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**INFLUENCE OF LEADING INDICATORS ON NATIONAL ECONOMY**

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**ABSTRACT**

*For more than hundred years GDP has been adapted as a measure for economic progress. GDP is an estimate of market throughput, adding together the value of all final goods and services that are produced and traded for money within given period of time. That is typically measure by adding together a nation's personal consumption expenditures (payments by households for goods and services), Government Expenditure (public spending on provision of goods and services, infrastructure, debts, payments, etc. Net Exports (Country Exports - Government Imports) and Net Capital formation (Increased in stock of monetised capital good). It is a reflection of how fast has economy has grown. Gross Domestic Product is only measure for marketed economic activity and human compliance of community capital are ignored. This paper attempts to identify certain factors that have long been influence Gross Domestic Product.*

*This paper tries to list down the following factors Gross Domestic Product, Foreign Direct Investment, Gold Rate, Exchange Rate USD, Imports in billions \$, Exports in billion \$, Inflation for analysis on GDP. The technique used in the research is Multiple Linear Regression. Through this technique the research analysis attempts to evaluate the association of different parameters viz-a-viz GDP taking into account the interdependence of these variables.*

*This research is an attempt to formulate the parameter that may be influential during formulation of strategies and policies for the economy.*

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## 1. INTRODUCTION

Growth experience in South-East and South-Asia has generated keen interest among economists and policy makers for the last two decades. The United States Department of commerce embarks upon use of Gross Domestic Product (GDP) to gauge economic proficiencies of the country as one of the biggest inventions of the 20<sup>th</sup> century. In 2003 when Government of India introduced Fiscal Responsibility and Budget Management Act aimed at controlling fiscal deficit, the acute problem of Twin Deficit i.e. fiscal deficit clubbed with Current Account Deficit got noticed. This triggered economists and researchers to look at the combined effect of a number of factors that play a major role in meeting our Trade account Balance and improve our Gross Domestic Product. Study of Authentic Reports from Credit Rating Agency Ltd. (ICRA) and Indira Gandhi Institute of Development Research points at numerous macroeconomic factors affecting economic growth like Foreign Direct Investment, inflation, Export-Import trade volume foreign exchange rate etc, have widely varying values across nations and therefore, on their economic growth.

For the analysis the parameters have been considered are follows-

Gross Domestic Product (GDP) is the market value of all officially recognized final goods and services produced within a country in a year or other given period of time. GDP per capita is often considered an indicator of a country's standard of living. The economy of India is the tenth-largest in the world by nominal GDP and the third-largest by purchasing power parity (PPP).

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The country is one of the G-20 major economies and a member of BRICS. On a per-capita-income basis, India ranked 141st by nominal GDP and 130th by GDP (PPP) in 2012, according to the International Monetary Fund (IMF). India is the 19th-largest exporter and the 10th-largest importer in the world. Several postulates have been identified to show impact on GDP like Gold rate, Exchange rate USD, Inflation CPI, Export, Import, FDI (foreign direct investment).

**Exchange rate:** The price of one country's currency expressed in another country's currency. In other words, the rate at which one currency can be exchanged for another. For example, the higher the exchange rate for one dollar in terms of one Indian rupee, the lower the relative value of the rupee. The USD/INR exchange rate has been subject to a continuous rise following a linear graph but this has a cascading effect on our imports, Balance of Trade,

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Money supply in economy, Monetary Policy of government and finally over Gross Domestic Product (GDP).

**Rate of Inflation:** The rate at which purchasing power of the money reduces. It is generally expressed as the rate at which the general level of prices for goods and services is rising and subsequently, purchasing power is falling. When the inflation rate of a country increases the currency depreciate. Because inflation is inversely related to that of the value of currency and thus hampers the real GDP of the country.

**Imports:** When a country imports goods, it buys them from foreign producers, the money spent on imports leaves the economy and that decreases the importing nation's GDP. India imports a large volume of crude oil for domestic consumption that heavily impacts its Balance of payment deficits and strikes a negative effect on its GDP.

**Exports:** When a country exports goods, it sells them to a foreign market, that is, to consumers, businesses, or governments in another country. Those exports bring money into the country, which increases the exporting nation's GDP .India takes a lead in generating 33% of its GDP from exporting IT/IT Enabled Services across globe. If net exports are positive, the nation has a positive balance of trade. If they are negative, the nation has a negative trade balance. Virtually every nation in the world wants its economy to be bigger rather than smaller. That means that no nation wants a negative trade balance

**Foreign Direct Investment:** Foreign direct investment (FDI) in developing economies has grown rapidly following financial and political transformation. To increase the share of FDI inflows, India has been in the continuous process of easing restrictions on foreign direct investment, strengthening macro stability, privatized state-owned enterprises, instituted domestic financial reforms, capital account liberalization and granted tax incentives and accessibility into sectors like retail, pension, insurance apart from Infrastructural Development.

**Gold rate:** Gold is an important investment asset and savings vehicle for a majority of population in India. In 2012, the demand for gold for investment purpose represented over one-third of global demand .In 2012 alone the fabrication demand was 942 tonnes and the consumption demand was 864 tonnes .This pace of rise in demand created an alarming import bill for India thus, indirectly influencing its GDP.

India strives to use a judicious mixture of macroeconomic variable in attaining a double digit growth trajectory by 2020.This paper uses average annual trade data for India between 2001

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and 2012 in order to study the short and long run relationship between real exchange rate , trade balance and GDP.

The Organisation of this paper is as follows:

The Section I of this paper provides introduction to the GDP and parameters of identified for the analysis. Section II enlists the background analysis done in the areas of the parameters to be incorporated in the study. Section III draws the objectives and methodology of research. Section IV does an in-depth data collection, analysis the collected data and conveys the findings of analysis. Section V draws out the result of the analysis. Section V concludes our paper.

## 2. LITERATURE SURVEY

The identified parameters have a close association with GDP. Several research the mentioned area done in the past report of such influences. To mention a few in background analysis.

The paper by Anubha Dhasmana[1], "India's Real Exchange Rate and Trade Balance: Fresh Empirical Evidence", Indian Institute of Management Bangalore(2012) ,evaluates the relationship between India's Real Exchange Rate and its trade balance with her major trading partners using quarterly trade data for 15 countries over the period 1975 Q1-2011Q1. Apart from using bilateral trade model we use Pooled Mean Group estimator of Pesaran and Smith (1995) to get direct estimates of long term income and real exchange rate elasticities. Also the paper concludes that exchange rate depreciation is positively associated with the trade balance in the long run. At the same time real exchange rate volatility is negatively correlated with India's trade balance in the long run.

Another paper by Shah Ajay, Patnaik Ila [2], "India's Experience with Capital Flows: The Elusive Quest for a Sustainable Current Account Deficit", in Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences,(2005) talks about India being engaged in policies involving trade liberalization, strong controls on debt flows and encouragement for portfolio flows and FDI, under a pegged exchange rate regime. Domestic institutional factors have led to relatively little FDI and substantial portfolio flows. There has been significant tension between capital flows and the currency regime. Many tactical details of the intricate reforms to the capital controls derive from the interlocking relationships between monetary policy, the currency regime and capital flows. In the recent period, pegging has given a capital outflow through reserves accumulation which was larger than the substantial net private capital inflows. In March 2004, difficulties of pegging appear

to have led to a near-tripling of the nominal rupee-dollar returns volatility, which has reduced outward capital flows.

Department of commerce [3], "Impact of Foreign Direct Investment on GDP: Empirical Evidence From India", Global Research Analysis, Rohtak University Haryana(2012) exhibited in their study a strong positive correlation between Foreign Direct Investment and GDP ( $r=0.869$ ) and indicated that FDI is the most important predictor of GDP with R square value of 0.755 which shows that FDI accounts for 75.5 % of variations in GDP.

Tverberg Gail and associates[4], in paper titled "The Future of Oil: Geology versus Technology", IMF working paper on Impact of Oil prices in GDP[2012] are trying to evaluate that GDP growth drives oil growth. While this is true, it is to some extent a "chicken" and "egg" situation. Perhaps the availability of inexpensive oil and other fossil fuels is one of the main drivers of economic growth. It also states the possibility of the cycle being started by the availability of cheap fossil fuels for industrial use and continued by the increased demand to which this growth gives rise.

Another paper by Chairah Anthony & Kwame Paul [5] titled "GDP growth, Inflation, money supply, foreign price and the real income, Exchange rate and Inflation In Ghana", University for Development Studies analyses the implications of exchange rate, GDP growth and monetary policies for inflation in Ghana but this paper unable to prove a significant long-run relationship between exchange rate and inflation in Ghana but confirms a long-run equilibrium relationship between inflation, money supply, foreign price and the real income. In line with theoretical assumptions, the findings demonstrate that in the long run, inflation in Ghana is positively related to the money supply while it is negatively related to real income and foreign price level. The results of the paper give enormous support to the current policy by the Bank of Ghana of anchoring inflation targeting on monetary policy.

Malik Aziz-ur-Rehman Atif's paper [6], titled "Impacts of Imports, Exports and Foreign Direct Investment on the GDP Growth", mentions that Economic growth has been considered as the most powerful engine pulling the people out of the clutches of poverty and raising their standard of life. Gross Domestic Product is based on different economic factors like Exports of goods & Services, Imports of goods & services, Foreign Debts, FDI, political environment in the country, conditions of part of products like material, labour level, Government spending and also on the government policies. He uses the scatter-plot matrix is used to view the relationships among the variables used in this study and he says yet in future studies it

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would be useful to include some other variables in the analysis as well like USD, Inflation, and human capital growth etc may improve the value of the coefficient of determination.

Mishra P. K. [7] in paper titled "The Dynamics of Relationship between exports and economic growth in India", makes an attempt to reinvestigate the dynamics of the relationship between exports and economic growth for India over the period 1970 to 2009. Applying time series econometric techniques of co integration and vector error correction estimation, the study provides the evidence of stationary of time series variables, existence of long-run equilibrium relation between them, and finally, the rejection of exported growth hypothesis for India by the Granger causality test based on vector error correction model estimation.

Alexandru Ioan Cuza[8] in paper titled "The Relationship between Exchange Rate and Key Macroeconomic Indicators Case Study: Romania", Anca Elena NUCU University of Iași. The issue addressed was to examine the influence of the following key macroeconomic indicators: GDP, inflation rate, money supply, interest rate and balance of payments on exchange rate of the Romanian lieu against the most important currencies (EUR, USD) during 2000-2010 period. The main findings of study are: it is an inverse relationship between exchange rate EUR/RON, Gross Domestic Product, respectively money supply and a direct relationship between exchange rate EUR/RON, inflation and interest rate.

Rodrik Dani [9] in the paper titled, "The Real Exchange Rate and Economic Growth", Harvard University Paper shows that undervaluation of the currency (a high real exchange rate) stimulates economic growth. This is true particularly for developing countries. This finding is robust to using different measures of the real exchange rate and different estimation techniques. Results suggest that tradable suffer disproportionately from the government or market failures that keep poor countries from converging toward countries with higher incomes. Paper present two categories of explanations for why this may be so, the first focusing on institutional weaknesses, and the second on product-market failures. A formal model gives the linkages between the real exchange rate and the rate of economic growth.

Sharma Manu and Agrawal Rajneesh [10] "Gold Price and GDP Analysis of the World's Top Economies" the study examines the relationship between gold prices and real GDPs of the world's largest gold-holding economies, which include the United States, the United Kingdom, France, Germany, Italy, Brazil, Japan, Europe, and Canada, for the 16-year period from December 1995 to June 2011. The multiple correlation coefficient measures the

relationship between the gold price and GDP based on the regression equation, while the coefficient of determination indicates the percentage of the variation in gold prices that can be explained and accounted for by the GDPs of the world's largest gold-holding economies in the regression equation. The authors perform multiple regression analyses to study the effect of nine GDPs on the movement of gold price. Results imply that the GDPs of seven out of nine economies when used together best predict the movements in the gold price. They also find that when individual GDPs are regressed with gold prices, the gold price is least correlated with Italy's GDP but highly correlated with Brazil's GDP. The gold price is only moderately correlated with the US. GDP even though the United States has the world's highest gold holdings.

### **3. OBJECTIVE OF STUDY**

Looking into influence of the parameters as mentioned in background analysis this paper aims to show influence of the parameters on Indian GDP. The main objectives of this study is to analyze the effect of major economic variables like Gold rate, Exchange rate, Inflation, Imports, Exports, FDI on GDP at Multiple Regression as these parameters not only influence the GDP but also show influence on one another.

### **4. THEORETICAL FRAMEWORK**

The focus of this paper is to show influence of independent variables on dependent variables where,

GDP is dependent variables.

Gold rates, Exchange rate USD, Inflation CPI, Export, Import, FDI (foreign direct investment) are independent variable.

The basic assumptions for this analysis are:

- Gold Rate 10 grams annual average rate.
- Indian Rupees viz-a-viz US Dollar annual average rate.
- Indian Inflation: CPI (consumer price index) India annual average rate.
- FDI Inflows in India annual average rate.
- Imports in billion dollar annual average rate.
- Exports in billion dollar annual average rate.

### **5. HYPOTHESIS**

(i) Our Parameters Foreign Direct Investment, Gold Rate, Exchange Rate USD, Imports in billions \$, Exports in billion \$, Inflation are not influence by GPD.

(ii) Our Parameters Foreign Direct Investment, Gold Rate, Exchange Rate USD, Imports in billions \$, Exports in billion \$, Inflation are influence by GPD.

## 6. RESEARCH METHODOLOGY

This paper explores the causal relationship between Gold rate, Exchange rate USD, FDI, Inflation, Exports, Imports and GDP a brief about each parameter is also provided. The various parameters have been classified and tabulated as per need of the paper.

### 6.1. Type of Data

The type of data in this research is Secondary data. Secondary data provides necessary background about the studies that has being done and its result and it also helps the researcher to compare or confirm the results.

### 6.2. Variables

There are independent and dependent variables.

Where, GDP is dependent variable

Gold rate, Exchange rate USD, FDI, Export in billions, Import in billions, Inflation CPI are Independent variable.

### 6.3. Time

The time period (yearly average) of research data start from 2000-2001 to 2012-2013.

Averages are calculated to make the study simple and understandable to all.

- Gold Rate 10 grams annual average rate.
- Indian Rupees viz-a-viz US Dollar annual average rate.
- Indian Inflation: CPI (consumer price index) India annual average rate.
- FDI Inflows in India annual average rate.
- Imports in billion dollar annual average rate
- Exports in billion dollar annual average rate

### 6.4. Sources of data

The data is collected from RBI (Reserve Bank of India), Planning Commission of India, Ministry of Finance portals, some leading global publications, and a few economic and monetary informative websites are also accessed to gather information for the study are index mundi, money control etc.

### 6.5. Model

Multiple Linear Regression is a statistical technique used for finding the relationship among variables. The independent and dependent variable have any positive or negative impact

among each other. Tabulated presentation of data has also been used to represent the trends of factors during the study period.

### MULTIPLE REGRESSION MODEL

The following simple linear regression model uses in this study;

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + se$$

$$Y (\text{GDP}) = \beta_1 + \beta_2 (\text{Gold}) + \beta_3 (\text{Exchange rate}) + \beta_4 (\text{Inflation}) + \beta_5 (\text{Imports}) + \beta_6 (\text{Exports}) + \beta_7 (\text{FDI}) + se$$

Whereas from the above equation we define Y as dependent variable called Gross domestic product of the country,  $\beta_1$  is the value of constant mean the value of gross domestic product in the absent of any independent variable.

SE or standard error term shows us the relationship of other variables affect the dependant variable except the independent variable defined in the modal.

Following is the table showing the statistical results using the SPSS.

SPSS Statistics is a software package used for statistical analysis which estimates the above stated equation showing the impact of Gold rate, Exchange rate USD, FDI, Export in billions, Import in billions, Inflation CPI on Gross domestic products.

### MULTIPLE REGRESSIONS

- Multiple linear regression (MLR) is a multivariate statistical technique for examining the linear correlations between two or more independent variables (IVs) and a single dependent variable (DV).

YEAR	GDP	FDI	GOLD RATE	EXCHANGE RATE USD	IMPORTS billion \$	EXPORTS billion \$	INFLATION (CPI)
2000-01	4.3	4029	4400	45.68	60.8	43.1	3.77
2001-02	5.52	6130	4300	47.69	53.8	44.5	4.31
2002-03	3.99	5035	4990	48.39	53.8	44.5	3.81
2003-04	8.06	4322	5600	45.95	75.15	57.24	3.77
2004-05	6.97	6051	5850	44.93	89.33	69.18	4.25
2005-06	9.48	8961	7000	44.27	113.1	76.23	5.79
2006-07	9.57	22826	8400	45.28	187.9	112	6.39
2007-08	9.32	34843	10800	40.24	305.5	176.4	8.32
2008-09	6.72	41873	12500	45.91	274.3	168.2	10.83
2009-10	8.59	37745	14500	47.41	327	201	12.11
2010-11	9.32	34847	18500	45.57	461.4	299.4	8.87

2011-12	6.21	46553	26400	53.33	500.4	298.4	9.3
2012-13	4.96	27197	31799	59.46	475.3	307.2	11.08

## 7. DATA FINDINGS AND ANALYSIS

A summary of the output is shown by fitted equation-

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + se$$

$$Y (\text{GDP}) = \beta_1 + \beta_2 (\text{Gold}) + \beta_3 (\text{Exchange rate}) + \beta_4 (\text{Inflation}) + \beta_5 (\text{Imports}) + \beta_6 (\text{Exports}) + \beta_7 (\text{FDI}) + se$$

$$Y = 50.05954 + (-0.00011) * X_2 + 0.001047 * X_3 + (-1.03185) + (-0.00755) * X_4 + 0.299433 * X_5 + (-0.03175) * X_6 + se$$

### Interpret Regression Statistics Table

Multiple R	0.8512	R = square root of R <sup>2</sup>
R Square	0.72454	R <sup>2</sup>
Adjusted R Square	0.44907	Adjusted R <sup>2</sup> used if more than one x variable
Standard Error	1.51914	This is the sample estimate of the standard deviation of the error $\epsilon$
Observations	13	Number of observations used in the regression (n)

The above gives the overall goodness-of-fit measures:  $R^2 = 0.72454$

Correlation between GDP and other 6 variables is 0.724536

Adjusted R<sup>2</sup> = 0.449071

The standard error here refers to the estimated standard deviation of the error term  $\epsilon$ .

$R^2 = 0.724536$  means that 72 % of the variation.

### Interpret Regression Coefficients

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	50.05954	18.75268	2.669461	0.037053	4.173392	95.9457
GDP	-0.00011	0.000128	-0.84467	0.430684	-0.00042	0.000206
FDI	0.001047	0.000766	1.366526	0.220767	-0.00083	0.002922
Gold rate	-1.03185	0.447102	-2.30785	0.060446	-2.12586	0.062173
Exchange Rate USD	-0.00755	0.063956	-0.11806	0.909875	-0.16405	0.148944
Imports in billions \$	0.299433	0.402093	0.744685	0.484597	-0.68445	1.283319
Exports in billions \$	-0.03175	0.08155	-0.38934	0.710465	-0.2313	0.167794

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- Column "**Coefficient**" gives the least squares estimates of  $\beta_j$ .

- Column "**Standard error**" gives the standard errors (i.e. the estimated standard deviation) of the least squares estimates  $b_j$  of  $\beta_j$ .
- Column "**t Stat**" gives the computed t-statistic for  $H_0: \beta_j = 0$  against  $H_a: \beta_j \neq 0$ .
- Column "**P-value**" gives the p-value for test of  $H_0: \beta_j = 0$  against  $H_a: \beta_j \neq 0$ .
- Columns "Lower 95%" and "Upper 95%" values define a 95% confidence interval for  $\beta_j$ .

### **Test Hypothesis of zero slope coefficients ("Test of Statistical significance")**

- The coefficient GDP of has estimated standard error of 0.000128, t-statistic of -0.84467 and p-value of 0.430684. It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .
- The coefficient of FDI has estimated standard error of 0.000766, t-statistic of 1.366526 and p-value 0.220767of. It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .
- The coefficient Gold Rate of has estimated standard error of 0.447102, t-statistic of -2.30785and p-value of 0.060446. It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .
- The coefficient Exchange Rate USD of has estimated standard error of 0.063956, t-statistic of -0.11806 and p-value of 0.909875.It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .
- The coefficient of Imports in billions \$ has estimated standard error of 0.402093, t-statistic of 0.744685 and p-value of 0.484597It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .
- The coefficient of Imports in billions \$ has estimated standard error of 0.08155, t-statistic of -0.38934 and p-value of 0.710465.It is therefore statistically insignificant at significance level  $\alpha = .05$  as  $p > 0.05$ .

## **8. CONCLUSION**

The obtained value suggest that the parameters identified Foreign Direct Investment, Gold Rate, Exchange Rate USD, Imports in billions \$,Export in billion \$,Inflation have a close influence on Gross Domestic Product.

Most significant parameters are in decreasing order are

- I.** Exchange Rate USD
- II.** Exports in billions \$
- III.** Imports in billions \$

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**IV. FDI**

This research paper would be an aid to strategic moves towards the economy .It may provide as the basic the formulation of regulation and strategy regarding these parameter. It also suggests the role played by the various factors on GDP along with information on the influence on each other.

At the time it was conceived, GDP was a useful signpost on the path to a better world, a path where increased economic activity provided jobs, income, and basic amenities to reducing social conflicts. But the fact reveals the world financial system is in crises. The time is right to embark on certain factors like Gross Domestic Product, Foreign Direct Investment, Gold Rate, Exchange Rate USD, Imports, Exports, Inflation to revive the financial condition of the world. This would provide an opening into a better, more sustainable and desirable future, we need seize this opportunity.

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