

The impact of global price and exchange rate fluctuations on domestic gold price: An empirical study

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Abstract

Gold plays an important role in India's economy, serving as both a cultural symbol and a financial asset. It is also considered a safe haven. This paper examines the factors driving domestic gold prices, focusing on foreign market prices and the USD/INR exchange rate from 1995 to 2024. The study uses a multiple linear regression model to examine how these factors affect changes in the gold price. The analysis shows that gold prices are quite volatile, with a high average and a high standard deviation. The results suggest that foreign prices and exchange rates have a bigger impact on domestic gold prices than other factors. There is a strong link between domestic gold prices and international trends. The model's high R² value (0.998) shows that currency movements are a key factor. Overall, the findings suggest that global gold prices and exchange rate movements significantly affect gold prices in India.

Keywords: Exchange Rate, Foreign Market, Gold Prices.

1. Introduction

Gold is important in India's economy, acting as both a cultural symbol and a financial asset. It is valued in households for tradition and prosperity, and also seen as a safe investment during uncertain times. India is one of the largest consumers and importers of gold, making up almost a quarter of global demand (World Gold Council, 2023). Since most gold is imported, domestic prices are very sensitive to changes in global markets and currency values.

Both international and domestic factors affect gold prices in India. Globally, gold is priced in U.S. dollars and responds to changes in demand, supply, monetary policies in developed countries, and geopolitical risks. Changes in the USD/INR exchange rate directly affect domestic gold prices. When the rupee weakens against the dollar, import costs rise, raising domestic prices even if global prices remain unchanged. This pattern has been seen during times of currency volatility, such as the Asian financial crisis (1997-1998), the global financial crisis (2008), and rupee depreciation in 2013 and 2018.

In India, gold is seen as a safe-haven investment, meaning it is trusted during times of financial uncertainty. When inflation rises or the stock market is volatile, investors often turn to gold. Studies show that gold typically moves in the opposite direction of stocks and bonds, making it useful for diversifying a portfolio (Baur & Lucey, 2010). Although inflation can influence gold prices, research suggests its effect in India is limited. Global price changes and exchange rates have a bigger impact (Singh & Joshi, 2017).

Gold prices in India have been unstable for the past 30 years. Even when inflation was steady, gold prices fluctuated significantly, underscoring the influence of broader market trends. In 2008, many investors bought gold, which pushed prices up both globally and in India. The same thing happened during the COVID-19 pandemic, reinforcing gold's reputation as a safe asset.

As global financial markets become more connected, the link between international and domestic gold markets grows stronger. Events such as U.S. Federal Reserve rate hikes, trade disputes, and geopolitical tensions can significantly affect global gold prices. Since India depends on gold imports, these changes also impact domestic prices. Understanding how global price changes and exchange rate shifts affect local markets is important for governments, investors, and financial institutions. This study examines how global gold prices and exchange rates have influenced domestic gold prices in India from 1995 to 2024, using multiple linear regression (MLR). The findings show that domestic prices are closely tied to global prices, with the world market playing a major role in India's gold industry. Covering nearly thirty years, this research adds to earlier studies by confirming the strong influence of global prices and exchange rates, while showing that inflation is less important. These insights can help policymakers stabilise gold markets, guide investors seeking

diversification, and assist financial institutions in managing price risk. The study offers a global perspective on the changing dynamics of India's gold market.

Objectives:

- To find out the relationship between global gold prices and domestic gold prices in India from 1995 to 2024.
- To identify the effect of exchange rate fluctuations (USD/INR) on price stability in the domestic gold market.
- To know the impact of external market dynamics and exchange rate volatility on the domestic gold market.

Statement of the problem:

India is a key participant in the gold market. Domestic gold prices are highly sensitive to exchange rates and global market movements. Existing literature has predominantly examined short-term. India plays a major role in the gold market. Domestic gold prices react strongly to changes in exchange rates and global market trends. Most previous research has focused on short periods or only a few factors. This study fills a gap by examining the long-term effects of international gold prices and the USD/INR exchange rate on domestic prices. Price swings create uncertainty for households, investors, and policymakers, so it is important to understand both the extent to which these external factors influence prices and the ways in which they do so. The U.S. determines the price of crude oil and the exchange rate (USD). However, international factors do not affect gold prices in India. He used data from credible sources to reach this conclusion. Dubey (2014) studied gold price trends and influencing variables in India. His paper focused on the rise in gold prices in India between 2004 and 2013. Empirical evidence indicates a strong positive correlation between the CPI rate and gold prices in our country. Gireesh et al. (2015) explored the link between India's gold price and the exchange rate. They used the Johansen co-integration test to examine this relationship for 2005-2013. The study found that the US dollar's exchange rate has a significant impact on Indian gold prices. Gold prices fluctuate with changes in the value of the US dollar. Guntur Archana Raju (2016) examined how inflation affected gold prices in China, India, and the United States. The research found a short-term correlation between inflation and gold prices. It also found cointegration between these two. The study used co-integration and gold prices as variables. It used Granger causality, VECM, and unit root tests. Nisarga M. et al. (2023)

studied various factors influencing gold prices in India. The study shows that many economic, political, and global factors affect gold prices. It examined gold prices in relation to the BSE Sensex, crude oil, inflation, exchange rates, and repo rates. The study used descriptive and regression analysis. The findings revealed a strong correlation between variables. The study highlights how changes in the repo rate affect gold prices. It also found that the BSE Sensex, inflation, and interest rate are interconnected. The authors declared no competing interests. Yi Bai (2024) examined six-month-ahead gold price forecasts amid rising investor demand. Predicting gold prices helps investors develop strategies and reduce risk. Data from 2020 to 2024 was used to predict price trends. The researcher used the Autoregressive Integrated Moving Average (ARIMA) model to forecast. Results show that price changes little and residuals remain near-diagonal, matching historical predictions. The conclusion is that gold investment is rising, and investors can follow the gold price trend.

Research Gap

Earlier research on domestic gold prices often used short time frames and considered only a few factors. There is a lack of detailed, long-term analysis covering the period from 1995 to 2024. Not enough focus has been given to how foreign market prices influence domestic gold prices. This study aims to fill these gaps by examining how external market changes affect domestic gold price trends.

Methodology:

This study takes a quantitative approach to explore how global gold prices and the USD/INR exchange rate affect gold prices in India. It looks at historical data to understand how changes in foreign markets have shaped domestic prices. The research uses secondary data from trusted sources like the RBI Handbook of Statistics, the World Bank, and the IMF. Both descriptive statistics and multiple regression analysis are used. The data covers the years 1995 to 2024.

Major Determinants of Gold Price:

Dependent variable

Domestic Gold price: The price of gold in India is the main variable studied. Gold is important both culturally and economically, serving as an investment and a symbol of

prosperity. Its price is shaped by both international and local factors. The global price, set in US dollars, is the main driver, but the exchange rate between the Indian Rupee and the dollar also plays a key role. When the rupee weakens, gold imports become more expensive, raising local prices. High demand during festivals and weddings also affects gold prices.

Independent variables

Exchange rate: The exchange rate shows how much the Indian Rupee (INR) is worth relative to other currencies, such as the US Dollar. India uses a floating exchange rate, so the rupee's value changes based on supply and demand in the foreign exchange market. The exchange rate is an important economic measure, directly affecting import costs and export competitiveness. Economic growth, interest rates, and trade balance can all cause the rupee to rise or fall against other currencies.

International rate: This refers to the main global factors that affect gold prices, especially the international gold price and the INR/USD exchange rate. The international gold price, typically quoted in US dollars per ounce, is influenced by global demand, supply, geopolitical events, and economic trends. Changes in this price directly affect domestic gold prices, as India imports much of its gold. The exchange rate between the rupee and the dollar also matters: if the rupee falls, gold becomes more expensive in India, even if global prices remain unchanged. These factors together constitute the 'international rate,' a key predictor of domestic gold price changes.

Results and Discussions

This analysis examines gold prices in both domestic and foreign markets, as well as the exchange rate (rupees per US dollar), from 1995 to 2024. Between 1995 and 2024, domestic gold prices in India rose from Rs.4,957 to Rs.75,842, while international prices went from Rs. 4,188 to Rs. 70,315. This shows that domestic prices closely followed global trends but remained higher because India relies on imports, faces customs and other taxes, and has strong household demand. As the rupee weakened from Rs.31.37/USD in 1995-96 to Rs.82.60/USD in 2024-25, these effects intensified, with global price changes having a greater impact on the Indian market. For example, in 2012-13, when the rupee dropped to Rs.46.67/USD, domestic gold prices rose to Rs.30,163, compared to the international price of Rs.28,919. During the COVID-19 pandemic in 2020-21, the rupee at Rs.70.42/USD led to

domestic prices of Rs.48,723, while international prices were Rs.43,541. These patterns show that gold in India serves as both a global commodity and a safe-haven asset during crises such as the 2008 financial crisis, the 2012-13-rupee crisis, and the 2020 pandemic. Overall, international prices set the base, while a weaker rupee amplifies price increases, making the domestic gold market highly sensitive to both global and local economic changes (Table-1)

Table 1: Descriptive statistics of the Domestic Gold Price and influence of global factors (1995-2024)

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Domestic Gold price	30	4268.17	75841.87	22513.907	19390.77479
International Price	30	3775.92	70315.41	20637.44	17423.68974
Exchange rate	30	31.3742	82.5993	52.83716	14.30485

Source: Calculated values

Gold prices in India fluctuated significantly during this period, ranging from Rs.4,268.17 to Rs.75,841.87. The average price was Rs.22,513.91, showing a steady upward trend over time (SD = 19,390.77). This high standard deviation indicates that gold prices were highly volatile, influenced by currency fluctuations and government policies in global markets. The foreign exchange rate ranged from RS.31.37 to Rs.82.60, with an average of Rs.52.84/USD (SD = 14.30). There is a strong link between domestic and foreign gold prices, as the average global price was Rs.20,637.44, close to the domestic average (SD = 17,423.69). These large deviations highlight how gold prices are affected by economic uncertainty, geopolitical risks, and global demand. The long-term decline in the rupee against the dollar also played a role, with a moderate but important effect on domestic gold prices.

Table 2: Coefficient of Variation

Variables	Coefficient of Variation (CV)	Levels of Variability	Interpretation of Homogeneity
Domestic Gold Price	0.8613	High Variability	Low Homogeneity
Foreign Market Price	0.8443	High Variability	Low Homogeneity
Exchange Rate	0.2707	Low Variability	High Homogeneity

Source: Calculated values

The table presents the coefficient of variation (CV) for the domestic gold price, the foreign market price, and the exchange rate, showing how stable or variable each was over time. The domestic gold price had a CV of 0.8613, indicating it was highly variable and fluctuated significantly relative to its average. This suggests that the domestic gold market was influenced by unpredictable economic factors. The foreign market price had a similar CV of 0.8443, indicating high volatility driven by global supply and demand, inflation, and investment trends. In contrast, the exchange rate had a much lower CV of 0.2707, indicating it was more stable and changed less over the period. This stability means that changes in domestic gold prices were more likely driven by international market trends than by large shifts in the exchange rate. Overall, both domestic and foreign gold prices were quite sensitive to market changes, while the exchange rate was more stable.

Table 4: Correlation Matrix

	Domestic Price	Foreign Market Price (at Rs. Per 10 Grms)	Exchange Rate
Domestic Price	1		
Foreign Market Price (at Rs. Per 10 Grms)	0.998754027	1	
Exchange Rate	0.917385432	0.910308434	1

Source: Calculated values

There is an extremely strong positive correlation, almost +1.0 (0.998), between domestic and international gold prices (in Rupees per 10 grams). This means that when international prices rise, domestic prices usually rise by a similar amount, and the same holds in reverse. The correlation between the exchange rate and the domestic gold price is also strong ($r = 0.917$), indicating that when the exchange rate rises, domestic gold prices tend to rise as well. Similarly, a higher exchange rate leads to higher international prices when converted to rupees. This makes sense because a higher exchange rate (more rupees per US dollar) increases the rupee price of gold, which is priced internationally in another currency.

Calculated values

$$\text{Domestic Gold Price} = -2855.31 + 1.0629(\text{Global Price}) + 64.9627(\text{Exchange Rate})$$

The negative intercept means that if both the global price and the exchange rate were zero, the domestic gold price would be negative, but this is merely a statistical result and not meaningful in practice. The main point is that these variables are the main factors affecting gold prices. The results show that for every one-unit increase in the international gold price

(Rs. per 10 grams), the domestic price rises by 1.06 units. This effect is highly significant ($t = 44.86$, $p = 0.000$), showing that domestic gold prices closely follow global trends. For every one-rupee increase in the exchange rate (₹ per USD), the domestic gold price goes up by about $\text{₹}65$ ($p = 0.0327$, coefficient = 64.96). While this effect is not as strong as that of global prices, it is still statistically significant. The model fits the data very well, explaining 99.8% of the variation in domestic gold prices ($R^2 = 0.9979$, Adj. $R^2 = 0.9977$), and its overall significance is confirmed by the F-statistic (6424.637) and p-value (0.000).

Impact on Indian Economy:

Gold is one of the most popular purchases in India, and the country is a leading importer of gold. When gold prices rise, it affects the trade balance because higher imports mean more spending in foreign currency, potentially widening the current account deficit. Central banks, jewellery makers, and exporters are also affected, as higher gold prices raise production costs and reduce their competitiveness abroad. As gold prices keep rising, they influence the economy by affecting inflation expectations, which can pressure the RBI to change its monetary policy. The RBI might raise interest rates to control inflation, leading to higher borrowing costs for businesses and consumers and possibly slowing economic growth. Many Indian households prefer to invest in gold during uncertain times, but higher prices mean people may have to spend more of their savings on gold, leaving less for other needs and reducing overall consumption. Gold is also important in cultural events, especially weddings, where high prices can force families to adjust their spending. Rising prices make it harder for lower-income families to buy gold, while wealthier families are less affected. Higher gold prices can also influence the value of other financial instruments, as gold's safe-haven status may increase demand for products like gold ETFs and mutual funds. As demand for gold rises, investors may shift their portfolios, affecting other asset classes.

Recent trend in gold price fluctuations resulting from war

On February 28, the United States and Israel attacked Iran following threats from President Trump. After Ayatollah Ali Khamenei was killed, Iran responded by attacking U.S. military bases in Israel and targeting energy and civilian infrastructure in the Gulf States. These events created geopolitical tension and uncertainty in global markets. As a result, financial markets reacted sharply, especially for commodities like gold, which is seen as a safe-haven asset during crises. According to the India Bullion and Jewellers Association Limited, gold

prices were very high at the start of March 2026, reaching about Rs. 1, 67,471 per 10 grams. This spike occurred right after the war began on February 28, 2026, indicating that gold was seen as a safe-haven asset amid geopolitical tensions. After this initial jump, gold prices fell steadily in the first half of March as more people sold than bought. At the same time, high interest rates and a strong dollar made gold less attractive, driving prices lower. From mid to late March, gold prices continued to fluctuate, reflecting on-going market uncertainty. At the end of March, prices rose slightly, suggesting that some investors returned to gold amid continued uncertainty and concerns about a prolonged conflict. However, this increase was smaller than the initial spike. Overall, gold prices in March 2026 first rose sharply, then fell, became volatile, and ended with a small increase. While war often pushes gold prices higher, in this case, factors such as a liquidity crunch, profit-taking, high interest rates, and a strong currency led gold prices to behave differently than expected.

Suggestions:

- Singapore offers incentives for retail investors to participate in financial markets rather than rely on gold as a safe haven. Likewise, diversifying investment options, such as bonds, mutual funds, and savings schemes, will reduce excessive demand for gold during periods of economic uncertainty.
- Given gold's price sensitivity to global markets and exchange rates, the government should promote gold bonds and digital gold to curb physical gold demand.
- Broaden financial literacy programs to focus public attention on other financial instruments instead of gold.
- licensing, restrictions, and monitoring of gold inflows can help stabilise domestic market conditions, e.g. like China.
- Upcoming research needs to compare developing vs developed countries to gain valuable insights into shaping policies.

Conclusion:

This research examined how international factors, especially the global gold price and the exchange rate (rupees per US dollar), affect the domestic gold price in India from 1995 to 2024. The analysis clearly shows a strong, positive, and statistically significant link, supporting the idea that global economic factors mainly shape domestic gold prices. The

results confirm that international influences are the main drivers of domestic gold prices. The model's high accuracy suggests that policymakers, investors, and the public should focus on the international gold price and the rupee-dollar exchange rate to understand and predict domestic price changes. This means that local supply and demand are less important than global price movements and currency values.

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