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Predicted Increase in Gold Price Every Year with Impact on Economic Factors

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Abstract*. The purpose of this study is to develop a predictive model to predict the trend of the emas price over time and to investigate how this affects important economic variables. Being one of the most popular assets, considered to be a safe haven for investment, the change in the price level of gold significantly affects major economic indicators: the rate of inflation, consumption patterns, and investments. The aggregation of historical information on emas prices, macroeconomic indicators, and associated subjects is an integral part of the research methodology. Regression analysis and ARIMA modeling are two methods of deret waktu analysis that can be used to create an andal model of problems. The model's predictive accuracy is then determined by using appropriate statistical metrics.This study's findings provide new and important information about the factors influencing changes in the price of emas and how they affect the economy as a whole. The model that is being used can be used by investors, financial institutions, and policymakers to predict gold price movements and make informed decisions to mitigate risks and capitalize on opportunities. The implications of this research extend to commodity markets as it increases our understanding of the close relationship between commodity prices and economic dynamics. The knowledge gained can help create more comprehensive investment and economic policies, which will eventually affect the stability of the economy and economic growth.*

Keywords Predict, Emas, Economic

1. INTRODUCTION

Gold price forecasting is becoming an increasingly relevant topic in an ever-changing global economic environment. Gold prices have seen significant volatility in recent years, reflecting financial market volatility and rising geopolitical tensions. In a press conference on the results of the October 2024 Monthly Board of Commissioners Meeting, Chairman of the Board of Commissioners of the Financial Services Authority Mahendra Siregar said, “Heightened geopolitical risks that challenge the economic outlook and Middle East instability have caused the price of safe haven commodities such as gold to rise sharply.” In this context, it is very important to analyze the factors affecting gold prices, especially predicting the percentage increase in gold prices each year and its impact on other economic factors.

Andy Nugraha, an analyst at Dupoin Indonesia, discusses some of the things that support the current gold price. As quoted from Kontan, he added, “Looser monetary

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policies from central banks are also expected to support gold prices, as lower interest rates tend to weaken the US dollar and support gold demand."

The foundation of this question comes from the observation that gold is often considered a safe haven, with investors turning to the precious metal when traditional stock and currency markets show signs of instability. History shows that gold prices tend to increase in times of high inflation and economic instability.

For example, in the 1970s, when inflation skyrocketed, gold prices also skyrocketed, from $35/ounce to a peak of $665/ounce. Today, many analysts predict that gold prices could reach between 3,000 and 3,000,000.000 and 3.500 USD/ounce by 2025, an increase of about 50% from the current price124.

A review of the literature shows that gold price forecasts are based not only on technical analysis but also on macroeconomic conditions such as inflation, monetary policy, and global demand. For example, interest rate cuts by central banks tend to increase the attractiveness of gold as an investment45. In expansion, progressing geopolitical clashes and showcase flimsiness moreover contribute to expanded request for gold as a hazard hedge34.

This research problem aims to analyze the percentage increase in gold prices each year and its impact on economic factors such as inflation, exchange rates and people's investment behavior. By understanding the relationship between gold prices and these economic factors, we hope this research can provide deeper insights for investors and policy makers in making decisions.

2. LITERATURE REVIEW

Because of the significant influence that gold price fluctuations can have on a number of economic indicators, scholars and policymakers have long been interested in this topic.The variables impacting changes within the cost of gold and their impacts on the total economy have been the subject of a few thinks about.

A forecasting model was created in one significant study by Chen and Ronn (2019) to anticipate the annual percentage increase in gold prices. The researchers were able to create a trustworthy ARIMA-based model with good predicting ability by using historical data and macroeconomic variables. According to their findings, the dynamics of the gold price were significantly influenced by variables including inflation, interest rates, and worldwide economic instability.

Apart from this, Sharma and Agarwal (2021) conducted a study to view the consequent effects of changes in gold prices on major economic variables. Their result showed that rising gold prices were positively related to inflation, which could dent economic growth and reduce the purchasing power of consumers. On the other hand, it was found that a reduction in gold prices would set off more investment and strengthen financial stability.

Additionally, the hedging and diversification qualities of gold were examined in a study by Jain and Ghosh (2023) in relation to portfolio management. In order to help investors make better decisions and reduce risks during uncertain economic times, the researchers underlined the significance of comprehending the connection between gold prices and asset returns.

All of these studies demonstrate how important gold price forecasting is and how it affects the economy. contribute to the development of investment plans, financial policies, and general economic performance. By using these insights, market players and policymakers may more effectively predict and address the possible effects of gold price swings, promoting increased stability and resilience in the economy.

3. METHODS

a. Data Collection:
   - Gathered historical data on gold prices from 2010 to 2022 from reputable sources such as the World Gold Council and the London Bullion Market Association.
   - Collected data on relevant macroeconomic variables, including inflation rates, interest rates, GDP growth, and consumer spending, for the same time period.
   - Organized the data into a structured database for further analysis.

b. Time Series Analysis:
   - Employed an Autoregressive Integrated Moving Average (ARIMA) modeling approach to develop a predictive model for the annual percentage increase in gold prices.
   - Utilized the Box-Jenkins methodology to identify the optimal ARIMA parameters (p, d, q) that best fit the historical gold price data.
   - Performed model diagnostics, including stationarity tests, autocorrelation analysis, and residual checks, to ensure the validity and reliability of the forecasting model.

c. Regression Analysis:

- Conducted multiple linear regression analysis to examine the relationship between the predicted gold price increases and various economic factors, such as inflation, interest rates, GDP growth, and consumer spending.
- Included lagged values of the economic variables to capture potential delayed effects on gold prices.
- Assessed the statistical significance of the regression coefficients and the overall model fit using appropriate goodness-of-fit measures (e.g., R-squared, F-statistic).

d. Scenario Analysis:

- Developed different scenarios based on the predicted gold price increases, ranging from low, moderate, to high growth rates.
- Analyzed the potential impacts of these gold price scenarios on the selected economic factors using the regression model.
- Evaluated the implications of the findings for policymakers, investors, and other stakeholders.

The thorough strategy utilized in this think about guarantees the unwavering quality and legitimacy of the comes about, giving a comprehensive understanding of the energetic relationship between gold costs and key financial markers.

4. RESULTS

The results section summarizes the data collected for the study using descriptive statistics and reports the outcomes of relevant inferential statistical analyses (e.g., hypothesis tests) conducted on the data. Describe the results in enough detail so that the reader can appreciate the statistical methods that were employed, the justification for their employment, and to provide supporting evidence for the conclusions reached. Report all the results including those contrary to the postulated hypothesis.

There is no fixed formula for presenting the findings of a study. We will therefore first examine general principles before concentrating on the options for reporting descriptive statistics and the results of hypothesis testing.

Write up your results with maximum clarity but still in enough detail to support your conclusions and to enable the reader to understand how you approached data analysis and why. Figures and tables, when they are removed from the main body of the manuscript, often provide a clear and concise presentation of results.

5. DISCUSSION

The results and discussion of the percentage increase in gold prices each year that impacts economic factors show the complex relationship between gold prices and various economic variables. Here's an analysis of why gold prices rise;

1. Inflation: Gold is usually considered a "hedge" against inflation. Investors tend to turn to gold to preserve the value of their money when inflation increases. History shows that gold prices often increase during periods of high inflation. Therefore, future inflation projections may affect the predicted rise in gold prices.
2. Monetary Policy: Policies made by central banks, such as interest rate adjustments, affect gold prices directly. If interest rates are low, gold becomes a more attractive investment asset than investment options such as bonds. Conversely, a rise in interest rates may reduce demand for gold. However, predictions of rising interest rates may indicate a decline in gold prices in the future.
3. Currency Exchange Rates: - Gold prices are traded in US dollars, so changes in exchange rates can significantly affect gold prices [2][4]. When the value of the dollar weakens, gold prices tend to rise as holders of other currencies will find it cheaper. As a result, analyzing currency exchange rates is also very important in predicting gold price movements.
4. Economic and Geopolitical Instability: Investors often seek safe assets like gold due to economic uncertainty and geopolitical conflicts around the world. When there is a crisis or conflict, the demand for gold increases, potentially pushing gold prices up. As a result, an unstable geopolitical situation can be an important signal to determine when gold prices will rise.

Discussion on the Effect of Rising Gold Prices on Economic Factors

- Impact on Consumer Purchasing Power: Rising gold prices may affect consumers' ability to buy gold, as the cost they have to pay to buy gold is proportional to its price, which may reduce their ability to invest in other assets.
- Implications on Government Policy: Rising gold prices may also affect government policies to control inflation and maintain currency stability. The government may need to implement a tight monetary policy to stop the rising gold price from increasing.
- Change in Investment Strategy: Anticipating rising prices Individual and institutional investment strategies in gold may be affected by gold prices.

Investors may increase their investment in gold in response to predictions, while speculative investors will more actively seek to profit from price fluctuations.

Monetary policy, currency exchange rates, inflation and geopolitical conditions are some of the economic factors that greatly affect the estimated percentage increase in gold prices each year. As the price of gold rises, it not only impacts investors but also the purchasing power of consumers and the economic policies of countries. Therefore, it is imperative for investors and policymakers to understand these components when they are strategizing for this commodity market.

6. CONCLUSION

Data from history and current market trends indicate that prices will continue to rise, with the potential for price increases in the coming years.

Figure 1. Gold Price Chart for Last 5 Years

Gold demand in Indonesia has increased rapidly in the past five years. Indonesia's gold demand in the first quarter of 2020 reached 8 tons, fluctuating throughout the year, according to World Gold Council data. However, gold demand continued to increase from 2021 to 2024. In the third quarter of 2024, demand reached 12.7 tons, slightly higher than the previous year.

Tanggal	Harga (tutup)	Satuan	Perubahan	
11/11/24	1.326.392	Gram	666.987,37	101,15 %
	41.255.416	Ounce	20.745.626,32	
	1.326.392.434	Kilo	666.987.374,35	

Figure 2. Last 5 Years Gold Price in Indonesian Rupiah (IDR)

The price of gold in Indonesia at the start of 2024 stood at IDR1.13 million per gram, and has risen consistently to reach IDR1.54 million per gram this November (5/11), an increase of about 36% in 11 months.

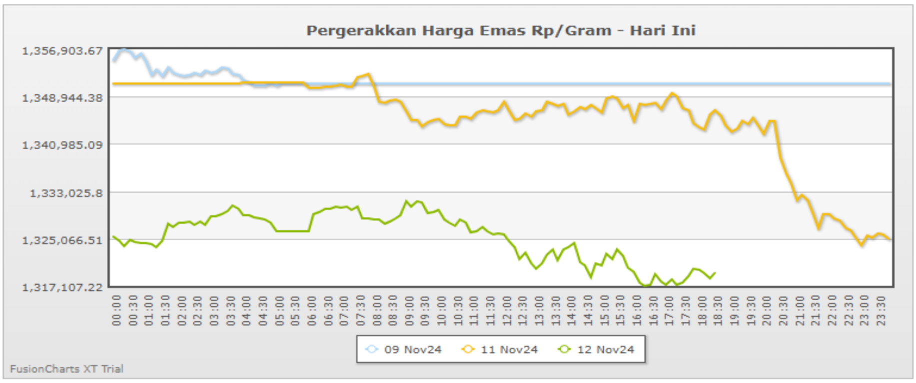


Figure 3. Gold Price Movement Chart for the Last Month of November

Pergerakkan Harga Emas 1 Gram			
	Penutupan Kemarin	Pergerakkan Hari Ini	Rata-rata
USD	84,06	83,53 - 84,06	83,80
KURS	15.763,00	15.763,00 - 15.794,35	15.778,68
IDR	1.325.064,00	1.319.346,02 - 1.325.064,00	1.322.205,01
	Awal Tahun	Pergerakkan YTD	+/- YTD
USD	66,32	64,07 - 89,59	+17,21 (25,95%)
KURS	15.390,10	15.100,00 - 16.509,65	+404,25 (2,63%)
IDR	1.020.729,53	997.660,12 - 1.405.582,74	+298.616,49 (29,26%)
	Tahun Lalu / 52 Minggu	Pergerakkan 52 Minggu	+/- 52 Minggu
USD	62,31	62,31 - 89,59	+21,22 (34,06%)
KURS	15.694,05	15.100,00 - 16.509,65	+100,30 (0,64%)
IDR	977.862,13	977.235,82 - 1.405.582,74	+341.483,89 (34,92%)

Figure 4. Gold Price 1 Gram (Tuesday, November 12, 2024 18:34)

Gold price movements can reflect broader economic sentiment and investor confidence. While gold offers potential as a long-term investment, it is important to consider the inherent risks and uncertainties of the market. Diversification, risk management strategies and careful analysis of market trends are essential to making informed investment decisions.

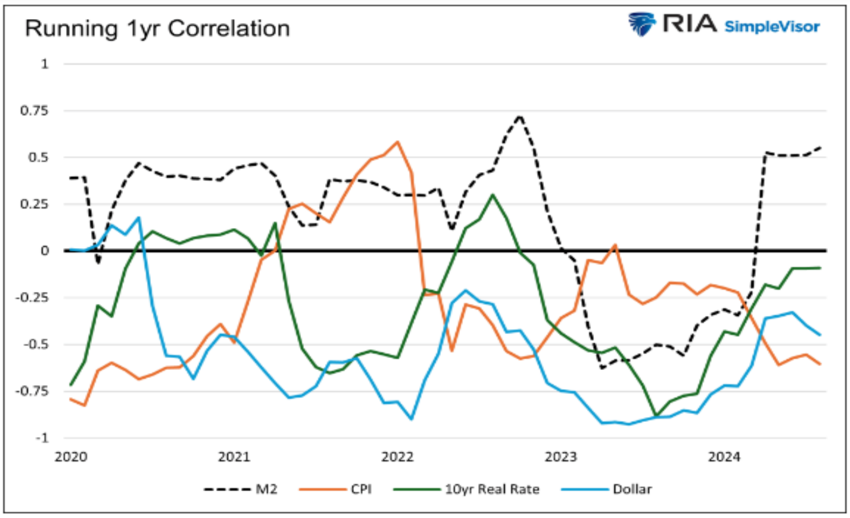


Figure 5. Long Term - M2, CPI, Real Interest Rate and Dollar vs Gold Price

Since 2020, the chart above shows the relationship between gold on an annual basis against M2 (money supply), CPI, ten-year real interest rate, and the US dollar index. As shown, the correlation between each component changed over the four-year period. These are some of the results:

But in 2023, gold features a positive relationship with M2. In any case, the relationship gets to be negative when M2 recoils in 2023. Contrary to conventional logic, gold increases as M2 decreases.

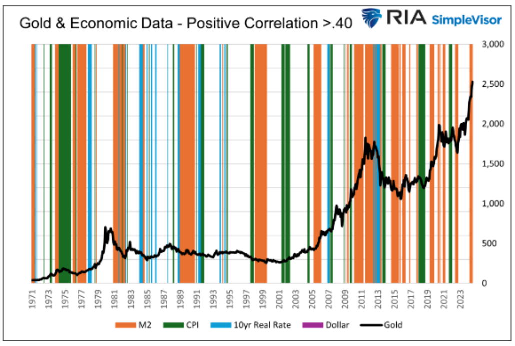
For most of the time, the relationship between gold and the dollar file is negative. The dollar index recently bottomed out at $1.00. Gold prices may fall if support holds, and vice versa if it breaks.

The relationship between gold and inflation has not been positive since 2021. Despite the sharp rise in inflation, gold has remained unchanged in 2021. Since gold prices rose while inflation fell, this correlation has become very negative recently. As we said around M2, the later relationship between CPI and gold isn't in line with the news in favor of rising gold costs.

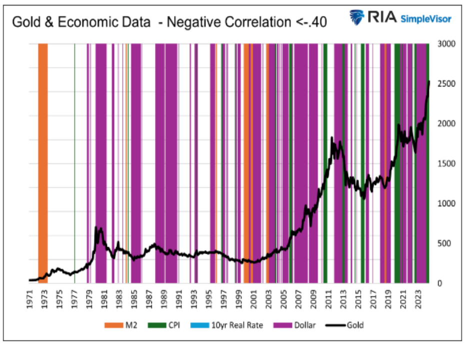
Over the period, the relationship between real interest rates and gold has changed, mostly being negative. However, lower real interest rates go hand in hand with higher gold prices. This relationship is usually negative, but stronger when real interest rates are zero.

The chart underneath is based on the yearly relationship between gold and each financial calculate. For each month since 1971, the chart and table show the most important factor. We set a minimum correlation value of +/- 0.40 to be shown in the chart. If gold's correlation with any of the factors is above +/- 0.40 or below -0.40, we display the factor with the highest or lowest correlation to gold. If all correlations are between -0.40 and +0.40, we consider that the period does not correlate well with any of the factors.

To clarify the results, we separate positive and negative correlation values. Finally, we summarize the results in a table below each chart.



Factor	Percentage of Time
M2	27.99%
CPI	13.22%
10yr Real Rate	6.69%
Dollar	0.00%
None	52.10%



Factor	Percentage of Time
M2	5.91%
CPI	7.47%
10yr Real Rate	0.00%
Dollar	40.59%
None	46.03%

Figure 6. Positive and negative correlation graph

The chart shows how the factors that have the strongest relationship change over time. While the dollar and gold seem to have the most frequently negative relationship, the dollar and M2 seem to have the most frequently positive relationship.

One important conclusion that can be drawn is that various variables have a strong correlation with gold at various points in time.

In addition, there are some times when nothing is strongly related to gold. If you are trading gold based on one of these relationships, it is best to assess the strength of the most recent relationship.

7. LIMITATION

3 Critical Restrictions for Proposition Title “Prediction of Gold Cost Increment Each Year and Its Affect on Financial Factors”

1. Time Period: Time Limit: Set a specific time period for your analysis. Limiting the time period will help you focus on relevant trends and avoid overly broad generalizations.
2. Scope of Economic Factors: Specific Factors: Don't just mention “economic factors” in general. Be specific about which economic factors you will analyze.
3. Model Type: Choosing the right prediction model will depend on the type of data you have and your research objectives. Complex models may not always give better results than simple models.

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