Relationship between Economic Factors and Economic Growth

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ABSTRACT

The aim of this study was to examine the effect of some of the key macroeconomic variables on Economic growth of India. Money Supply, Inflation and Exchange rate was taken as the independent variables whereas GDP was taken as the measure of economic growth. Simple & Multiple Regression test was applied to check the relationship between the independent and dependent variables over the period 2007-08 to 2017-18. The results from multiple regression test revealed that Money Supply possessed a positive impact on economic growth and Exchange rate had negative effect on GDP but Inflation had insignificant negative relationship with GDP.

Introduction

Growth with stability is essential condition for attaining sustainable economic development. Achieving sustainable rapid economic growth is the objective of most countries. It has been a problem to achieve such objective due to many factors that affects economic growth. Economic growth of any country is affected by so many macroeconomic factors such as inflation, Money supply, Exchange rate, Index of industrial production, Foreign Direct Investment, Interest rate etc. GDP is the main indicator of the economic growth in India. In this study our main focus is to investigate the impact of macroeconomic variable on the GDP of India. There are various macroeconomic variables which affect the GDP but we only took Inflation, Exchange Rates & Money supply as the independent variables and GDP as the dependent variable.

Money Supply- The total stock of currency and other liquid instruments of a particular period of time in a country's economy is known as Money Supply. The balances which incurred in checking & savings account are included in it. The components of money supply are M1, M2, M3 & M4 these components are according to the dimension and kind of account in which instrument is held. In this study M3 was considered.

Inflation- Constant increase in the common stage of prices for goods and services is known as Inflation. For measuring the inflation, weighted average of prices of goods and services are considered. The Wholesale price index is the measure of Inflation. The relationship between inflation rate and economic growth remains an issue of research because literature suggested that there are three possible results of study that are none, positive or negative relationship.

Exchange Rates- The value of nation's exchange in terms of other nation's exchange. It includes two components, the domestic currency & the foreign currency. It can also be estimated directly or indirectly. In direct estimation, the price of

foreign currency is conveyed in terms of domestic exchange & In indirect estimation, the price of domestic exchange is conveyed in foreign exchange.

GDP- It is the monetary value of all finished goods & services produced in a country within a particular period of time. It is the most commonly used measure of economic growth of any country. The calculation of GDP likely used to determine the economic performance or growth of a whole country or region, yet it can also weigh the comparative contribution of an industry sector. It includes all private and public consumption, government outlays & investments.

Literature Review

Syed (2013) studied the Effects of Macroeconomic Variables on Gross Domestic Product (GDP) in Pakistan" analyzed that there are three major factors which affects the GDP of Pakistan. The first factor is associated with industrial and business activities in country while second factor is only lead by agricultural & livestock sector and third one is related with fishing & mining sector.

Agalega & Antwi (2013) found the Impact of Inflation rate and Interest rates on GDP of Ghana. The results indicated that there was a positive relationship between GDP & Inflation rate it indicates that if inflation rate goes high GDP also goes high and vice versa. In the case of Interest rate there is negative relationship between Interest rate and GDP of Ghana.

Sireesha (2013) examined the Effect of Selected Macro Economic Variables on Stock Returns in India and found that there is an inverse relationship of Inflation, IIP & Money Supply with returns from stocks, gold & silver. There is a direct relationship of GDP with stock return and an inverse relation with gold and silver returns.

Salian, Gopakumar (2011) investigated the relationship of Inflation and Economic Growth of India and found the negative relationship between these variables. The study also revealed the negative relationship between Inflation and GDP in Long run. Low or moderate inflation rate leads to High Economic Growth in long run whereas High Inflation rate affects economic growth negatively.

Checherita et al (2010) studied the Impact of High and Growing Government Debt on Economic Growth- An Empirical Investigation on The Euro Area and found evidence for a non-linear impact on GDP per capita growth rate across twelve euro countries over a long period of time.

Mbulawa, (2015) studied the effect of Macroeconomic Variables on Economic Growth in Botswana and found that FDI & Inflation rate had a positive and significant effect while gross fixed capital formation had also a positive but insignificant effect on economic growth of country.

Antwi et al, (2013) investigated the Impact of macroeconomic factors on economic growth in Ghana: A cointegration analysis shows a long run economic growth of Ghana is largely explained by physical capital, foreign direct investment foreign-aid, inflation & government expenditure. It is also shows that a short term changes in labour force do not effect on the economic growth.

Ristanovic Vladimir (2010) found the negative relationship between fundamental economic variables and GDP. Budget Consumption, Private expenditures, Export and Imports are considered as the basic macroeconomic variables which affects the economic growth of any country.

Objectives of the Study

- To analyze the cause and effect relationship between Inflation and GDP
- To analyse the cause and effect relationship between exchange rate & GDP
- To analyse the cause and effect relationship between Money Supply & GDP
- To analyse the effect of Inflation, Exchange rate and Money Supply on GDP

Research Methodology

The study was causal in nature since the secondary data was used for the study purpose. In the study GDP is the indicator of economic growth which is taken as independent variable and Inflation, exchange rate and money supply are the independent variables. The data has been taken in the quarterly frequency and the period of study has been considered from 2007-08 to 2017-18 financial years. Non-probability sampling technique was used to select the sample. The data used in this study was fetched from the official website of RBI.

Tools for Data Analysis

Simple & Multiple Regression test using PASW 18 was applied to find out the relation between macro-economic variables and Economic Growth. Kolmogorov–Smirnov test was used to check the normality of the residuals.

Results & Discussion

Simple Regression								
Independent Variables	R	R square	Adjusted R square	F stats.	Sign.	Beta	t	Sign.
Inflation	0.96	0.926	0.924	477.8	0	0.96	21.86	0
Exchange rate	0.71	0.499	0.486	37.918	0	0.71	6.158	0
M3	0.97	0.946	0.945	667.2	0	0.97	25.83	0
Dependent Variable: GDP								

Simple linear regression test was applied and results of model summary include the R, R-squared and adjusted R-squared for the model. R is the correlation coefficients. It can be clearly seen from R-square value which is a measure of how much of the variation in the dependent variable is accounted for by the independent variable, that inflation R2 in the model .926 explains 92.6% of variance in GDP, exchange rate and M3 is also influence to GDP by 49.9% and 94.6% respectively. F.statistics values in all cases are significant at 5% level of significance i.e. 0.000. It indicates the model is good fit for the study. And the beta value of Inflation, exchange rate and Money supply tested through t-test is also positively significant at 5% level of significance it indicated that each variable affects the GDP in a positive manner. If one variable will increase GDP also will increase. Hence, null hypothesis is not accepted that there is no significant relation between each economic variable with GDP.

H0: There is no relationship between Inflation, EXR, M3 and GDP

Multiple Regression					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

dimensiono	1	.982[a]	0.965	0.962	468.89646	1.745

Multiple regression test was applied to check the impact of inflation, exchange rate and money supply on GDP. In model summary table, R value is .982 which indicates the very high degree of relationship between the independent and dependent variable. The Value of adjusted R2 (96.2%) shows the percentage explained variation in dependent variable caused by the independent variable. Durbin Watson value is 1.745 near to 2 also shows no auto correlation between the variables.

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.18E+08	3	7.25E+07	329.746	.000[a]
	Residual	7915099.957	36	219863.888		
	Total	2.25E+08	39			

a. Predictors: (Constant), M3, EXR, Inflation
b. Dependent Variable: GDP

From ANOVA table f statistics value is 329.746 significant at 0.000 level of significance shows the model is good fit.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13248.8	2423.393		5.467	0
	Inflation	-57.917	30.046	-0.63	-1.928	0.062
	EXR	-82.855	21.05	-0.206	-3.936	0
	M3	0.184	0.034	1.765	5.356	0

a. Dependent Variable: GDP

The coefficient table indicated that exchange rate and money supply having a significant cause and effect relationship with GDP. Exchange rate having the negative impact on GDP, it is indicated by beta value -.206. tested through “T” test having a value of -3.936 significant at .000 level of significance but in case of money supply the influence is positive indicated by beta value 1.765 tested through t-test 5.356 positively significant at 5% level of significance whereas inflation is not significantly contributing to GDP. In the model summary table indicated that macro-economic variables having 96.2 % effect on GDP. Therefore, the null hypothesis is not accepted because “P” value is less than 0.05 level of significance.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	0.108	40	.200*	0.961	40	0.178

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Here in above table the standardized residuals test is applied through Shapiro-Wilk test of Normality to check whether the residuals are normally distributed or not. P value (.959) is more than standard value (.05), Thus null hypothesis H0(1) is not rejected, which is desirable. “The residuals are normally distributed “.

Conclusion

The empirical study was done to establish the relationship between Inflation, exchange rate, Money Supply and GDP. On the basis of the results it can be concluded that Inflation, exchange rate & Money Supply individually contributed to Economic Growth of India. The positive relationship was found between Independent and dependent variable. but when we see the combined effect of these variables on GDP the results indicated that there is negative but significant relationship between exchange rate and GDP. As Exchange rate varies from country to country and fluctuate in short term so it gives the negative impact on growth of country. Money supply shows the positive significant relationship with GDP whereas Inflation not contributed to GDP.

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