IRJA-Indian Research Journal, Volume: 1, Serious: 1. Issue: December, 2013 **ISSN: 2347 - 7695**
Online Available at www.indianresearchjournal.com

An Empirical study on World Inflation Effect on World Economy

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ABSTRACT

Inflation is one of the leading financial concerns in twenty first century. In the late 2009, public opinion polls ranked inflation as the number one problem in India. While the rate of inflation has slowed since the late 2012, inflation is still present and many investors expect a reappearance of inflation to higher levels in the near to immediate future. This continued concern about inflation has led to an increased search and evaluation of investments that will protect investors from inflation. Assets that have the ability to protect investors from the effects of inflation are generally liable inflation hedges. Gold has been regarded as one of the best inflation hedges of past years.

While there has been research in the past evaluating this possibility and some recent research using only business real estate, no current research on gold as inflation hedges exists. This study examines the economic factors which are effecting the inflation to go upside and the factors to which inflation is effecting positively and negatively.

Key Words : BDI, DOLLER, GDP, GOLD, MSCI and WORLD INFLATION

INTRODUCTION:

No word strikes more fear into the hearts of central bankers than inflation. Defined as a general increase in prices or as a decrease in money's purchasing power, inflation creates problems for more than central bankers. Inflation affects everyone in the economy. Governments, businesses,

and households are subject to inflation's influence. Inflation is either created by excessive demand or increases in producers' per unit costs, but it is sustained by too much money in circulation. Left unchecked, inflation can have cataclysmic results for a society.

During the 1920s, the Weimar Republic of Germany suffered from extreme inflation. Instead of taxing or borrowing to raise revenue, the government began to print money for the purpose of making its purchases. The result was runaway inflation. Some historians credit the period of inflation and the resulting loss of confidence in the Weimar Republic for sowing the seeds of Hitler's eventual rise to power.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates and encouraging investment in non-monetary capital projects.

Economists generally agree that high rates of inflation and hyperinflation are caused by an excessive growth of the money supply. Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth.

It is measured as an annual percentage increase. As inflation rises, every dollar you own buys a smaller percentage of a good or service. The value of a dollar does not stay constant when there is inflation. The value of a dollar is observed in terms of purchasing power, which is the real, tangible goods that money can buy. When inflation goes up, there is a decline in the purchasing power of money.

OBJECTIVES:

- To know the impact of inflation on Baltic dry index.
- To know how gold will act as a hedging tool against inflation.

- To find the world inflation impact on world growth.
- To know how world inflation impacting the world equity(MSCI)

LIMITATIONS:

- For this analysis I have used secondary data. This analysis does not contain primary data.
- The figures were taken for 5 years which may not reflect the actual picture.
- As inflation calculation is based on so many items (Good and services). List is not fixed.
- All the countries will not follow same method to calculate the inflation

REVIEW OF LITERATURE:

- **Janak Raj & Sangita Misra:** The properties of core inflation measures have been studied extensively, both internationally and domestically. At the global level, research has been conducted for core inflation based on both exclusion-based criteria and statistical measures for a number of countries, by OECD (2005),
- **Bryan and Cecchetti (1993):** popularized the trimmed mean or weighted median techniques for computing core inflation; estimating core inflation through a structural vector auto regression (SVAR) method was suggested.
- **Armour, Lafleche, 2006:** The components which are generally considered for exclusion are fresh food items, energy prices and mortgage interest payments. Recognizing that all of these measures have pros and cons, Wynne (1999) observed that howsoever, core inflation is measured, for them to be useful for monetary policy formulation, it is crucial that they should be computable in real time and have some predictive power for future inflation.
- **Mohanty (2000):** made a comprehensive attempt to examine core inflation measures: trimmed mean, weighted median and exclusion-based (by excluding energy, a number of fresh food items and a few manufactured items related to primary articles). They observed that 20 per cent trimmed mean WPI was an appropriate core inflation indicator for India. Looking at some recent studies on the subject, while

- **Kar (2009):** focused only on statistical measures of core inflation, Das, analyzed both exclusion-based measures, excluding food articles, and fuel group, individually and together and some statistical measures such as mean-SD, trimmed mean, median, reweighing, HP filter, Wavelet filter and structural VAR measures. Based on his findings, Kar showed that geometric exponential smoothing and weighted percentile were most suitable tools for core inflation.
- **Das (2009):** on the other hand, found that there was no individual measure of core inflation that could be considered superior to other measures. Both these studies were based on the old WPI series with 1993-94 as base.

DATA BASE - METHODOLOGY:

Skewness: Skewness is indicator used in distribution analysis as a sign of asymmetry and deviation from a normal distribution if skewness is greater than zero it is a right skewed distribution which concentrates on left of the mean with extreme values to the right, if skewness is less than zero it is left skewed distribution which concentrates on right of the mean with extreme values to the left, if skewness is zero it is symmetric

$$\begin{aligned}\gamma_1 &= \mathrm{E}\left[\left(\frac{X-\mu}{\sigma}\right)^3\right] \\ &= \frac{\mathrm{E}[X^3] - 3\mu\,\mathrm{E}[X^2] + 3\mu^2\,\mathrm{E}[X] - \mu^3}{\sigma^3} \\ &= \frac{\mathrm{E}[X^3] - 3\mu(\mathrm{E}[X^2] - \mu\,\mathrm{E}[X]) - \mu^3}{\sigma^3} \\ &= \frac{\mathrm{E}[X^3] - 3\mu\sigma^2 - \mu^3}{\sigma^3}\ .\end{aligned}$$

Kurtosis: it is an indicator used in distribution analysis as a sign of flattering or peakedness of a distribution, for kutosis 3 is a base value, if kurtosis is greater than 3 it is leptokurtic distribution sharper than the normal distribution, if kurtosis is less than 3 it is platykurtic distribution flatter than the normal distribution, kurtosis is equal to 3 it is mesokurtic distribution it means it is normal distribution.

The kurtosis for a standard normal distribution is 3. For this reason, some sources use the following definition of kurtosis (often referred to as "excess kurto

$$\text{kurtosis} = \frac{\sum(X-\mu)^4}{N\sigma^4} - 3$$

Correlation: A correlational study is a research writing that attempts to relate an event to another events or sets of causality which precipitate the event.

Slabs: 0 -0.3 slightly correlated,

0.3-0.7 moderately correlated,

0.7-1 strongly correlated

Regression: A statistical measure that attempts to determine the strength of the relationship between one dependent variable (usually denoted by) and the series of other changing variable(known as independent variable).

Y=a+bx

a= the intercept

b= the slope

x= the variable that are using to predict y

y= the variable that are trying to predict

Empirical Investigation:

In this analysis we have dealt with correlation, regression, kurtosis, mean and T-test for the following: **Crude oil, $ vs. Rupee, BDI, World Inflation, MSCI, Gold and world GDP**

DATA ANALYSIS and INTERPRETATION:

Table I: **An Analysis on World Inflation to Gold Prices.**

Year	Months	World Inflation	Gold Prices
2009	Jan-Mar	-0.036666667	21059625.25
2009	Apr-June	-1.15	13161643.05
2009	July-Sep	-1.623333333	10261758.21
2009	Oct-Dec	1.46	17182703.96
2010	Jan-Mar	2.36	16726146.97
2010	Apr-June	1.77	19760307.96
2010	July-Sep	1.176666667	18906374.06
2010	Oct-Dec	1.27	17898765.6
2011	Jan-Mar	2.14	15988228.86
2011	Apr-June	3.43	15347617.31
2011	July-Sep	3.756666667	44664048.29
2011	Oct-Dec	3.293333333	28904556.77
2012	Jan-Mar	2.816666667	25124244.36
2012	Apr-June	1.886666667	25541376.21
2012	July-Sep	1.696666667	26489065.97
2012	Oct-Dec	1.886666667	24736127.64

Analysis Output:

Correlation	0.620907659	
Kurtosis	-0.026308438	
T-Test	1.30465E-11	2.145 (a)
Regression	24429165.25	

Interpretation: Gold investments are hedging tool against general inflation. The correlation between world inflation with international gold prices has got moderately positive correlated during the 4 yrs analysis from 2009-2012. Kurtosis analysis between inflation and gold is leptokurtic, values is <3 i.e., -0.0263. Regression analysis application on gold with inflation has given that gold is expected to go down side, where value of Y 24429165.25 which is less than the December, 2012 value of 24736127.64. T-test has accepted the hypothesis between inflation and gold where its value had follow under significance which is 1.30465. This indicates that gold investments are influenced more during the analysis period.

Table II: An Analysis on World Inflation with MSCI.

Year	Months	World Inflation	MSCI
2009	Jan-Mar	-0.036666667	28.97666667
2009	Apr-June	-1.15	34.67333333
2009	July-Sep	-1.623333333	34.80666667
2009	Oct-Dec	1.46	34.92333333
2010	Jan-Mar	2.36	33.35666667
2010	Apr-June	1.77	33.46333333
2010	July-Sep	1.176666667	36.97333333
2010	Oct-Dec	1.27	35.51666667
2011	Jan-Mar	2.14	36.29
2011	Apr-June	3.43	31.79333333
2011	July-Sep	3.756666667	30.56666667
2011	Oct-Dec	3.293333333	31.88
2012	Jan-Mar	2.816666667	30.89
2012	Apr-June	1.886666667	28.99666667
2012	July-Sep	1.696666667	22.23333333
2012	Oct-Dec	1.886666667	16.67666667

Analysis Output:

Correlation	-0.184794168	
Kurtosis	-1.969017162	
T-Test	9.86208E-20	2.145(r)

Interpretation: The above correlation analysis between the world inflation with global equity index MSCI has shown slight negatively correlated during the 5 years tenure. Kurtosis analysis is value is leptokurtic distribution which is <3 i.e., -1.969017. T-test is rejecting the hypothesis where calculated value is not following under significance region. In general economy inflation act as an enemy; where MSCI is an economic indicator of the world.

Table III: An Analysis on World Inflation to Baltic Dry Index (BDI).

Years	Months	World Inflation	Baltic Dry Index
2010	Jan-Mar	2.36	3323.050877
2010	Apr-June	1.77	2353.838384
2010	July-Sep	1.176666667	2355.373294
2010	Oct-Dec	1.27	1358.531884
2011	Jan-Mar	2.14	928.847619
2011	Apr-June	3.43	10319.64206
2011	July-Sep	3.756666667	1915.628427
2011	Oct-Dec	3.293333333	877.9601276
2012	Jan-Mar	2.816666667	1016.549344
2012	Apr-June	1.886666667	840.805863
2012	July-Sep	1.696666667	928.9570487
2012	Oct-Dec	1.886666667	796.3491028

Analysis Output:

Correlation	0.38537858	
Kurtosis	14.79247258	
T-Test	0.007894182	2.228(a)

Interpretation: Baltic dry index will be considered as a wolrd economic indicator. Correlation between world inflation with BDI analysis has shown slightly correlated with the value of 0.385, which indicates that economy got influenced during the 5 yrs. Analysis. Kurtosis analysis between above analysis is leptokurtic , which is >3 i.e., 14.79. The distribution is sharper between world inflation and BDI. T-test calculated value is following under significance region, hence hypothesis is accpeting that inflation will influence the economy.

Table IV: An Analysis on World Inflation to World GDP.

Year	World Inflation	World GDP
2008	8.4	3.8
2009	10.9	8.5
2010	12	10.5
2011	8.9	6.3
2012	9.3	5

Analysis Output:

Correlation	0.960327905	
Kurtosis	-0.558719742	
T-Test	0.056131748	3.182(a)
Regression	10.4328	

Interpretation: World inflation has not influenced the world gdp during the five years analysis period. The correlation between inflation and gdp has shown positively strong correlated with the value of 0.9603. Kustosis analysis value is < 3, which indicates that world inflation with world gdp is platykurtic distribution. Regression analysis is showing that world inflation is expected to go upside and world gdp will go down side. T hypothesis test application analysis between the world inflation with gdp is showing that the calculated value is following under significance region, Hence world inflation will have significance impact on world gdp even in future years.

FINDINGS:

1. It has been observed with the help of the analysis gold investors had considered inflation for their investments. Gold is the international commodity where all the countries investors and speculators will participate in deriving its value.

2. Morgan stanely all countries index is the world equity index which reflect the world equity indices performances. World inflation affected the equity markets across the world. Correlation values have got negative between inflation and MSCI.

3. Baltic Dry Index will be considered as a world economic indicator than MSCI. Where BDI will be traded for shipping transportation cost. The correlation between BDI and World inflation is slightly positive during the analysis period. Which indicates that inflation did not impacted the world economy.

4. World GDP has got positive strongly correlation with world inflation during the analysis period. The calculated correlation 0.9603 which is near to 1 which indicates that when inflation went upside world economy did not effected in fact gdp also went upside along with it. Kurtosis analysis for the inflation with world gdp is leptokurtic which is normally distributed i.e., <3 the calculated value is -0.5587. T-test hypothesis has been applied for the inflation and world gdp where hypothesis accepted that inflation is affecting the world gdp during the analysis. T-table calculated value is following under acceptance region; hence world inflation has affected the world gdp during the 5 years tenure.

CONCLUSION:

With this analysis I conclude that inflation is playing vital role in the economy, where so many goods and services pricing have been depended on various situations. If the Inflation goes up side from common man to Prime minister have to take the necessary steps to control it. Inflation is required for the growth of country but higher inflation will act as hurdle for the growth of economy. High Inflation will influence to all asset classes. Where as low inflation does not simulate economic activity. So with this analysis I end up that there is a further scope of the research to find a better measurement of the calculation of inflation and to which sector is influencing positive and negatively.

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