Impact Of Macroeconomic Variables On Gold Price In India: An Empirical Examination

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Abstract:
Macroeconomic indicators show an economy's health and also determine the flow of investments. The uncertainty of macroeconomic variables has a substantial impact on stock and commodities markets, causing price volatility. Gold prices are likely to be influenced by macroeconomic volatility, and vice versa. The strong association between macroeconomic indicators and gold prices must be studied and examined because gold is one of the most valuable financial assets that may be used as a hedge against inflation. The purpose of this research is to use a multiple regression model to investigate the causal impact of macroeconomic variables on gold prices. Annual data was utilised to analyse the relationship between inflation rates, interest rates, gold reserves, fiscal deficit and GDP with gold prices over an eleven year period, from 2010 to 2021. The researchers observed a strong association between macroeconomic indicators and gold prices.

Keywords: Macroeconomic factors, Gold price, Multiple Regression

Introduction: According to 2018 estimates, India is the world's greatest gold consumer (World Gold Council, 2018). Private individuals in India own almost 25,000 tonnes of gold (Bhayani, 2016), accounting for roughly 15% of all gold extracted to date around the world (World Gold Council, 2018b). Private gold holdings in India are estimated to be worth USD 1.63 trillion at current world prices. Even when the price of gold rises (Gold Price, 2019), gold usage in India continues to increase. India is a net importer of gold since domestic production is restricted to 1 tonne per year, which is negligible compared to annual demand of around 800 tonnes (IANS, 2018). As a result, a large amount of foreign currency leaves the country each year. The current account deficit (D'Souza, 2015) suffers as a result, with gold imports accounting for 30% of the deficit. The problem is exacerbated by the fact that jewellery accounts for 60% of all gold purchased in the country (World Gold Council, 2018c).

In India, gold is ubiquitous, accounting for roughly 10% of all family assets on average (Ramadorai et al., 2017). According to consumer observations across the country and across income classes, gold is a prominent item of ornamentation, both on special occasions and as part of everyday wear. Gold has great symbolic meaning because it is a noble metal that does not rust (Holland, 2005). However, gold's associations go far beyond those of a dazzling metal, as indicated by its conspicuous presence in Indian temples, and encompass purity and hallowed religious symbolisms (Dobson, 2015).

In addition to its monetary value, consumers place a high value on gold: for Indian families, gold has both investment (monetary value driven by cognitive connections) and sentimental value (emotional value, driven by affective associations). Lower-income people can acquire access to both legal and illegal lending markets by promising gold (Churiwal and Shreni, 2012). This enables for risk-taking and social mobility, which is especially crucial for India's massive internal migrant population (Kundu, 2018).
Because commodity prices are thought to be able to absorb new information faster than consumer prices, gold and silver prices could be used to gauge inflation expectations. When a country's inflation rate is high, investors frequently purchase large amounts of gold. Gold demand rises during inflationary periods due to its inherent worth and limited supply. Because gold cannot be diluted, it retains its value far better than other types of currency.

The value of a country's currency is directly proportional to its imports and exports. The value of a country's currency rises when it exports. A country that exports gold reserves, in particular, will see its currency strengthen. To put it another way, a rise in gold prices can lead to a trade surplus. The Central Bank's acquisition of gold determines the supply and demand for domestic currency, which may lead to inflation. This happens because banks rely on producing more money to buy gold, resulting in a fiat currency glut.
Gold is frequently used as an absolute substitute for a country's currency appreciating. Although there is a relationship between gold prices and the value of fiat currency, the inverse is not always true. In that case, if there is a high demand for gold production, gold prices will rise, but so will the local currency. Gold's value has a significant impact on the value of world currencies. Gold prices have increased by 900 percent in the last ten years.

Literature Review

The gold prices in India are continuously increasing due to domestic demand based on security, liquidity and diversified portfolio. The historic data indicates that investing in gold is a safe option when the stock market collapses or dollar deteriorates as the gold prices increase during that time (Guar et al., 2010)

According to World Gold council report, India is the world's largest single market for the consumption of gold. This leads to include macro and other market indicators such as crude oil price, exchange rate, interest rate, inflation for future research

(Kumar, 2005) The Dollar has been regarded as the dominant global currency since the postwar period. The dollar is an important medium of exchange and a means of storing wealth. Many countries keep reserves for currency fluctuations in dollars. If people believe the dollar is vulnerable, they may sell US dollar assets in favour of something more secure, such as other currencies or gold.

(Le et al., 2011) showed that there is a long-run relationship existing between the prices of oil and gold which imply that the oil price can be used to predict the gold price and gold can be used as a hedge against inflation rate. (Narayan et al., 2010) Investors do use the gold market as a hedge against inflation rate, and the oil market can be used to predict the gold market prices and vice versa with markets inefficiencies

Consumers have a great love for gold, particularly jewellery (Churiwal and Shreni, 2012), to the point that gold is rarely sold and is only swapped for other gold things if absolutely necessary (Sahay and Mukherjee, 2016). Consumers prefer solid gold, such as jewellery, bars, and coins, to other investment options such as gold bonds, equity, and bank deposits, and are frequently influenced by family elders (Balaji and Maheswari, 2014; Ramadorai et al., 2017).

Krauth (2011) in his article has mentioned about some factors affecting prices of gold. Ho, Wang & Liou (2010) also have stated that gold prices are affected by dollar index. Aggarwal & Lucey (2005) have also discussed about crossing psychological price barriers of gold. Feldstein (1978) has mentioned how gold prices are affected by inflation. Greely & Currie (2005) in their paper have examined the causes for increase in demand for gold in last decade and how this contributed towards price rise of gold. Butler. J (2012) in his book has stated how increasing gold prices will affect economies of countries and gave measures to cope up with this scenario.

A safeguard against inflation According to popular belief, gold would not only have to be uncorrelated with inflation, but it would also have to be negatively correlated (Fei & Adibe 2010). As a result, gold has always been regarded as an excellent inflation hedge.

In October 2009, India purchased 200 tonnes of gold from the International Monetary Fund, putting it ahead of Russia in ninth place (Bloomberg, 2009). This was mostly owing to the Reserve Bank of India's strategic decision to diversify its FOREX portfolio while also strengthening the currency (Karunagaran, 2011)

Zakaria et al. (2015) used Pooled Ordinary Least Squares methodology to identify the factors influencing gold prices in Malaysia and assessed the prospective relationships between the dependent variable gold price and the independent variables like inflation rate, interest rate, and exchange rate. The findings demonstrated that gold prices were highly related to inflation, exchange, and interest rates.

Tufail and Batool (2013) used co-integration and VECMs to examine the causes of inflation as well as the inflation-hedging features of various assets, and found that gold prices are positively and significantly associated to inflation in Pakistan.

Methodology

Objectives:

The aim of the study is to identify the impact of macroeconomic variables on gold prices in India.

Hypothesis:

Ho: There is no impact of macroeconomic variables on gold prices in India.

Period of study:

This research has been carried out considering the data from January 2010 till December 2021.

Scope of study:

- The study was confined to macroeconomic variables like inflation, Gold reserves, interest rates and GDP.
- The study period had its own economic, political, and social situation and environment, which could have an impact on the prices of the scripts; consequently, the results are susceptible to an assessment of the situations and environment at the time.

Type of Data:

The study considered secondary data from RBI bulletin, World Gold Council, World Bank Data, News papers and Magazines.

Independent Variables:

Gross domestic product (GDP) demonstrates that when the economy grows quickly people's incomes and purchasing power rise, as does demand for gold. However, the gold price is significantly driven by investment demand rather than consumer demand because consumers are price takers rather than price setters, so they buy more when prices fall and vice versa.

Rising interest rates may even have a bullish effect on gold prices. Bonds and dividend-paying stocks typically pay higher interest rates when the RBI raises its key interest rate. Higher interest rates, on the other hand, increase the opportunity cost of owning gold.

Because gold has a direct relationship with inflation, the inflation rate is related to gold prices. When there is a lot of inflation, the value of paper money falls in terms of the goods and services it can buy. As a result, as inflation rises, so does demand for gold, and vice versa.

Dependent Variable:

Price of gold in India.

Result and Discussion

PART-A:

Variables	**Coefficients**	**Standard Error**	**t Stat**	**P-value**
Constant	-11683.49188	13641.13058	-0.85649	0.430851546
Inflation	-25040.59774	48768.88765	-0.51345	0.629509113
Gold Reserves	62.84929144	24.22873509	2.593998	0.048601074
Fiscal deficit	1536.338678	1025.158016	1.498636	0.194243657
Interest rates	297.5266983	468.7068085	0.634782	0.553477227
GDP	-620.0835146	231.0004397	-2.68434	0.043593022

The P value of independent variables i.e. Gold reserves and GDP is less than 5%, which is significant implies that these two variables are majorly influencing the gold prices. But in case of inflation, fiscal deficit and interest rates the critical value is above 5%, implies they are not significantly influencing the price of gold.

From the above table, based on coefficients it can be inferred that, if the values are negative they are inversely related and if the values are positive they are directly related.

PART-B: Regression Statistics

Multiple R	0.980395225
R Square	0.961174797
Adjusted R Square	0.922349594
Standard Error	1884.248184

From the table it is evident that as the R square value is 96.11%, it indicates that variation in the gold prices can be best explained by the selected macroeconomic variables. Hence model is best fitted.

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	**5**	439475687.3	87895137	24.75646542	0.001546941
Residual	**5**	17751956.1	3550391		
Total	**10**	457227643.4			

From the above table it is evident that null hypothesis is rejected as the p-value is than 5%. Hence it is proved that the selected five independent variables namely inflation, gold reserves, fiscal deficit, interest rates and gdp are effecting the prices of gold.

Conclusion:

The current article is a modest attempt to investigate the causal relationship between gold prices and Indian macroeconomic indicators. Gold reserves and GDP have a substantial independent impact on gold prices, whereas inflation, fiscal deficits, and interest rates have a minor impact on gold prices. However the selected five independent variables have a significant impact on gold prices in India.

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