Macroeconomic Variables and Economic Growth in India

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ABSTRACT

World second highest population, robust domestic demand, high purchasing power, economic liberalization cheap labor makes India world's fastest growing economy. Cost competitiveness and epic pool of talent makes India as one of the most preferred destination for Investment. Macroeconomic variables (e.g. savings, investment, economic output, unemployment and employment, and inflation) play a crucial role in the economic performance of any country. This research studies the pattern of CPI, WPI, GDP, GDS and Rate of interest in India for the year 2004-2014while also analyzing the impact of macro-economic variable on GDP growth in India.

Key Words : Macroeconomic variables, growth of Indian economy, CPI, WPI, GDP, GDS.

Introduction :

Whenever there is increase in real GDP of a country it will boosts up the overall output and we called it economic development. The economic development is cooperative to amplify the incomes of the country to bring the joblessness at low level and also helpful in the deliveries of communal services. In the last few years the macroeconomic variables and the economic growth relationship became the hot issue amongst the economist. In the middle of these variables recent research focuses is on the foreign direct investment (FDI), exports of a nation, savings and revenue. In this research we proxy the Real GDP for economic growth. The review of growth literature has emphasized the role of macroeconomic variables in economic growth. There is a growing diversion in these variables in the case of developing countries which is of great concern for economists. In the case of developing country like India foreign inflows are also very high in recent years. However, they can be problematic sometimes because large inflows may create inflationary pressure and at the same time, national savings are important as foreign savings can be volatile and lead to "sudden stops" that forces costly macroeconomic adjustments. In the present changing scenario the study on macroeconomic variables has become important. This study in future may further contribute towards better understanding of economic growth.

Table 1: Gross Domestic Savings Rate

(per cent of GDP)

Country	1990	1995	2000	2005	2007	2008	2009
India*	22.8	24.4	23.7	33.5	36.9	32	33.8
China	39.1	43.5	37.5	47.6	50.5	51.8	52.1
Indonesia	32.3	30.6	32.8	29.2	29	28.9	33.8
Malaysia	34.5	39.7	46.1	42.8	42.1	42.3	36
Pakistan	11.1	15.8	16	15.2	15.4	20.8	11.4
Sri Lanka	14.3	15.3	17.4	17.9	17.6	13.9	18
Thailand	33.8	35.4	31.5	30.3	34.8	31.5	32.4

Country	1990	1995	2000	2005	2007	2008	2009
Select Other EMEs							
Brazil	21.4	16.5	16.5	19.8	19.8	20.9	16.5
Mexico	22	22.6	21.9	22.3	24.2	24.9	20.9
Russian Federation	30.3	28.8	38.7	33.8	32.8	34.6	26.1
South Africa	23.2	18.9	18.9	17.5	18.3	18.9	18.6
Select Advanced Economies							
France	21.2	19.7	21.4	19.5	20.3	19.8	17
Germany	23.1	22.7	22.1	22.2	25.4	24.9	21.4
Japan	33.7	29.7	26.9	25	25.4	23.8	20.7
Korea, Rep.	36.4	36.6	33.4	32.4	30.9	30	29.8
Singapore	44	50.1	46.9	47.1	49.5	47	NA
United Kingdom	18.1	17	15.8	13.6	15.2	14.1	11.2
United States	16.3	16.9	16.7	14.1	14	12.5	11.4
Memo							
World	23.2	22.6	22.2	21.7	22.5	21.4	18.9

Trends in Gross Domestic Savings

International Perspective of India's Savings Performance

India's savings act has been quite remarkable in a cross-country context (Table 1). India's gross domestic savings rate in the current period is equivalent to Indonesia, Thailand and Korea, much poorer than that of other developing nation like Singapore, Malaysia and China but a large amount than that of many other promising and highly developed economies. The enormity of increase in the domestic savings rate in India and China during the period 2000 to 2007 was among the maximum in the globe. The savings pattern of many advanced countries and some of the Asian emerging market economies witnessed a turn down during this period. India's savings rate declined piercingly in 2008, as it did in many other countries, in the aftermath of the international monetary crisis, but improved, in 2009. Even although savings rate in India in 2009 remained worse than previous few years, in disparity to that in developing nations for occurrence, the extent of decline in India's savings rate was much lower than those in many of the advanced and emerging market economies. More prominently, the gross household savings scenario of India, and other developing nations carry on to demonstrate an upward tendency, even as those of many other emerging and advanced countries have either stabilized at much lower levels or are on a declining trend.

Table 2: India's Savings Rates over the Five-Year Plans(Average)

Five-Year Plan	Gross Domestic Savings Rate (per cent)	Average annual rate of change in the savings rate (percentage points)
First Plan (1951-56)	9.2	
Second Plan (1956-61)	10.6	0.3
Third Plan (1961-66)	12.1	0.3
Fourth Plan (1969-74)	14.7	0.5
Fifth Plan (1974-79)	18.5	0.8
Sixth Plan (1980-85)	17.9	-0.1
Seventh Plan (1985-90)	20	0.4
Eighth Plan (1992-1997)	22.9	0.6
Ninth Plan (1997-2002)	23.6	0.1
Tenth Plan (2002-2007)	31.3	1.5
Eleventh Plan so far (2007-2011)	33.7	0.6

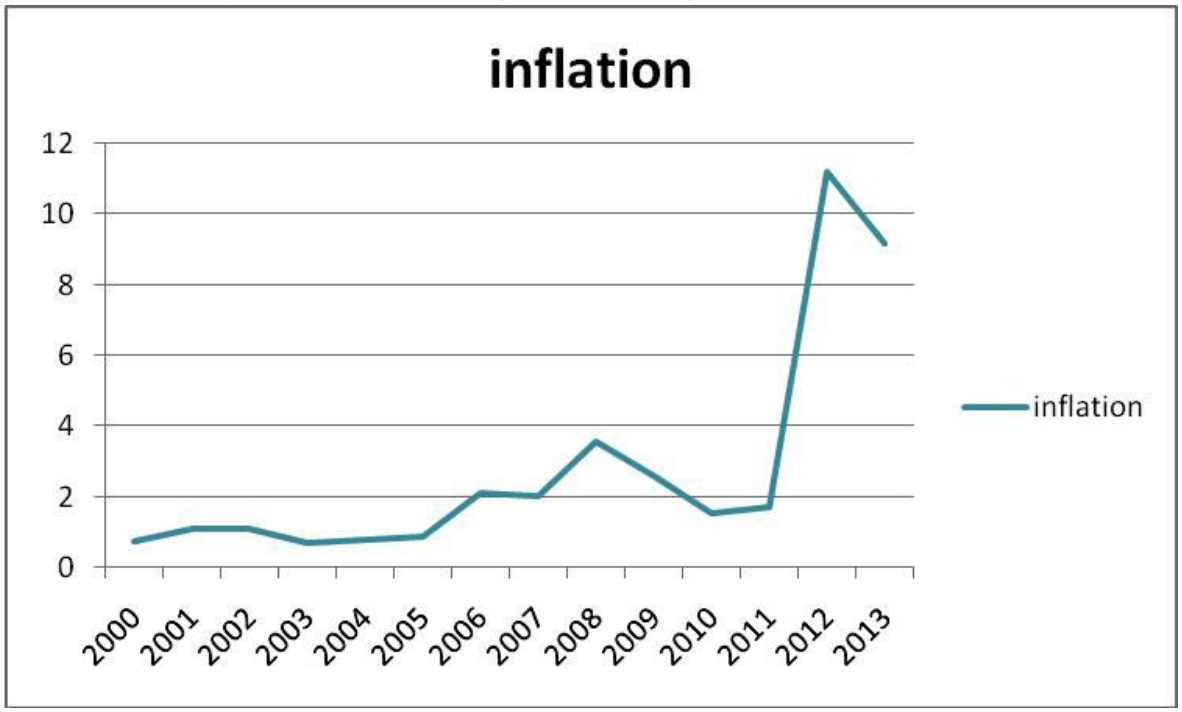
Over the Eighth to the Eleventh Plan so far - an 18-year period that coincided with the structural reforms progression - the average rate of Gross Domestic Savings (GDS) amplified by around 14 percentage points (Table 2). This was superior to the increase of around 11 percentage points in the GDS rate that occurred over the First to the Seventh five year Plans, a phase of approximately 40 years. The highest increase (of around 8 percentage points) in the average GDS rate occurred over the Tenth Plan (2002-2007).

TABLE 3: GROSS DOMESTIC SAVIN G AND INVESTMENT

Item	Per cent of GDP at current market prices				Amount in ` billion		
	Average 2003-04 to 2007-08	2008-09	2009-10 P	2010-11*	2008-09	2009-10 P	2010-11*
1	2	3	4	5	6	7	8
1. Household Saving (Net) (a+b)	23.2	23.6	25.4	22.8	13,309	16,390	17,493
a) Financial Assets	11.2	10.1	12.9	10.0	5,710	8,356	7,677
b) Physical Assets	12.0	13.5	12.4	12.8	7,598	8,035	9,816
2. Private corporate sector	7.2	7.4	8.2	7.9	4,175	5,321	6,025
3. Public sector	2.9	1.0	0.2	1.7	543	118	1,302
4. Gross Domestic Saving	33.3	32.0	33.8	32.3	18,026	21,830	24,819
5. Net capital inflow	2.1	2.3	2.8	2.7	1,288	1,807	2,101
6. Gross Domestic Capital Formation (7+8)	33.6	34.3	36.6	35.1	19,314	23,637	26,920
7. Errors and Omissions	0.3	-1.2	0.5	-0.7	-687	313	-572
8. Gross Capital Formation	33.4	35.5	36.1	35.8	20,001	23,324	27,492
of which :							
a) Public sector	7.8	9.4	9.2	8.8	5,317	5,916	6,762
b) Private corporate sector	12.5	11.3	12.7	12.1	6,363	8,210	9,285
c) Household sector	12.0	13.5	12.4	12.8	7,598	8,035	9,816
d) Valuables #	1.1	1.3	1.8	2.1	722	1,163	1,628
Memo:							
Total Consumption Expenditure (a+b)		69.4	69.4	68.4	38,646	44,824	52,491
a) Private Final Consumption Expenditure		58.4	57.4	56.5	32,493	37,081	43,384
b) Government Final Consumption Expenditure		11.0	12.0	11.9	6,153	7,743	9,107
Saving-Investment Balance (4-6)	-2.1	-2.3	-2.8	-2.8			
Public Sector Balance #	-4.9	-8.4	-9.0	-7.1			
Private Sector Balance #							
a) Private Corporate Sector	-5.3	-3.9	-4.5	-4.2			
b) Household Sector	11.2	10.1	13.0	10.0			
GDP at Market Prices (at current prices)	38,111	55,826	64,574	76,741			

P : Provisional Estimates. *: Quick Estimates.

This entry records total commerce spending on important possessions, such as factories, capital goods, equipment, stock of raw materials, which afford the basis for future manufacture. It is deliberate gross of the depreciation of the resources, i.e., it includes venture that purely replaces worn-out or scrapped capital. Uttered as a ratio of total investment in current local currency and GDP in current local currency. Investment or gross capital development is measured by the total value of the gross fixed capital formation and changes in inventories and acquisitions less disposals of valuables for a unit or sector.



Interpretation :

In economics, inflation is a rise in the general level of prices of goods and services in an economy over a phase of occasion. When the common price intensity rises, every part of money purchases small amount of goods and services. As a result, price rises shows a decrease in the purchasing power per unit of money a loss of real value in the medium of exchange and unit of account within the economy. Food inflation in India has been a major challenge to rule makers, further so throughout modern time when it has averaged 10 percent during 2008-09 to December 2012. It was found that average household in India still spends almost half of its expenditure on food, and poor around 60 percent , and that poor cannot easily hedge against inflation, high inflation inflicts a strong 'hidden tax' on the poor. The average year-on-year overall price rises calculated by the wholesale price index (WPI) of all commodities, comes out to be 5.8% for the period between 1995-96 through December 2012. The period between FYs 2000-2008, found the average WPI rate of 5.2% which however escalated to 7.4% post 2008- crisis period. The Inflation, especially Food Articles Price Index (FAPI), increased even at a faster pace. From the diagram we can analyze that there is an increase in inflation and overall inflation during 2000 to 2013.

Review of Literature :

Nick Cunningham (2008), Analyzed "the effects of macroeconomic factors on economic expansion within the former soviet union" concludes that foreign direct investment is helpful to improve economic growth. This study also found that financial growth in the member countries of WTO are at higher level than the non-member countries as the member countries are occupied in internal trade which help to get better the economic situation of the country.

Serhanand Nermin (2008) Discussed "The relationship between economic growth and selected macroeconomic indicators in a group of Central and East European countries" conducted their study on the

basis of panel data and found that domestic investment, trade openness, ratio of budget balance all have optimistic impacts on economic growth while price rises negatively affect development of the economy.

Khalid Zaman (2012) Analyzed the "Macroeconomic factors determining Foreign Direct Investment impacts on Pakistan Growth" suggest that foreign direct investment has positive and significant impacts on economic growth. Trade liberalization has pessimistic impacts in the long run while in short run trade liberalization has optimistic impacts on economic development in Pakistan.

Objectives of the Study :

1. To study the Impact of Macroeconomic variable on Economic growth in India.
2. To study the relationship between savings and investment in India.
3. To study the effect of inflation on selected macroeconomic variables (savings and Investment).

Hypotheses :

H_0: There is no impact of Macroeconomic variable on Economic growth in India.

H_1: There is an impact of Macroeconomic variable on Economic growth in India.

H_0: There is no correlation between saving and investment.

H_2: There is a correlation between saving and investment.

H_0: There is no effect of inflation on savings and investment.

H_3: There is an effect of inflation on savings and investment.

Research Methodology :

Research Design: The study is exploratory in nature and is aimed at identifying the relationship between selected macroeconomic variables and economic growth. The data is collected from 2004-2014.

Sources for data collection: The data is secondary in nature and data is collected from RBI database, research bulletin and central statistical organization.

Tools for data analysis: Data is analyzed with the help of applying the basic statistical tools like correlation and descriptive statistical tools and finally regression models.

Selection of variables :

The study applies the multiple regression method to find out whether the variables influence the GDP in India. After systematic examination of the different combination of the variables, the current lessons comprise the subsequent macroeconomic indicators: Gross Domestic Savings at Factor Cost (GDS), Gross Domestic Investment as independent variables which influence the growth of GDP into the country. These macroeconomic indicators are considered as the pull factors of GDP in the country. Thus, the principal determinants of GDP are put in the equation as follows:

$$\mathbf{GDPt = á + â_1GDSt + â_2\ GDIt + â_3INFLt + e}$$

Where,

GDP = Gross Domestic Product at Factor Cost calculated Rs. in crores

GDS= Gross Domestic Savings as % of GDP

GDI= Gross Domestic investment as % of GDP

INFL = Inflation measured in terms of percentages

T = time frame

TABLE 4: Outcome of multiple regressions formative GDP growth in India
Impact of Macroeconomic variable on Economic growth in India

Variables	Un standardized		Standardized Coefficient	t value	SE
	Coefficient	SE			
GDP	1144170.264	1096125.905		1.044	.327
GDS	-173839.175	99761.075	-.840	-1.743	.120
GDI	234617.124	67002.704	1.687	3.502	.008
INFL	89332.303	51474.008	.396	1.735	.126

Multiple R value = 0.917 R Square value = 0.842 F - Value = 21.274

Durbin – Watson test value = 1.468

The Multivariate Regression was applied to find how the institutional factors influencing the growth of GDP into India. The Regression result as in table 1 shows that the calculated F value is 21.274 which is greater than the table value of 19.296 at 5 % level of significance. Because the intended value is larger than the table value the null hypothesis is rejected. Hence, it is inferred that the above variables have influenced the growth of GDP in India. Further the estimated results are analyzed by using the relevant econometric techniques viz. coefficient, standard error, f- ratio, t- statistics, Durbin Watson (D-W statistics) etc. The multiple correlation coefficients which measure the degree of relationship between the independent values are 0.917 and they indicate that the relationship between the independent variables is quite strong and affirmative. The Coefficient of R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, the value of R square is 0.842 means that nearly 84.2 percent of the variation in adjustment is explained by the projected SRP. In order to resolve the autocorrelation problem, the Durbin – Watson (D-W statistics) test is used. The D-W Statistic is found to be 1.468, which confirms that there is no autocorrelation problem in the analysis.

The multiple regression equation built-in for the analysis is

1.044 (GDP) = 1144170.264 + (-1.743 GDS) + (3.502 GDI) + (1.735 INFL)

Interpretation :

One percent decrease in GDS causes -.840 percentage decrease in GDP growth in India. The negative relationship between GDP and GDS has to be read in conjunction with India's objective to achieve a advanced development rate. There is a encouraging association between Investments made in India (GDI) and GDP growth. One percent increase in GDI causes 1.687 percentage increase in GDP growth in India. There is a positive relationship between inflation (INFL) and GDP growth. One percent increase in INFL causes .396 percentage increase in GDP growth in India. So the null hypothesis is rejected and alternate hypothesis is accepted means there is an impact of Macroeconomic variable on Economic growth in India.

TABLE 5: result of multiple correlations determining GDS and GDI

Association among investment and savings in India

Correlations			
		GDS	GDI
GDS	Pearson Correlation	1	.956**
	Sig. (2-tailed)		0
	Sum of Squares and Cross-products	153.58	218.71
	Covariance	15.358	21.871
	N	11	11
GDI	Pearson Correlation	.956**	1
	Sig. (2-tailed)	0	
	Sum of Squares and Cross-products	218.71	340.47
	Covariance	21.871	34.046
	N	11	11
**. Correlation is significant at the 0.01 level (2-tailed).			

Interpretation

From the above correlation analysis between gross domestic saving and gross domestic investment found that there is a high correlation that is .956 so the null hypothesis is rejected and alternate hypothesis is accepted. That means there is a positive correlation between saving and investment.

TABLE 6: Result of multiple regression determining GDS and inflation in India

Effect of inflation on selected macroeconomic variables (savings and Investment).

Variables		Un standardized		Standardized Coefficient	t	Sig.
		Coefficient	SE	Beta		
1	GDS	25.801	2.199		11.734	0
	INFLATION	2.142	1.228	0.503	1.745	0.115
a. Dependent Variable: GDS						
b. Predictors: (Constant), INFLATION						

Multiple R value = .503 **R Square value = .253** **F - Value = 3.044**

Durbin – Watson test value = .903

11.734 (GDS) = 95983.23 + (1.745 INFL)

Interpretation

One percent increases in inflation causes .503 percentage increase in GDS in India. The positive relationship between inflation and GDS has to be read in conjunction with India's objective to achieve a higher growth rate. So the null hypothesis is rejected and alternate hypothesis is accepted means there is an effect of inflation on savings and investment in India.

TABLE 7: result of multiple regression determining GDP growth in India

Effect of inflation on selected macroeconomic variables (savings and Investment).

Variables		Un standardized		Standardized Coefficient	t	Sig.
		Coefficient	SE	Beta		
1	GDI	25.036	2.939		8.517	0
	INFLATION	4	1.641	0.631	2.437	0.038
a. Dependent Variable: GDI						
b. Predictors: (Constant), INFLATION						

Multiple R value = .631

R Square value = .398

F - Value = 5.941

Durbin – Watson test value = .951

8.517 (GDI) = 235424.873 + (2.437 INFL)

Interpretation

One percent increases in inflation causes .631 percentage increase in GDI in India. The positive relationship between inflation and GDI has to be read in conjunction with India's objective to achieve a higher growth rate. So the null hypothesis is rejected and alternate hypothesis is accepted means there is an effect of inflation on investment in India.

Suggestion

Economic development in India is financed either by its domestic savings or foreign saving that flow into the country. We had to mostly depend on domestic savings to give impetus to our development, proceeding to economic sector transformation in the country. Though, the foreign wealth flows into the country in the form of aid, External Commercial Borrowing (ECB) and NRI deposits, these methods do not contribute much towards are wealth formation or monetary growth. The existing policies of the administration are being continuously changed in favor of foreign capital in India. What it is here now is simply some of the major changes. But, thousands of other minor changes are taking place each week in some sector of the economy or the other, creating a vast complex of incentives for FDIs that help it grow in both depth and extent. The pace of its development in India, at both the Central and State levels, shows quite clearly that policy is now fully dictated by the imperialists.

Conclusion

The aim of this research is to find out the impact of macroeconomic variables on GDP growth and study the blueprint of Inflation, GDP, GDS and Rate of interest in India. To solve this basic purpose yearly data was used from 2004 to 2014 and the basic and believed to be “indicator” variables were used and studied and analyzed by first applying the basic statistical tools like correlation and descriptive statistical tools and finally regression models. The application of regression econometric models reveals that the null hypothesis is rejected. It concludes that the series of GDS, GDI, and Inflation of India is stationary. These macroeconomic variables affect the growth of Indian economy.

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