variables and GDP moves in the same direction means when these variables increase GDP also increase. Furthermore, it is noticed that amongst all the independent variables Import, CAB and Investment have a positive and significant impact on the GDP of the country because the sig. (p-value) of these variables is less than the value .05.

## CONCLUSION

The present study is conducted to check the impact of key macroeconomic variables on the economic growth (GDP) of India for the period of 26 years i.e. from 1991-92 to 2016-17 by employing multiple regression analysis. The study shows that the predictors have 80.4 % influences on the output. The study found that some independent variables (such as inflation, import, current account balance and investment) have a positive impact on the economic growth of India. On the other hand, some variables (such as expenditure and gross debt) influencing the GDP negatively. Also, it is observed that variables such as import, CAB and investment have a positive and significant impact on the GDP of India. The study suggests that the Government of India should take required steps on the basis of the results of the present study. The Government of India should consider all these variables influencing economic growth adversely at the time of making policies.

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**WEBSITES:**

<http://www.imf.org>

**Table 5**  
**Variables**

Year	Inflation	Expenditures	Import	Gross Debt	CAB	Investment	GDP
1991-92	13.48	26.8	-18.19	75.33	-0.43	21.8	1.06
1992-93	9.86	26.23	26.22	77.41	-1.68	23.04	5.48
1993-94	7.28	25.74	0.82	76.98	-0.41	22.19	4.75
1994-95	10.28	25.76	27.35	73.46	-1.01	24.73	6.66
1995-96	9.96	24.55	17.51	69.65	-1.61	25.27	7.58
1996-97	9.43	23.94	6.86	65.98	-1.13	23.68	7.55
1997-98	6.84	24.8	13.88	67.82	-1.3	25.57	4.05
1998-99	13.13	25.59	4.6	68.09	-0.94	24.21	6.18
1999-2000	3.43	25.4	6.55	70.04	-1.01	26.63	8.46
2000-01	3.82	25.64	2.19	73.65	-0.56	24.26	3.98
2001-02	4.32	27.79	-0.89	78.73	0.69	24.24	4.94
2002-03	3.98	28.61	12.44	82.85	1.21	24.75	3.91

2003-04	3.86	29.43	8.52	84.24	2.28	26.83	7.94
2004-05	3.83	27.96	35.81	83.29	-0.34	32.82	7.85
2005-06	4.01	26.43	16.62	80.89	-1.19	34.65	9.29
2006-07	5.74	26.66	11.5	77.11	-1.01	35.66	9.26
2007-08	5.93	26.47	20.43	74.03	-1.27	38.11	9.8
2008-09	9.2	28.69	8.1	74.54	-2.28	34.31	3.89
2009-10	10.61	28.05	0.2	72.53	-2.82	36.48	8.48
2010-11	9.5	27.45	14.74	67.46	-2.81	36.5	10.26
2011-12	9.54	27.64	9.58	69.64	-4.29	39.58	6.64
2012-13	9.94	27.36	1.38	69.11	-4.81	38.27	5.48
2013-14	9.44	26.59	-3.55	68.53	-1.74	34.2	6.54
2014-15	5.93	26.39	6.06	68.58	-1.32	34.18	7.18
2015-16	4.91	27.46	1.96	69.55	-1.06	32.75	7.93
2016-17	4.87	27.9	4.96	69.54	-0.92	31.42	6.83

Source: Compiled from WEO database