



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## A Study On Macro Economic Variable And Their Impact On Gold Price In India

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### Abstract

In India's economy, gold has a special and significant significance as a hedge against uncertainty, a store of value, and a cultural asset. At the same time, India's GDP is a good indicator of the country's overall economic health. Gaining knowledge of the relationship between gold prices and India's GDP can help one better understand trade dynamics, investor behaviour, and the consequences for economic policy. An analytical prediction of India's GDP growth and domestic gold prices from 2025 to 2030 is provided in this article. The projection is based on historical data (2015–2024), macroeconomic trends, inflation expectations, the direction of monetary policy, and the dynamics of the world gold market.

**Keywords:** Economic growth, GDP, Gold price, monetary policy, macroeconomics.

### Introduction:

India is one of the largest consumers of gold globally, importing nearly all of its demand for the metal. Gold demand in India is driven by cultural, social, and financial factors. Meanwhile, GDP measures the value of goods and services produced domestically. When the economy grows strongly, investors often favor riskier assets such as stocks or real estate. During slowdowns, they tend to seek safe-haven assets such as gold. Thus, the relationship between GDP and gold prices is often inverse, but it can vary due to inflation, currency strength, and global conditions.

### Economic Overview:

India has shown consistent economic resilience, maintaining an average GDP growth rate of 6.5–7% between 2021 and 2024. Structural reforms, strong domestic demand, and the digital economy have supported growth. However, external challenges such as oil price volatility, geopolitical risks, and global inflationary pressures remain significant. Gold, meanwhile, has continued to act as a key hedge asset and cultural investment, with prices nearly doubling over the past decade.

## Review of Literature:

**Ismail et al. (2009)** forecasted the gold price using multiple regression models. Factors influencing the research were the Commodity Research Bureau Future Index, Foreign Exchange Rate, Inflation Rate, Money Supply, New York Stock Index, S&P 500, US Dollar Index, and Treasury Bill. The primary elements affecting the gold price, according to the study, are the CRB, inflation rate, exchange rate, and money supply.

**Toraman et al. (2011)** investigated the factors influencing gold prices in the United States. As predictor variables, the oil price, US exchange rate, US real interest rate, and US inflation rate were considered. It has been observed that there is a strong negative link between gold and the US dollar exchange rate Bapna et al. (2012).

**Tiwari & Gupta (2015)** investigated the association between gold prices and Indian stock market returns. There is no correlation between the gold price and the BSE Sensex according to the Granger Causality test. **Long & Hanh (2019)**, the gold reserve, the price of energy items, and the financial markets have all been categorised and grouped into three categories. The FAVAR model was used in this study to assess all macroeconomic variables that impact gold prices and trends. The findings revealed that gold reserves and energy goods have positive benefits; however the financial market's influence suggests that macroeconomic indicators have a negative effect on gold prices.

**Liya A, Qian Qin (2021)** the findings of this research indicate a remarkable and positive relationship between GDP, IR, and STV and the gold price. Furthermore, the RIR is negative and has no meaningful relationship with gold prices.

## Statement of the Problem:

Initially, we wanted to see how macroeconomic variables affected gold's price. We have uncovered, established, and measured correlations that may help us understand these implications. The gold model demonstrates how macroeconomic factors influence the real price of gold in a measurable way. The anticipated findings support our claim that real GDP, real interest rate, real US dollar index, and real gold price are all connected.

Further research has shown mixed results, according to a literature review. Some studies discovered a link between gold's price and macroeconomic variables, while others found none. As a result, our model predicts a positive relationship between real GDP and the real price of gold in the long run. As with the real US dollar index, the real interest rate has an inverse relationship with the real price of gold. Although the actual rate of interest may have some short-term fluctuations. As a result, this element is more erratic and volatile. It is, however, the least essential factor in the price of gold.

## Research Objectives:

The following objectives were set for the research study.

- 1) Investigate the Impact of Macroeconomic Variables on Gold Prices.
- 2) To explore the connection among macroeconomic factors and gold prices.

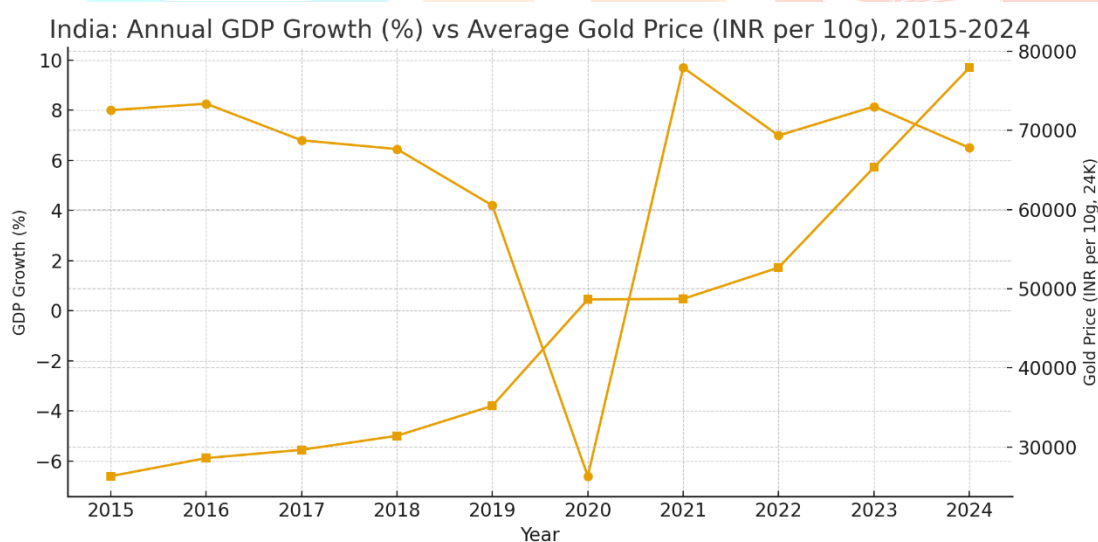
### Research Design and Methodology:

The research study aims at describing. This study uses annual GDP growth rates and average gold prices (24K, INR per 10 grams) from 2015 to 2024. GDP data are sourced from the World Bank and IMF, while gold prices are obtained from Bank Bazaar, Groww, and Forbes India market histories. Forecasts were generated based on trend analysis, IMF and World Bank economic projections, and market sentiment regarding inflation, interest rates, and currency exchange rates. Gold price forecasts are influenced by global gold trends, rupee exchange rates, and domestic inflation expectations. The data are summarized below.

**Table - 1: Year wise GDP Growth and Gold Price**

| Year | GDP Growth (%) | Gold Price (INR per 10g, 24K) |
|------|----------------|-------------------------------|
| 2015 | 8.0            | 26343.5                       |
| 2016 | 8.26           | 28623.5                       |
| 2017 | 6.8            | 29667.5                       |
| 2018 | 6.45           | 31438.0                       |
| 2019 | 4.2            | 35220.0                       |
| 2020 | -6.6           | 48651.0                       |
| 2021 | 9.7            | 48720.0                       |
| 2022 | 6.99           | 52670.0                       |
| 2023 | 8.15           | 65330.0                       |
| 2024 | 6.5            | 77913.0                       |

Figure 1 below shows the relationship between GDP growth and gold prices over the ten-year period.



### Findings and Analysis:

From the chart, a noticeable pattern emerges: during periods of economic slowdown (e.g., 2020, when GDP fell by -6.6%), gold prices surged sharply. Conversely, in years of strong GDP growth, gold prices tended to stabilize or increase moderately. This suggests an inverse or counter-cyclical relationship between economic growth and gold prices in India. The 2020 pandemic period demonstrates this clearly. The contraction in GDP coincided with a steep rise in gold prices, as investors sought safety amid uncertainty. In subsequent years (2021–2024), GDP rebounded while gold continued to rise moderately, reflecting both inflationary pressures and persistent demand for gold as a financial hedge.

### Analysis of Trends:

The projections suggest that India's GDP will maintain healthy growth, averaging about 6.6% annually through 2030. Economic expansion will be driven by manufacturing, renewable energy, infrastructure, and digital services. However, structural inflation and energy price pressures could moderate growth slightly after 2028. Gold prices in India are expected to continue rising due to inflation, currency depreciation, and sustained retail demand. By 2030, gold prices are projected to reach approximately ₹97,000 per 10 grams (24K). This represents an increase of about 25% from 2024 levels, assuming steady inflation and moderate rupee depreciation.

### Tools for Analysis:

The study used correlation analysis to investigate the link between predictor variables and dependent variables. Regression analysis has been used to determine the influence of gross domestic product on the gold price. SPSS was used to apply the acquired data.

### ANOVA

| Model        | Sum of Squares | df | Mean Square | F       | Sig.              |
|--------------|----------------|----|-------------|---------|-------------------|
| 1 Regression | 328.217        | 2  | 164.108     | 181.055 | .000 <sup>b</sup> |
| Residual     | 11.783         | 13 | .906        |         |                   |
| Total        | 340.000        | 15 |             |         |                   |

a. Dependent Variable: Year

b. Predictors: (Constant), Gold Price (INR per 10g, 24K), GDP Growth (%)

The ANOVA results indicate that the regression model, which includes Gold Price (INR per 10g, 24K) and GDP Growth (%) as predictors, is highly significant in explaining variations in the dependent variable, Year. The F-statistic of 181.055, coupled with a very small p-value (0.000), shows that the model explains a substantial portion of the variance in Year. The Sum of Squares values suggest that the predictors account for most of the variation, with a relatively small residual sum of squares. In conclusion, the model fits the data well, and both Gold Price and GDP Growth are statistically significant in predicting Year.

### Coefficients<sup>a</sup>

| Model                         | Unstandardized Coefficients |            | Standardized Coefficients | t        | Sig. |
|-------------------------------|-----------------------------|------------|---------------------------|----------|------|
|                               | B                           | Std. Error | Beta                      |          |      |
| 1 (Constant)                  | 2011.615                    | .732       |                           | 2747.703 | .000 |
| GDP Growth (%)                | -.005                       | .069       | -.004                     | -.073    | .943 |
| Gold Price (INR per 10g, 24K) | .000                        | .000       | .983                      | 19.004   | .000 |

a. Dependent Variable: Year

The regression results indicate that the model explains the relationship between GDP Growth, Gold Price, and Year. The constant term (2011.615) represents the intercept, suggesting that when GDP growth and gold price are zero, the predicted year would be approximately 2011.62. The coefficient for GDP Growth (-0.005) is very small and statistically insignificant ( $p = 0.943$ ), meaning GDP growth has no meaningful impact on the year variable. In contrast, the coefficient for Gold Price is positive ( $B = 0.000$ ) and highly significant ( $p = 0.000$ ), with a standardized beta of 0.983, implying a very strong positive relationship between gold price and time as years progress, gold prices tend to rise. Overall, the model suggests that changes in gold price are strongly associated with the passage of time, while GDP growth has no significant influence.

#### Forecast Data:

The table below presents projected GDP growth rates and average gold prices for 2025–2030:

**Table - 3: Year wise GDP Growth and Gold Price**

| Year | Predicted GDP Growth (%) | Predicted Gold Price (INR per 10g, 24K) |
|------|--------------------------|-----------------------------------------|
| 2025 | 7.0                      | 82000                                   |
| 2026 | 6.8                      | 84500                                   |
| 2027 | 6.6                      | 87000                                   |
| 2028 | 6.5                      | 90000                                   |
| 2029 | 6.4                      | 93500                                   |
| 2030 | 6.3                      | 97000                                   |

#### Factors Influencing the Forecast:

The relationship between gold demand and various economic factors can be summarized as follows; Persistent inflation is likely to support gold demand, while rising interest rates may slightly moderate it by making other investments more attractive. A weakening rupee will increase domestic gold prices, even if global prices remain stable, due to higher import costs. Globally, geopolitical tensions and central bank gold purchases are expected to keep gold demand strong.

In India, government investments in infrastructure and technology will help sustain GDP growth, indirectly supporting gold demand. Additionally, India's ongoing gold imports will continue to impact its trade deficit, currency stability, and foreign exchange reserves, reinforcing the complex interplay between domestic economic policies and global market trends in influencing gold prices. These factors combined suggest that gold demand in India is shaped by both domestic and global economic conditions, with inflation, currency movements, and international geopolitical events playing significant roles.

**Conclusion:**

The analysis shows that while India's GDP growth and gold prices are influenced by multiple factors, they often move in opposite directions during economic shocks. Gold remains both a cultural and economic stabilizer, acting as a hedge during downturns. Policymakers should balance the benefits of gold as a financial asset with its impact on imports and trade balance. Between 2025 and 2030, India's economy is expected to maintain steady growth amid moderate inflation and global uncertainties. Gold will continue to play a dual role as a cultural asset and as a financial hedge. While GDP growth remains robust, policymakers must address the balance between gold imports and domestic investment to ensure sustainable long-term development.

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