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GDP of Indian Economy and Its Impact on Inflation

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Abstract: ***Paper focuses on relationship and collision of inflation and population growth with GDP. This paper investigates the impact of Inflation and Population on GDP of India. The change in GDP is taken as dependent variable while Population and Inflation are considered as independent variables. The data have been taken from secondary sources i.e. financial reports of the RBI and World Bank. The period of the study comprehends twenty years as it provides us a sound analytical position for observing GDP, Population and Inflation at the national level of the Indian economy. The analysis has been carried out with the help of correlation, regression analysis, t-test and ANOVA model using SPSS software.***
Keywords: Inflation, GDP, Regression, Tax bracket.

I. INTRODUCTION

Financiers are probable to hear the stipulations, gross domestic product (GDP) and inflation, just about on a daily basis. They often feel that these facts must have reviewed as a surgeon would study a patient's map before surgery. National income deals the money worth of the flow of productivity of goods and services formed within a financial system over a period, where Inflation can indicate either a raise in the currency supply or enhancing in price level. Commonly, when there is increase in inflation there is increase in prices too. If the money supply has been augmented, then there is enlargement in price levels (Zaigham Abbas Khan et.al 2013). Though inflation has always been a major public concern and always been subject to heated political debate, it is an astonishing truth that since 1950 India has experienced one of the lowest inflation rates in the world in comparison to other developing countries and most of these years it had consistently maintained a steady control over the inflation rate by limiting it to only a single digit figure. (DR.S.JAMUNA, 2016) The biggest turmoil of inflation came in the year 2008 to 2009 when India experienced both the highest ever rate of inflation in the country and the lowest rate also within span of just few months.

II. CAUSES OF INFLATON

Inflation refers to a rise in prices that causes the purchasing power of a nation to fall. Inflation is a normal economic development as long as the annual percentage remains low; once the percentage rises over a pre-determined level, it is considered an inflation crisis. There are many causes for inflation, depending on a number of factors (S.Jamuna, 2016).

1) Excess printing of money: Inflation can happen when governments print an excess of money to deal with a crisis. As a result, prices end up rising at an extremely high speed to keep up with the currency surplus. This is called the demand-pull, in which prices are forced upwards because of a high demand.
2) Rise in production costs: Another common cause of inflation is a rise in production costs, which leads to an increase in the price of the final product e.g. if raw materials increase in price, this leads to the cost of production increasing, this in turn leads to the company increasing prices to maintain steady profits. Rising labour costs can also lead to inflation. As workers demand wage increases, companies usually chose to pass on those costs to their customers.
3) International lending and national debts: Inflation can also be caused by international lending an national debts. As nations borrow money, they have to deal with interests, which in the end cause prices to rise as a way of keeping up with their debts. A deep drop of the exchange rate can also result in inflation, as governments will have to deal with differences in import/export level.
4) Rise in tax and duties: Finally, inflation can be caused by federal taxes put on consumer products such as cigarettes or fuel. As the taxes rise, suppliers often pass on the burden to the consumer; the catch, however, is that once prices have increased, they rarely go back, even if the taxes are later reduced. Wars are often cause for inflation, as governments must both recoup the money spent and repay the funds borrowed from the central bank. War often affects everything from international trading to labour costs to product demand, so in the end it always produces a rise in prices.

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A. Effect of Inflation

Most effect of inflation are depressing and can hurt economy alike:

1) Inferior national saving (when there is a lofty inflation, saving money would mean surveillance your cash diminish in value relentlessly, so people lean to pay out the cash on something else).
2) Fixed income recipients will be hurt (as inflation augments, their incomes do not rise, and as a result, their income will have not as much of value over time).
3) Causes a rise in tax bracket (people will be taxed a higher proportion if their income increases following an inflation boost).
4) Currency degradation is (which lowers the significance of a legal tender, and occasionally become a source of new currency to be born).
5) Growing prices of imports (if the currency has desecrated, then its purchasing power in the global market is lesser.(Zaigham Abbas Khan et.al 2013).

B. GDP and Inflation

Money has considered as storage of value. When money grasps its worth, people feel secure saving it. Inflation declines the utility of money as storage of value, since every unit of money is value less with the passing of time and enhance of inflation, so people lean to pay out money on something else that can play the role of "the storage of value". In the meantime, the inflation has negative connection with national income and at the same time have negative impact on national savings because of the lower purchasing power.

C. Effects of Population

Population increase put forth supplementary strain on natural resource utilization. People have to fed, housed, and dressed; as population raises, the requirement for food and materials swells. The escalating utilization of land and resources, at some position go beyond the carrying facility and causes the natural resources ineffective or exhausted. This could effect in economic hardship. Specifically every addition in population has directed to more troubles than settlement. Some of the negative effects of population increase include high population growth rates need immense investment in Social infrastructure. Due to the scarcity of investment finances, social infrastructure like schooling, wellbeing, transportation and accommodation is likely to diminish. This results in congestion and declining value of services. Every year the world population enlarges by about 80 million. Towards the finish of 2011, the total attains seven billion, having more than twice since 1965. The Gross Domestic Product (GDP) in India expanded 1.80 per cent in the third quarter of 2016 over the previous quarter. GDP Growth Rate in India averaged 1.67 per cent from 1996 until
2016, reaching an all-time high of 5.80 per cent in the second quarter of 2009 and a record low of -1.80 per cent in the first quarter of 2009(Trading Economics, 2016). It has estimated to rise to 9.3 billion in 2050. The carrying ability of the earth for humans has determined by global inhabitants, economic means to devour resources, the technology available and the selection of lifestyle. Correct population data is an essential element of social and economic strategy. Governments cannot distribute well- organized services and infrastructure without facts of the national demographic sketch – the mass of the population, where people exist, how aged they are, and the net effect of birth rates, death rates and exodus (Zaigham Abbas Khan et.al 2013).

III. LTERATURE REVIEW

Tobin, (1965) in his paper "Money and Economic Growth" regarded money as a substitute for capital, and shows that higher inflation enhances investment and causes a higher level of output. National income deals the money worth of the flow of productivity of goods and services formed within a financial system over a period, where Inflation can indicate either a raise in the currency supply or enhancing in price level. Commonly, when there is increase in inflation there is increase in prices too.
Denison, E.F. , (1981)in his paper "International Transactions in Measures of the Nation's Production" analysed that net exports should be deflated by means of an import price index, sets up the term "Command GDP" to portray real GDI in the United States. This is the identical measure illustrated in the SNA 1993. Denison's terminology and methodology are afterward used by the National Income and Product Accounts in the United States when constructing their Command GDP measure.

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Judson, Ruth, Orphanides, &Athanasios , (1996)in their paper "Inflation, Volatility and Growth"found a significant negative inflation-growth effect for a large panel; but when splines are introduced the relation turns out to be insignificant for inflation rates below 10%.

Khan, A. H. &Qasim, M. A., (1996)in their paper "Inflation in Pakistan Revisited" described that food inflation to be determined by money supply, value-added in manufacturing and wheat support price in Pakistan. Non- food inflation is determined by money supply, real GDP, import prices and electricity prices. It is scarcely astonishing that changes in the wheat support price have an effect on the food price index, given that wheat products account for 14 per cent of the index. Nevertheless, this does not routinely entail that headline inflation is exaggerated by changes in the value of one particular item. Certainly, Khan and Qasim discover that generally inflation is only determined by money supply, import prices, and real GDP.

Sarel, (1996) in his paper "Non linearaffects of inflation on economic growth" attempted an alternative empirical investigation of the problem and also concludes that inflation affects growth only if it breaches a specific 'threshold' rate of inflation but not otherwise. He concludes that an inflation threshold of about 8 % for a pooled sample of a large number of countries, including India, serves as a good common benchmark for the sample as a whole. Since the common threshold is an estimate from a pooled sample, it may not be exactly suitable for particular country if taken in isolation. There is, therefore, a need to have yet another empirical assessment of the problem of finding the level at which inflation actually begins to erode economic growth in given economy.

Bruno & M and W Easterly, (1998) in their paper "Inflation Crisis and Long Run Growth"concluded that there was no evidence of a growth-inflation tradeoff in a sample which excluded discrete high inflationary crisis. On the other hand, there was ample evidence to show that growth turned sharply negative when inflation crossed past a high threshold rate of 40 % per annum. They also argue that the failure of investigators in detecting a meaningful relationship between inflation and growth can be attributed to a stylised rapid recovery of output after inflation which, on an average, renders the overall statistical relationship insignificant.

Ghosh, Atish, & Steven Phillips, (1998)in their paper "Inflation, Disinflation, and Growth"found for IMF member countries, at low inflation rates a positive inflation-growth correlation, and for higher inflation rate a negative inflation- growth relation. Further the negative relation that they find is non-linear whereby the marginal effect is stronger at lower inflation rates than at higher ones.

Fischer,S.,Feldstein,M., Lucas, (2000) in their paper "Inflation and Welfare" found that Inflation and its inconsistency necessitate great real costs to the market. Numerous studies demonstrate that a 10% inflation rate can create losses of approximately 3% of the real GNP in the course of saving and investment misallocation or the loss of value of real balances.

Khan, Mohsin, &Abdelhak, (2000) in their paper "Threshold Effects in the Relationship Between Inflation and Growth" found a significant negative effect of inflation that starts above a certain "threshold" inflation rate level and continues for all higher rates. The threshold inflation rate is found to be 1% for industrial countries and 11% for developing countries; below these rates the inflation growth effect is positive.

Hall, R. E. & Jones, C. I, (2007)in their paper "The Value of Life and the Rise in Health Spending" stated that expenditure on wellbeing to enlarge life allow individuals to buy extra periods of utility. The marginal utility of life addition does not decrease. As a consequence, the best composition of total expenditure moves toward health, and the health share rise along with income.

Lokeswar Reddy, (2012)in his paper "Impact of Inflation and GDP on Stock Market Returns in India"emphasized Inflation is a situation in the economy where, there is more money chasing less of goods and services. In other words, it means there is more supply/availability of money in the economy and there are less of goods and services to buy with that increased money. Thus goods and services command a higher price than actual as more people are willing to pay a higher value to buy the same goods. In this inflationary situation, there is no real growth in the output of the economy per se. It's simply more money chasing few goods and services.

Dr.S.Jamuna, (2016)in his paper "Inflation and its impact on India" found that Inflation has always been a major public concern and always been subject to heated political debate, it is an astonishing truth that since 1950 India has experienced one of the lowest inflation rates in the world in comparison to other developing countries and most of these years it had consistently maintained a steady control over the inflation rate by limiting it to only a single digit figure. The biggest turmoil of inflation came in the year 2008 to 2009 when India experienced both the highest ever rate of inflation in the country and the lowest rate also within span of just few months.

IV. OBJECTIVES

The purpose and objectives of this research is to:

1) To assess the relationship among inflation, population growth and GDP during year 1996-2016.

2) To test the impact of inflation and population growth on GDP in Indian Economy.

V. MODEL OF THE RESEARCH PAPER

Regression Equation is as follows;

a) $GDP = \alpha + \beta * P$ (i)

b) $GDP = \alpha + \beta * I$ (ii)

Where:

'P': Population

'I': Inflation Rate

'α': representing the coefficient intercept term as constant

'β': representing the slope intercept as vibrant due the multiplier value of Population and Inflation in Time.

A. Research Hypothesis

H0A: Population has no significant impact on GDP in Indian Economy.

H1A: Population has a significant impact on GDP in Indian Economy.

H0B: Inflation has no significant impact on GDP level in Indian Economy.

H1B: Inflation has a significant impact on GDP level in Indian Economy.

B. Research Methdology And Data

For the present study descriptive research cum analytical design is used. The study describes the impact of inflation and population growth on GDP in the Indian Economy. The period that has been chosen for the present study is from 1996-1997 to 2015-2016. For the research study, data has been gathered from the financial reports of the RBI and World Bank. The period of study comprehends twenty years, as it will provide us a sound analytical position for observing the relationship between GDP, Population growth and Inflation in the Indian economy. The analysis has been carried out with the help of correlation, regression analysis, T-test and ANOVA model using SPSS software

Table 1. Gross Domestic Product Population Growth and Inflation Rate

Year	GDP at Market Prices (Billion)	Population Growth (In Millions)	Inflation, Consumer Price Rate
1996-1997	14192.77	946	256
1997-1998	15723.94	964	264
1998-1999	18033.78	983	293
1999-2000	20121.98	1001	306
2000-2001	21686.52	1019	305
2001-2002	23483.30	1040	309
2002-2003	25306.63	1056	319
2003-2004	28379.00	1072	331
2004-2005	32422.09	1089	340
2005-2006	36933.69	1106	353
2006-2007	42947.06	1122	380
2007-2008	49870.90	1138	409
2008-2009	56300.63	1154	450
2009-2010	64778.28	1170	513
2010-2011	77841.16	1186	564
2011-2012	87360.39	1220	611
2012-2013	99513.44	1235	672
2013-2014	112727.6	1251	750
2014-2015	124882.1	1267	800
2015-2016	135760.9	1283	835

Source: (World Bank Group, 2016) (Reserve Bank of India, 2016).

A constant growth rate was observed in Inflation, Population growth and GDP during the year 1996-1997 to 2015-2016. It showed that inflation rates were consistently growing at 3 to 4 per cent during 1996-97 to 1999-2000 andin 2000-01, it decreased from 306 to 305 during 1999-2000 to 2000-01. GDP increased at a rate of 10 to15 per cent during 1996-97 to 2000-01 while population growth was increased at a rate of around 2 per cent. During 2014 to 2016, GDP rate fall down below 10 per cent. Population growth rate was constant around 1.27 per cent. Inflation rate is also increased at a decreasing rate

VI. ANALYSIS AND INTERPRETATION

After analyzing the available data, the following interpretation has been made

Table 2.Descriptive statistics

Variables	Mean	Std. Deviation	Number of Observation
GDP	54413.31	38981.17	20
Population growth	1115.10	104.66	20
Inflation	453.00	187.87	20

Standard deviation is widely used for measuring dispersion or variability. The mean of GDP is 54413.31and standard deviation is 38981.17and the mean of Population is 1115.10and the standard deviation is 104.66. This indicates that deviation in GDP is greater than Population. In addition, the mean of Inflation is 453.00and the standard deviation is 187.87 (Table 2). Therefore, it is concluded that Inflation is unstable and unpredictable

Table 3.Correlation Between GDP,Population And Inflation

Variables	GDP	Population	Inflation
GDP	1	-	-
Population	0.951	1	-
Inflation	0.998	-	1

(Significant at 5 percent level of significance)

It is observed that the correlation between Gross Domestic Product and Populations positive (i.e. 0.951) and is significant at the 5% level of significance. The correlation between GDP and Inflation is positive (i.e.0.998) and also considerable. It can be inferred that Population and inflation have positive and significant correlation.

Table 4.Summarized result of the research model

Model fit Between GDP and Population				
R-Square	F-test	St.beta	T-test	P value
0.903	168.48	0.951	12.98	0.000
Model fit Between GDP and Population				
R- Square	F-test	St.beta	T- test	P value
0.996	4772.87	0.998	69.09	0.000

*Significant at 5 Percent level of significance

The result of various statistical techniques shows in the above table which were applied on the data of our proposed model (GDP and Population, Inflation). It is observed that the value of R-Square is 0.903 for the first model and 0.996 for the second model, which shows that Population explains 90% and on the other side Inflation explains only 99% on GDP. Table 4 also shows the value of beta is positive in both the cases and is larger in case of Population which means that a unit change in Population brings about greater positive change in GDP but the impact of Inflation is less. Most importantly the table shows that the p-value is less in both the cases of Population and Inflation which states that Population and Inflation both has significant impact on the GDP.

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On the basis of the analysis made above the, following findings have been made

1) The null hypothesis H0A is rejected because the value of p<.05, which implies that Population has significant positive relationship with the GDP in the Indian Economy. It means Population is an important stimulus for the economic growth of India.

2) The null hypothesis H0B is rejected because the value of p<.05, which implies that Inflation has significant positive relationship with the GDP in the Indian Economy

VII. FINDINGS OF STUDY

The conclusive outcome of the research study is that the Population is found as significantly influential for GDP. It is observed that the value of R-Square is 0.903 for the first model and 0.966 for the second model, which shows that Population explains 90% and on the other side Inflation explains only 99% on GDP. It means that if there is a good trend of Population and inflation then it will ultimately results in increasing the GDP and growth of the country. It is, therefore, concluded that Population and inflation possess a significant influential role in the Indian Economy. The finding of current research study is in conformance with the study done by Dr.S.Jamuna, (2016) which examined that there was the biggest turmoil of inflation came in the year2008 to 2009 when India experienced both the highest ever rate of inflation in the country and the lowest rate also within span of just few months. Therefore, it is concluded that Inflation is unstable and unpredictable.

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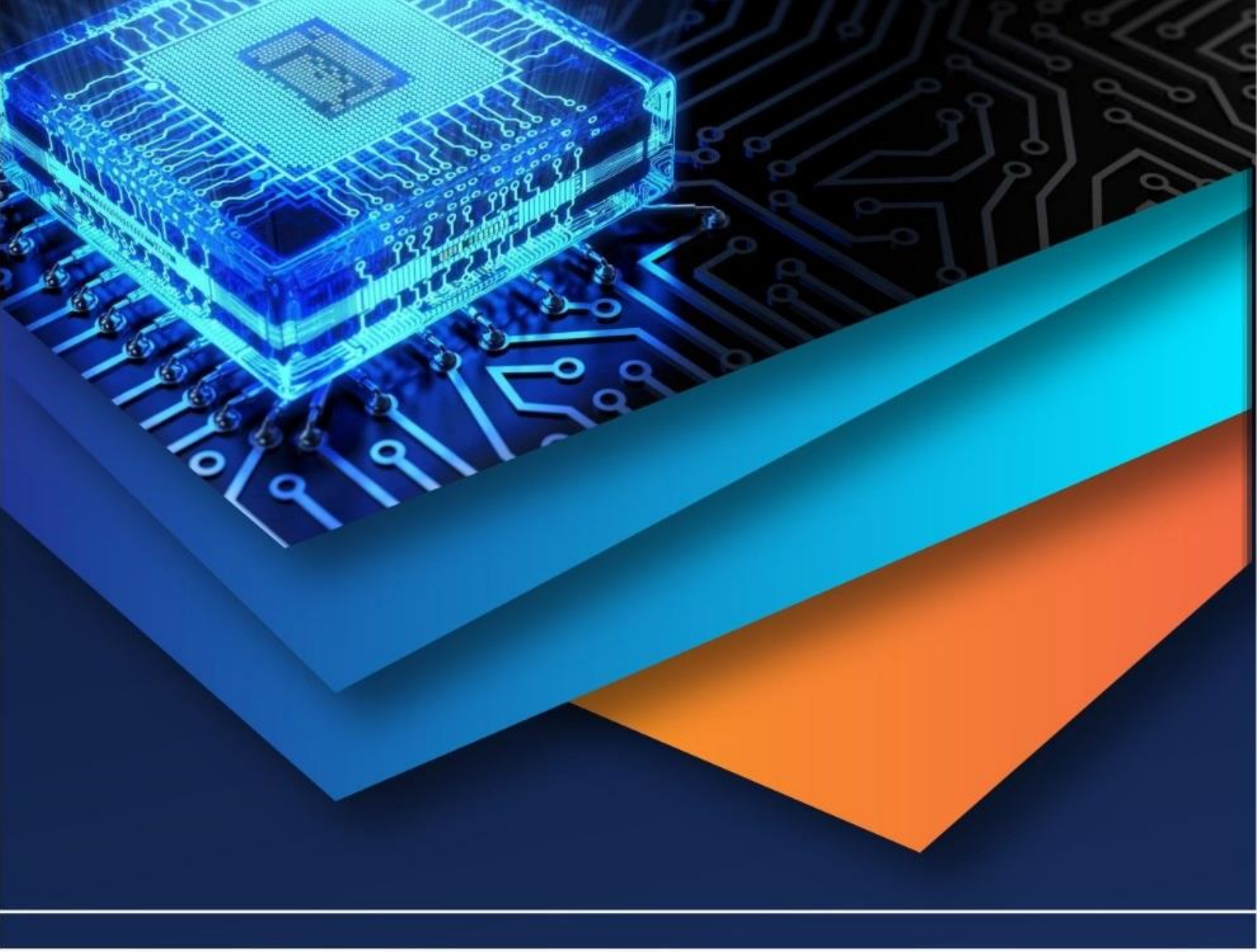

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