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ORIGINAL CONTRIBUTION

Gleaming Gold: Unraveling the Enigmatic Surge in Price

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ABSTRACT

Gold is a precious metal; from historic period gold is used to make jewellery. Gold represent a secure investment choice for risk averter investors. In recent past gold price hike tremendously. Price of any product is influenced by the level of demand from the consumers and the amount of product available in the market. The international price of gold is determined by the interplay of global demand and supply of this precious metal. This study aims to investigate the factors that are mainly responsible for recent hike in gold price. The study period considered in this paper is 2000-2022. In this period gold price is increased by more than 10 times. The determinants that are investigated under this study are: share market return through NIFTY 50, real interest rate, crude oil price, GDP and exchange rate. Data related to various determinants that affect gold price are collected from different website. The Pearson correlation and level of significance between these variables and gold price are measured by using SPSS software. During this period, the most significant correlation is observed between price of gold and Gross Domestic Product (GDP). A substantial correlation is identified between the price of gold and the exchange rate during this period. Gold price and real interest rate have moderate negative correlation. Crude oil price and gold price shows a low positive correlation.

KEY WORDS: Gold Price, Real Interest Rate, GDP Crude Oil Price, Exchange Rate.

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1. INTRODUCTION

India, renowned for its strong cultural affinity and tradition for gold, experiences exceptionally high demand for this precious metal, driven by desires for beauty and financial security. To meet this demand, the country heavily relies on imports. Gold's historical value preservation has made it an attractive choice for investors throughout ancient times.

Investors often incorporate gold into their portfolios as a hedging tool to mitigate risks associated with other investment options. However, the recent surge in gold prices has become a pressing concern for the government, economic policymakers, and the general populace, particularly in India, where gold is pivotal for cultural rituals.

Numerous factors, including inflation rate, share market return, real interest rate, crude oil price, GDP, growth rate, and exchange rate, influence gold prices. Traditionally, a strong negative correlation has been perceived between share market return and gold price, with investors shifting focus from shares to gold during price rises due to perceived risk reduction. Surprisingly, recent trends have shown a weak and statistically insignificant negative correlation between share market return and gold price.

This research aims to identify the macroeconomic factors primarily responsible for the recent surge in gold prices, which accelerated significantly from 2020. The outbreak of the global pandemic and subsequent lockdowns resulted in a slowdown of industrial growth and a decline in the country's GDP. Consequently, investors turned to gold as a safe haven to safeguard their investments, leading to increased demand and a subsequent rise in gold prices.

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2. Literature Review

Numerous studies have been undertaken to explore the determinants affecting the price of gold, especially concerning India and other nations. Dr. Amalendu Bhunia et al. (2012) explored the association between gold prices and stock market returns in India using econometric analyses, Johansen's Co- integration Test, and some other test. Their study revealed a direct relationship between gold prices and domestic demand, driven by factors such as security, liquidity, and portfolio diversification.

Sayyed Mahdi Ziaei's study (2012) in Malaysia employed the GMM model for analyzing the effects of gold prices on equity, bond, and domestic credit in ASEAN +3 countries. The study highlighted the fundamental role of aesthetic and precautionary demands for gold in influencing its price, which, in turn, positively impacted bond and equity markets.

Another research by Prerana Baber, et al. (2013) focused on factors affecting gold prices in India. Employing Karl Pearson correlation coefficient and Hotelling's Squared T-test, they identified a range of contributors, including decreased gold supply, inflation and interest rates, currency fluctuations, geopolitical concerns, financial market weaknesses, and central bank demand.

Muhamad Khairul Anuar bin Sukri, et al. study (2015) finds the association between some economic variables and gold prices in Malaysia. They used Multiple Linear Regressions (MLR) and found significant positive associations between price of crude oil and price of gold, while the Malaysian ringgit rate of exchange showed a negative significant relationship. Real Malaysian GDP was found to have a low impact with a positive significant relationship on gold prices.

Sahaida Laily Md Hashim, et al. (2017) researched the volatility of gold prices by analyzing rate of inflation, rate of exchange, price of crude oil, and GDP. The findings demonstrated positive correlations between crude oil prices and gold prices, and negative relationships between inflation rate, GDP, real interest rate, exchange rate, and gold prices.

Aylin Erdoğdu's study (2017) on the US market utilized econometric models like ARCH/GARCH to investigate correlations between macroeconomic variables and gold price changes. They identified factors such as index of Dow Jones, exchange rate of US, price of silver, rate of interest, price of crude oil, and rate of inflation. The highest negative correlation was found between gold price and the exchange rate of US.

Vanitha S. and Saravanakumar K.'s study (2019) on gold usage and investment analysis in India revealed factors influencing gold prices, including rise in price level, movement of world economy, reserves of gold hold by the government, festive seasons, trends of interest rate, stock exchange performance, and cost of production.

Finally, Liya A., et al. (2021) conducted regression and correlation analyses, ANOVA, and unit tests to examine how indicators of macroeconomics influence management of gold price. They found direct relationships between GDP, inflation rate, standard trade value, and price of gold, while real rate of interest showed negative but insignificant relations.

These studies collectively provide valuable insights into the complex and multifaceted nature of gold price dynamics, serving as essential references for investors, policymakers, and researchers worldwide.

3. Methodology

The objective of this study is to examine the factors that influence the recent hike in gold prices during the period from 2000 to 2022. Secondary data collected from various websites will be analyzed using SPSS software. The main aim of this research is to establish the relationship between gold prices and various macroeconomic factors using Pearson's correlation.

In this investigation, the dependent variable is the price of gold, while the variables that are independent include the rate of inflation, market return measured by NIFTY 50 return, real interest rate, price of crude oil, GDP, and rate of exchange. With the help of multiple regression analysis these relationship is established.

The recent sharp increase in gold prices has raised concerns among investors, policymakers, and the general public. The graph below illustrates the notable surge in gold prices in India from 2000 to 2022:

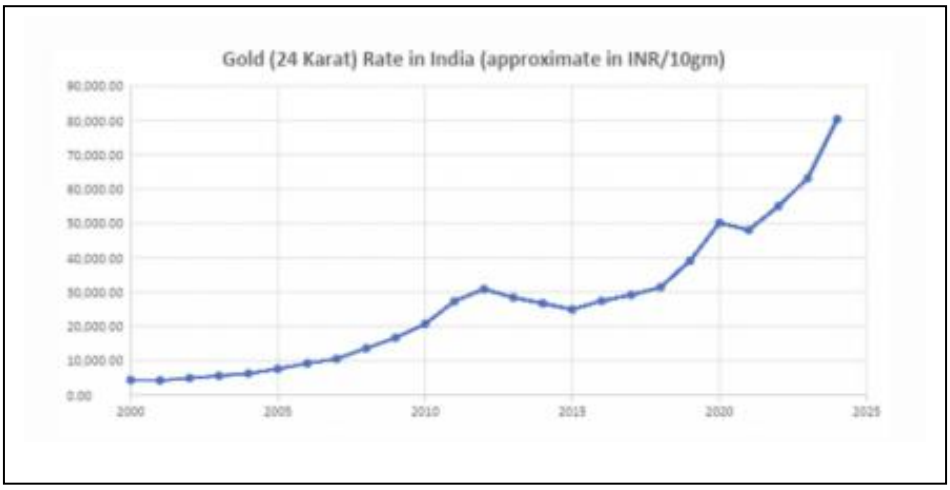

Figure 1: Increasing trend of gold price from 2000-2023

Research Problem 1:

Investigate the Relationship between Inflation Rate and Price of Gold in India.

Hypothesis (H1): A noteworthy correlation exists between the inflation rate and the price of gold.

Pearson Correlation Analysis:

The Pearson product-moment correlation coefficient between inflation rate and gold price was determined to be moderately positive (r = .494) but statistically not powerful (p >.001). Consequently, the null hypothesis H1 was not accepted. This indicates that there is no significant correlation in between rate of inflation and price of gold, especially in the period of this study.

Table 1: Correlation between price of gold & rate of inflation

Correlation Analysis			
		Price of Gold	Rate of Inflation in %
Price of Gold	Correlation of Pearson	1	0.15
	Significance level (2-tailed)		0.494
Rate of Inflation in %	Correlation of Pearson	0.15	1
	Significance level (2-tailed)	0.494	

Research Problem 2:

Investigate the relationship between Nifty 50 returns and gold price in India.

H1: A noteworthy correlation exists between the Nifty 50 returns and gold price.

Reporting Pearson correlation

The Pearson product-moment correlation coefficient between NIFTY 50 returns and gold price was determined to be very low negative ($r = -0.088$) and statistically insignificant ($p > 0.001$). As a result, Hypothesis H1 was not supported, indicating that no powerful correlation exists in between NIFTY 50 returns and price of gold in this period.

Table 2: Correlation between price of gold & nifty 50 return in %

Correlation Analysis			
		Price of Gold	Nifty 50 return in %
Price of Gold	Correlation of Pearson	1	-.088
	Significance level (2-tailed)		.691
Nifty 50 return in %	Correlation of Pearson	-.088	1
	Significance level (2-tailed)	.691	

Research Problem 3:

Investigate the relationship between real interest rate and price of gold.

H1: A noteworthy correlation exists between the real interest rate and gold price.

Reporting Pearson correlation

The Pearson product-moment correlation between real interest rate and gold price revealed a moderate negative correlation that was statistically significant ($r = -0.453$, $p < 0.05$). As a result,

Hypothesis H1 was accepted, indicating a significantly negative correlation between real interest rate and gold price.

Table 3: Correlation between price of gold & rate of interest in %

Correlation Analysis			
		Price of Gold	Rate of interest in %
Price of Gold	Correlation of Pearson	1	-0.453
	Significance level (2-tailed)		0.03
Rate of interest in %	Correlation of Pearson	-0.453	1
	Significance level (2-tailed)	0.03	

Table 4: Correlation between price of gold & GDP

Correlation Analysis			
		Price of Gold	GDP
Price of Gold	Correlation of Pearson	1	.958
	Significance level (2-tailed)		.000
GDP	Correlation of Pearson	.958	1
	Significance level (2-tailed)	.000	

Research Problem 4:

Find the relationship between India's GDP (Gross Domestic Product) and price of gold.

H1: A noteworthy correlation exists between the GDP and gold price.

Reporting Pearson correlation

The Pearson product-moment correlation between GDP and gold price revealed a highly significant and positive correlation ($r = 0.958$, $p < 0.01$). Therefore, Hypothesis H1 is accepted, indicating that a strong positive relationship exist in between GDP and price of gold in this period of study. The findings suggest that an increase in GDP is associated with higher gold prices in this period.

Research problem 5:

This study aims to explore the connection between the exchange rate of the Indian rupee against the USD and the price of gold.

H1: A noteworthy correlation exists between the exchange rate and gold price.

Reporting Pearson correlation

The Pearson product-moment correlation between rate of exchange and price of gold was found to be highly significant at the 0.01 level ($r = 0.885$, $p < 0.01$). As a result, Hypothesis H1 is accepted, indicating the study period revealed a robust and positive correlation between the exchange rate of the Indian rupee to the US dollar and the price of gold. This implies that a higher rate of exchange of Indian rupee to the US dollar is associated with higher gold prices, particularly during the study period.

Table 5: Correlation between price of gold & exchange rate of rupee to USD

Correlation Analysis			
		Price of Gold	Exchange rate of rupee to USD
Price of Gold	Correlation of Pearson	1	.885
	Significance level (2-tailed)		.000
Exchange rate of rupee to USD	Correlation of Pearson	.885	1
	Significance level (2-tailed)	.000	

Multiple regression analysis shows the relationship between dependent and independent variables. The results of this analysis indicate an R-square value of 0.952, suggesting that 95.20% of the dependent variable can be explained by the independent variables.

With the help of ANOVA it is tested that level of significance in this particular model is less than .001. From this result it can be said that the model used in this research is statistically significant.

Coefficient Analysis

Model	Un standardized B	Standardized coefficient beta	Significance
Constant	-35133.850		0.009
Inflation rate in %	1047.418	.178	0.067
Interest rate in %	-252.538	-.047	0.575
Exchange rate of rupee to USD	715.005	0.580	0.011
GDP in billion USD	6.261	0.374	0.101
NIFTY 50 returns in %	-30.901	-0.060	0.305
Average crude oil price in USD	41.968	0.068	0.516

The regression equation relating the dependent variable , gold price, to the independent variables is as follows:

Y=a+bX1+cX2+dX3+eX4+fX5+gX6

where X1=>rate of inflation, X2=>rate of interest, X3=>rate of exchange, X4=>GDP, X5=>NIFTY 50 return, X6=>Crude oil price

From the above coefficient analysis table, the equation can be rewrite in the following way:

Y=-3513.85+1047.418X1-
252.538X2+715.005X3+6.261X4-
30.901X5+41.968X6

In multiple regression analysis beta coefficient shows the contribution of independent variable to the model. The more the data value is the most significant contribution the independent variable is contributing. In this model highest beta value is 0.580, which is found in case of exchange rate of rupee to USD and its significance level is .01 which is less than .05. It means the variable exchange rate of rupee contributing uniquely to this model.

4. Conclusion

The fulfillment of the study objective relies on the Pearson correlation and statistical significance test conducted between gold price (dependent variable) and various macroeconomic variables (independent variables) over the last 23 years. According to the research findings, there is no significant correlation observed between the inflation rate, Nifty 50 returns, and crude oil price with gold price during the study period.

However, a moderate negative correlation is observed between real interest rate and gold price. As real interest rates increase, investors are incentivized to opt for risk-free saving instruments such as term deposits and fixed deposits, leading to a decreased demand for gold and subsequently a decline in gold prices. These variables demonstrate a weak relationship during the period from 2000 to 2022.

In contrast, the variables primarily responsible for the recent hike in gold price are GDP and exchange rate. A higher average growth rate of the country's GDP and exchange rate contributes to increased gold prices.

Based on the multiple regressions model, a higher beta coefficient signifies a greater influence of the exchange rate on gold price during the study period.

Growing GDP signifies an increase in income and purchasing power of the people, leading to higher gold demand and subsequent price hikes. Moreover, a strong positive correlation exists between the USD to INR exchange rate, as India predominantly relies on gold imports. With the increase in the dollar's value against the Indian rupee during the study period, imports become more costly, leading to higher gold prices. Additionally, gold serves as a hedging instrument against adverse exchange rate fluctuations, further driving up demand among investors and resulting in higher gold prices.

REFERENCES

[1] Baber, P., Baber, R., & Thomas, G. Factors affecting Gold prices: a case study of India. In National Conference on Evolving Paradigms in Manufacturing and Service Sectors (2013).

[2] Bhunia, A., & Das, A. Association between gold prices and stock market returns: Empirical evidence from NSE. Journal of Exclusive Management Science, 1(2), 1-7 (2012).

[3] Ziaei, S. M. Effects of gold price on equity, bond and domestic credit: Evidence from ASEAN+3. Procedia-Social and Behavioral Sciences, 40, 341-346 (2012).

[4] Erdoğdu, A. The most significant factors influencing the price of gold: An empirical analysis of the US market. Economics, 5(5), 399-406 (2017).

[5] Hashim, S. L., Ramlan, H., Razali, N. H., & Nordin, N. Z. Macroeconomic variables affecting the volatility of gold price. Journal of Global Business and Social Entrepreneurship (GBSE), 3(5), 97-106 (2017).

[6] Liya, A., Qin, Q., Kamran, H. W., Sawangchai, A., Wisetsri, W., & Raza, M. How macroeconomic indicators influence gold price management. Business Process Management Journal, 27(7), 2075-2087 (2021).

[7] Bin Sukri, M. K. A., & Mohd Zain, N. H. The relationship between selected macroeconomic factors and gold price in malaysia.

International Journal of Business, Economics & Law, 8(1) (2015).

[8] Vanitha, S., & Saravanakumar, K. The usage of gold and the investment analysis based on gold rate in India. International Journal of Electrical and Computer Engineering, 9(5), 4296 (2019).