IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

# A STUDY ON THE PERFORMANCE OF BULLION MARKET WITH SPECIAL REFERENCE TO GOLD

A. Akash Raj

Student

KLH Global Business School, Koneru Lakshmaiah Education Foundation, Hyderabad, 500084, India

***Abstract:*** This research delves into the bullion market's performance, with a specific emphasis on gold, a significant asset in the worldwide financial landscape. Utilizing a blend of quantitative analysis of past price data and qualitative scrutiny of economic indicators, the study seeks to pinpoint the primary drivers behind gold price fluctuations and their repercussions for both investors and policymakers. The outcomes of this investigation enrich comprehension of the bullion market's intricacies and offer valuable guidance for stakeholders maneuvering within its multifaceted dynamics.

***Index Terms*** **-** performance analysis, gold market dynamics, financial market trends, investment implications, economic indicators, price movements, market efficiency, portfolio diversification, quantitative analysis, qualitative examination, historical price data, market drivers, investor behavior, and policy recommendations.

## I. INTRODUCTION

The bullion market is where we discuss how we exchange precious metals such as gold and silver. The bullion market is a broad topic in which we will cover the gold bullion market and the evolution of gold. How the importance of gold has grown, as well as how the perception of gold consumption has led to gold investment. The gold price is said to be inversely proportional to the stock market. When there is a reduction or a decline in the stock market, the gold price rises. When there is a loss ,gold is assumed to be viewed as an asset. Particularly in the instance which was experiencing a financial crisis, the country used its gold reserves to stabilize itself

### Need of the Study

**II.** The necessity for this research arises from the pivotal role gold holds in the global financial sphere, especially as a hedge during economic instability and market fluctuations. With financial markets constantly evolving, there's a pressing need for thorough examination of the factors impacting gold prices and their significance for both investors and policymakers. This study endeavors to bridge this gap by offering comprehensive insights into the dynamics of the bullion market, aiding investors in informed decision-making and policymakers in devising effective strategies.

## III. OBJECTIVES OF THE STUDY

1. To understand the growth and significance of gold as an investment.
2. To understand the volatility of the gold price.
3. To understand how gold affects the market.
4. To estimate the volatility and risk of the gold price.
5. To investigate the elements that influence the gold market.

## IV. SCOPE OF THE STUDY

The scope of this study is confined to the Sensex and Nifty. This study provides a brief overview of these indices and their significance. Additionally, it focuses on gold prices, as historical gold prices are utilized to analyze trends in the gold bullion market. Consequently, this study indirectly offers insights into the overall gold bullion market, including aspects related to return and risk. The study is directed towards evaluating the performance of the gold bullion market over a period of 5 years. The methodology employed in this project is descriptive in nature

## V..RESEARCH DESIGN

It is a descriptive and casual research where this research helps to analyze the performance of gold price movements.

Data Sources:
Secondary data:
All the data required for this analytical study has been obtained mainly from secondary sources. Sources have been used for the collection of the data used in the research.

1. Data collected from BSE, NSE, SEBI, and Investopedia websites, etc.

**Sample Design:**
Sample Size:
The data is collected and analyzed for 5 years.

**Statistical Tools & Techniques Used for Data Analysis:**
Statistical tools used include Maximum, Minimum, Range, Mean, and Variance.

- Range: Maximum Value – Minimum Value.
- Mean: $\bar{x} = (\Sigma xi) / n$
  - $\bar{x}$ stands for the sample mean.
  - $\Sigma$ denotes summation notation, indicating the sum of all x-values.
  - xi represents all individual x-values.
  - n signifies the number of items in the sample.
- Variance: $S^2 = \Sigma(Xi - \bar{X})^2 / (N-1)$
  - $S^2$ denotes sample variance.
  - Xi represents the value of each observation.
  - $\bar{X}$ denotes the mean value of all observations.
  - N signifies the total number of observations.

**Descriptive analytics framework**

- Data Collection:

  Obtain historical data on gold prices from reliable sources such as BSE, NSE, SEBI, and financial databases.Gather secondary data on economic indicators, market trends, and relevant factors influencing gold prices.

- Exploratory Data Analysis (EDA):

  Conduct an initial exploration of the data to identify patterns, trends, and relationships. Visualize the data using charts, graphs, and statistical plots to gain insights into the behavior of gold prices over time. Calculate summary statistics such as mean, median, standard deviation, and range to describe the central tendency and dispersion of gold prices.

- Time Series Analysis:

Perform time series analysis to understand the temporal patterns and seasonality in gold prices. Decompose the time series into trend, seasonal, and residual components to isolate the underlying patterns. Apply forecasting techniques to predict future movements in gold prices based on historical data.

- Statistical Analysis:

Utilize statistical methods such as correlation analysis to examine the relationships between gold prices and other variables such as economic indicators and market trends.Calculate measures of market efficiency, such as the efficient market hypothesis (EMH), to assess the degree to which gold prices reflect all available information.

## V. THEORITICAL FRAMEWORK

1. A dynamic causality analysis between gold price movements and stock market returns: Evidence from India Anil Kumar Bhuya,*, Ajit Kumar Dash India is a developing economy and one of the largest importers of gold globally. During the financial year 2016-17, India imported around 550 tonnes of gold, and this figure is projected to rise to 846 tonnes in the current financial year (according to MMTC-PAMP). The Ministry of Commerce & Industry data from August 2017 indicates that imports in May 2017 were valued at US $35,462.79 million (Rs 226,849.74 crore), with gold showing the highest growth rate (68.90%) compared to the corresponding month of the previous year. This study investigates the empirical relationship between gold prices and the NSE Nifty stock index in India, using monthly data from January 2001 to December 2017. The Augmented Dickey-Fuller unit root test, Granger Causality Test, and Johansen's Co-integration test were applied. The results of Johansen's Co-integration test indicate a long-run equilibrium relationship between gold prices and stock returns. However, the Granger causality test results suggest no causal relationship between gold and stock returns. Furthermore, the impulse response functions show that the response of stock returns to changes in gold prices is positive at each time period, and both variables exhibit smooth fluctuations over the 10-period horizon.

2. A study on dynamic Relationship between Gold price and Stock market price in India by Dr. Naliniprava Tripathy The current research study examines the integration between gold prices and stock market prices (Nifty) using monthly time series data from July 1990 to April 2016. The study employs unit root tests, correlation tests, Granger causality tests, and Johansen's co-integration tests to evaluate their relationship. The findings suggest that there is no causal relationship between gold prices and stock market prices in the short run. However, gold prices and stock market prices are cointegrated, indicating a long-run equilibrium relationship between them, and they move together. The CUSUM test also confirms the presence of a long-run relationship between gold and stock market prices and exhibits the stability of the coefficients. The stock market price can be used to predict gold prices. The study recommends that the integration between gold and stock market prices necessitates the need for global investors to follow a portfolio stock selection strategy to add value

from investments in India. However, the scope of these opportunities is limited in the short run. The study suggests that while there is no short-term causal relationship, gold prices and stock market prices exhibit a longterm equilibrium relationship, implying that they move together in the long run. This long-run integration highlights the potential for investors to consider both asset classes in their portfolio strategies, although short-term opportunities may be limited.

3. Investment in Gold: Trends and Analysis of Indian Stock Market Dr. Sunaina Kanojia1 and Silky Jain With the growth of financial instruments and investment alternatives, the role, usage, and scope of commodity gold have undergone a paradigm shift. Gold has evolved from being a raw material for making statues, icons, and jewelry to adorn human bodies, to now serving as a hedge against risk in volatile markets. This paper attempts to examine the concept of gold trading in India, highlight the significance of gold trading in the context of the Indian stock market, and analyze the trend of nominal gold prices in the Indian stock market. 13 Furthermore, it undertakes to examine the performance of gold and the Nifty index after adjusting for inflation and to check whether including gold in an optimal portfolio improves its performance or not. Using three-week moving averages, graphical analysis, and Sharpe's portfolio optimization model, a bullish trend in gold prices has been observed over the past eight years. This supports the fact that the inflation-adjusted performance of gold is better than the inflation-adjusted performance of the Nifty index. Additionally, it also proves that including gold in an optimal portfolio improves the portfolio's performance. The study highlights the evolving role of gold from a decorative commodity to a risk-hedging asset in volatile markets. It also emphasizes the significance of gold trading in the Indian stock market context and the observed bullish trend in nominal gold prices over the past eight years. Moreover, the analysis suggests that gold's inflation-adjusted performance is better than the Nifty's, and incorporating gold into an optimal portfolio can enhance its overall performance.

4. A Study on Performance Evaluation of Gold Exchange Traded Funds in India: Pre & Post Covid Scenario Sura Goverdhan , Dr. M. Jeyakumaran For centuries, Indians have had a strong affinity for gold. However, it was only in 2007 that India launched its first gold ETF (Gold BeES), which has the underlying asset of physical gold and provides exposure to the Indian gold market. Gold Exchange Traded Funds (Gold ETFs) are open-ended mutual fund schemes based on the ever-fluctuating price of gold. Unlike physical gold, which does not generate income and has high making charges, Gold ETFs offer investors exposure to the gold market and are an excellent choice for those looking to beat inflation in the long run. This paper evaluates the performance of gold ETFs in India during the COVID-19 pandemic situation. The evaluation is achieved using performance assessment strategies such as the Treynor Performance Index, the Sharpe Performance Index, and the Jensen Performance by measuring the alpha, beta, and standard deviations of selected ETFs traded on the NSE. Data for this examination was gathered from the NSE website over a two-year period, from December 1st, 2018, to November 30th, 2020. The study suggests that the Quantum Gold Fund (ETF) performs moderately well according to Sharpe's Model, Treynor's Model, and Jensen's Model, indicating its potential as an investment option during the pandemic period.

5. A study on performance of gold ETFs trading in national stock exchange in India S Prachee Jain, Stella Mary Gold is considered one of the best investment avenues in India, with a traditional investment method. In recent years, the growing demand for gold and the boom in the capital market gave rise to various investment options in gold, such as gold futures in commodities and gold ETFs. This paper aims to study the performance of selected gold ETFs traded on the National Stock Exchange (NSE) in India and to analyze the variations and risk behavior patterns of gold ETFs traded on the NSE. The data collected for this study was taken from the NSE website for three years, from January 1, 2015, to December 31, 2017. It also attempts to evaluate the relationship of gold ETFs with the spot price of gold and the Nifty 50 index using correlation analysis. The findings indicate that ETFs are positively correlated with the spot price of gold, and they are negatively correlated with the Nifty 50 index. The study highlights the growing interest in gold investment options, such as gold ETFs, in India. It examines the performance of selected gold ETFs traded on the NSE, analyzing their variations and risk behavior patterns over a three-year period. Additionally, the research investigates the relationship between gold ETFs, the spot price of gold, and the Nifty 50 index using correlation 14 analysis, revealing a positive correlation with the spot price of gold and a negative correlation with the Nifty 50 index.

6. Gold Performance And Its Impact On Economy During Covid-19 by Dr Sasikala Devi D, Dr Padmaja DV Gold is considered an economic asset for people, and investments are made to generate income from it. The COVID-19 pandemic and ensuing economic lockdowns were likely to be supportive of consumer demand for gold performance. Gold's behavior may depend on the speed of recovery and the duration of monetary policy and fiscal stimuli. Hence, this paper aims to study the performance of gold and its impact on the economy during the COVID-19 pandemic. India's GDP growth has been on a downward trend. Against this backdrop, consumer spending on nonessential items declined, which was accentuated by the outbreak of COVID-19 in March. People have become more cautious in their spending. The study indicates that there will be high demand for gold in the Indian and international markets. The COVID-19 pandemic temporarily dampened the demand in the gold market. However, it provided greater demand for investment purposes. Moreover, the study found that the supply and actual prices of gold are higher than the demand and estimated gold prices. Hence, it is concluded that the COVID-19 pandemic has created a positive impact on investment decisions and a negative impact on gold buying behavior for consumption purposes.

7. Gold and India Charan Singh The unique liquidity and enduring appeal of gold as a form of wealth have puzzled researchers for years, remaining a topic of ongoing study. Its role as a hedge against economic downturns, such as inflation or recession, is well-established when other investment avenues are uncertain. Understanding the demand for gold involves navigating a complex interplay of economic factors, making it ripe for academic exploration. This study seeks to analyze the impact of gold imports on the current account deficit (CAD), as well as the regulatory landscape of the gold market in India. Additionally, it proposes strategies to enhance the gold market and unlock the considerable reserves of gold held by households and temples in the country.

8. RELATIONSHIP BETWEEN THE GOLD AND SILVER MARKETS IN INDIA. Jobin Scaria A derivative is a financial instrument whose value is derived from an underlying asset or assets, typically established through a contract between multiple parties. Its value is influenced by changes in the value of the underlying asset. Common underlying assets include stocks, bonds, commodities, currencies, interest rates, and market indexes. This study examines the performance of the Indian gold and silver commodity derivative market, focusing on cointegration analysis to understand the long-term relationship between gold and silver markets, as well as price discovery in these markets. Utilizing data from the MCX website spanning five years, both spot and future prices are analyzed. The findings indicate that there is no long-term relationship between future and spot prices of gold and silver, suggesting no cointegration or association between them over time. Therefore, gold and silver serve as promising investment avenues in the long run, offering investors the opportunity to diversify risk through a balanced portfolio without significant correlation between the two commodities.

9. Gold Price Volatility and Stock Market Returns in India by P K Mishra, J R Das, S K Mishra Over the past few decades, numerous studies have delved into examining a country's capital market through the lens of various macroeconomic and financial factors. Recently, there has been considerable interest in understanding the impact of gold price volatility on the stock market. This paper aims to explore the potential causal relationship between domestic gold prices and stock market returns in 15 India. By analyzing data from January 1991 to December 2009, focusing on domestic gold prices and stock market returns based on the BSE 100 index, the study employs the Vector Error Correction Model to investigate Granger causality. The findings reveal a bidirectional causality between the variables: gold prices Granger-cause stock market returns, and vice versa, during the specified period. This indicates that both gold prices and stock market returns contain valuable information for predicting each other's movements.

10. A Study on Relationship between Gold and Silver with Special Reference to Multi Commodity Exchange of India Limited by Deepu Nair, Dr. N. Ravichandran This study focuses on analyzing the relationship between gold and silver prices during the period from 2012 to 2016. Given the diverse economic conditions, significant changes in major producers, and increased complexity in asset markets during this time frame, it is reasonable to anticipate a lack of stability in the relationship between gold and silver. Traditionally, gold and silver have been viewed as close substitutes, both

serving as precious metals with historical roles in backing currency. While they are often considered to offer similar risk diversification benefits and investment appeal, economic fundamentals can also drive their prices apart. The primary aim of this study is to explore the relationship between gold and silver in the commodity market, with secondary objectives including an examination of various factors influencing their prices and an analysis of price fluctuations in the Indian commodity market. Through comprehensive research utilizing data from the Multi Commodity Exchange of India Limited, correlation and regression analysis are employed as analytical tools. The findings suggest a significant relationship between gold and silver prices. This research provides valuable insights for investors seeking to understand the factors influencing gold and silver prices, aiding in informed decision-making for those considering investments in these commodities.

## VI. INDUSTRY PROFILE

STOCK MARKET:
The stock market refers to public markets for the issuance, purchase, and sale of stocks that trade on a stock exchange or over-the-counter. Stocks, sometimes known as equities, represent fractional ownership in a corporation, and the stock market is a marketplace for investors to buy and sell such investible assets. A well-functioning stock market is crucial to economic development because it allows businesses to swiftly acquire funds from the general public.

BULLION MARKET:
A bullion market is a place where buyers and sellers can trade gold, silver, and related derivatives. It serves as a location where silver and gold are traded over the counter and in futures contracts. The bullion market operates 24 hours a day, seven days a week, and transactions often occur via phone or electronic means. Bullion markets can be found all over the world, with the majority of transactions taking place electronically or over-the-counter.

DEFINITIONS:
STOCK MARKET:
It is a place where shares of publicly listed companies are traded. The primary market is where companies float shares to the general public in an initial public offering (IPO) to raise capital.

BULLION MARKET:
A bullion market is a market through which buyers and sellers trade gold and silver as well as associated derivatives.

GOLD:
A soft yellow malleable ductile (trivalent and univalent) metallic element. It is a relatively soft, shiny precious metal.

PRESENT SCENARIO OF THE INDUSTRY

The price of gold, like any other commodity, is notoriously difficult to predict. Despite numerous attempts, many have failed to accurately forecast its movements.

Every day, thousands of investors worldwide analyze various factors influencing the price of gold. While some experts successfully predict future prices based on this information, others may interpret the same data incorrectly.

To profit from gold, it's crucial to identify trustworthy experts. Look for individuals who have consistently predicted gold price spikes throughout history by thoroughly considering all available information.

Gold is gaining popularity in India as a secondary investment option after bank deposits. India stands as the largest gold jewelry investor globally.

Domestic gold consumption in India is influenced by factors such as the monsoon, harvest, and wedding seasons. Indian jewelers' demand is highly sensitive to price increases and market volatility, making the Indian Bullion Market resilient despite occasional corrections.

Overall, the market index reflects the recent financial growth of the nation.

PESTEL ANALYSIS

POLITICAL FACTORS:

Political variables significantly influence long-term profitability in a country or industry. Operating in Gold and Silver in over a dozen nations exposes the business to various political environments and system hazards. Diversification of systemic risks in the political environment is necessary to achieve success in such a dynamic Silver or Gold business across multiple countries.

- Political stability and the importance of the silver and gold sector in the country's economy.
- Risk of military invasion.
- Levels of corruption, especially regulations in the Basic Materials sector.
- Bureaucracy and government interference in the silver and gold industry.
- Legal framework for contract enforcement.
- Intellectual property protection.
- Trade regulations and tariffs related to Basic Materials.
- Favored trading partners.
- Anti-trust laws related to silver and gold.
- Pricing regulations and mechanisms for Basic Materials.
- Taxation, tax rates, and incentives.
- Wage legislation, minimum wage, and overtime.
- Workweek regulations in Silver and Gold.
- Mandatory employee benefits.
- Industrial safety regulations in the Basic Materials sector.
- Product labeling and other requirements in Silver and Gold.

ECONOMIC FACTORS:

Macroeconomic factors such as inflation rate, savings rate, interest rate, foreign exchange rate, and economic cycle determine aggregate demand and investment in an economy. Microenvironmental elements like competition standards impact the firm's competitive advantage. Wheaton Precious Metals Corp. can anticipate growth trajectories by considering country economic factors and industry economic indicators.

- Type of economic system in countries of operation and stability.
- Government intervention in the free market and related Basic Materials.
- Exchange rates and stability of host country currency.
- Efficiency of financial markets.
- Infrastructure quality in the silver and gold industry.
- Skill level of the workforce in the silver and gold industry.
- Education level in the economy.
- Labor costs and productivity.
- Business cycle stage (e.g., prosperity, recession, recovery).
- Economic growth rate.
- Discretionary income.
- Unemployment rate.
- Inflation rate.
- Interest rates.

SOCIAL FACTORS:

The culture and way of life of a society influence an organization's culture in a given context. Understanding customers' shared values and attitudes is crucial for marketing messages in the Silver and Gold industry.

- Demographics and skill level of the population.
- Class structure, hierarchy, and power structure in society.
- Education level and standards in the industry.
- Culture (gender roles, social conventions, etc.).
- Entrepreneurial spirit and society's attitude towards it.
- Attitudes (health, environmental consciousness, etc.).

TECHNOLOGICAL FACTORS:

Technology is rapidly disrupting various industries, as exemplified by the transportation industry. Over the last five years, this sector has transformed swiftly, leaving little opportunity for established players to adapt. Players like Uber and Lyft now dominate the taxi industry, while firms such as Google are leading the automation trend in the car industry. Tesla's introduction of electronic cars has sparked a revolution in manufacturing.

Firms must not only conduct technological analysis but also consider the pace at which technology disrupts their industry. Slow adaptation may provide more time for adjustment, whereas rapid technological disruption can leave firms with minimal time to adapt and remain profitable. Technology analysis involves understanding the following impacts:

- Recent technological developments by Wheaton Precious Metals Corp. competitors.
- Technology's impact on product offering.
- Impact on cost structure in the Silver and Gold industry.
- Impact on value chain structure in the Basic Materials sector.
- Rate of technological diffusion.

ENVIRONMENTAL FACTORS:

Different markets adhere to varying environmental norms or standards, which can affect an organization's profitability. Even within a country, different states may have distinct environmental laws and liability clauses. For instance, states like Texas and Florida in the United States have differing liability clauses for mishaps or environmental disasters. Additionally, several European countries offer tax breaks to companies operating in the renewable sector.

Before entering new markets or initiating a new business in an existing market, firms should carefully evaluate the environmental standards required for operation. Some environmental factors that firms should consider beforehand include:

- Weather.
- Climate change.
- Laws regulating environmental pollution.
- Air and water pollution regulations in the Silver and Gold industry.
- Recycling.
- Waste management in the Basic Materials sector.
- Attitudes toward "green" or ecological products.
- Endangered species.
- Attitudes toward and support for renewable energy.

LEGAL FACTORS:

In many countries, the legal framework and institutions may not adequately protect an organization's intellectual property rights. Firms should thoroughly evaluate such markets before entering, as inadequate protection may lead to theft of the organization's intellectual property and compromise its competitive edge.

Some legal factors that firms should consider include:

- Anti-trust laws in the Silver and Gold industry and overall in the country.
- Discrimination law.
- Copyright, patents, and intellectual property law.
- Consumer protection and e-commerce regulations.
- Employment law.
- Health and safety regulations.
- Data protection laws.

## VII. DATA INTERPRETATION

GOLD PRICES IN 2019

| Date | Close Price | Monthly Return |
|---|---|---|
| 01-Apr-19 | 31,756.00 | |
| 02-May-19 | 32,266.00 | 1.605 |
| 03-Jun-19 | 34,206.00 | 6.012 |
| 01-Jul-19 | 35,419.00 | 3.546 |
| 01-Aug-19 | 38,656.00 | 9.139 |
| 03-Sep-19 | 37,323.00 | -3.448 |
| 01-Oct-19 | 38,578.00 | 3.362 |
| 01-Nov-19 | 38,031.00 | -1.417 |
| 02-Dec-19 | 39,108.00 | 2.831 |
| 01-Jan-20 | 41,052.00 | 4.971 |
| 01-Feb-20 | 41,397.00 | -3.629 |
| 02-Mar-20 | 42,956.00 | 3.765 |

| | |
|---|---|
| Minimum | 31,756.00 |
| Maximum | 42,956.00 |
| Range | 11,200.00 |
| Mean | 37562.33333 |
| Variance | 12590116.97 |
| Risk | 3548.255483 |

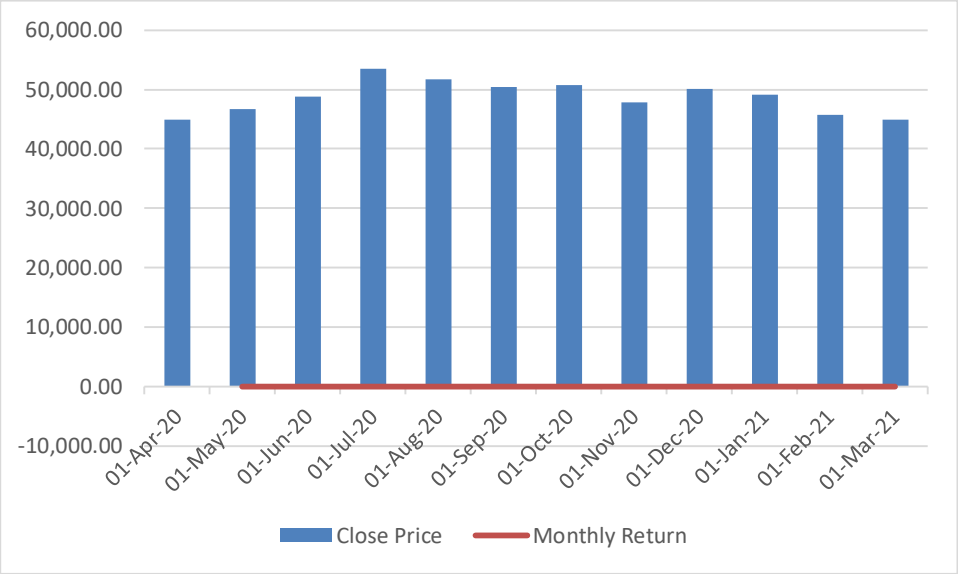

INTERPRETATION

1. From May 2019 to January 2020, there's a general upward trend in the closing prices.
2. Monthly returns fluctuate, indicating varying degrees of price changes from one month to the next.
3. There are some negative monthly returns, suggesting months where the closing price decreased compared to the previous month, and some positive returns indicating months of price increase.

2020

| Date | Close Price | Monthly Return |
|---|---|---|
| 01-Apr-20 | 44,906.00 | |
| 04-May-20 | 46,654.00 | 3.892 |
| 01-Jun-20 | 48,762.00 | 4.518 |
| 01-Jul-20 | 53,445.00 | 9.603 |
| 03-Aug-20 | 51,701.00 | -3.263 |
| 01-Sep-20 | 50,334.00 | -2.644 |
| 01-Oct-20 | 50,699.00 | 0.725 |
| 02-Nov-20 | 47,792.00 | -5.733 |
| 01-Dec-20 | 50,151.00 | 4.935 |
| 01-Jan-21 | 49,096.00 | -2.103 |
| 01-Feb-21 | 45,736.00 | -6.843 |
| 01-Mar-21 | 44,935.00 | -1.751 |

| | |
|---|---|
| Minimum | 44,906.00 |
| Maximum | 53,445.00 |
| Range | 8,539.00 |
| Mean | 48684.25 |
| Variance | 7528691.295 |
| Risk | 2743.846077 |




INTERPRETATION

Based on the provided data, which includes the close prices and monthly returns for a particular asset from April 2020 to March 2021, we can perform the following analysis:

1. Minimum Close Price: The minimum close price observed during the period was 44,906.00 on April 1, 2020.
2. Maximum Close Price: The maximum close price observed during the period was 53,445.00 on July 1, 2020.
3. Range of Close Prices: The range of close prices over the period is calculated as the the difference between the maximum and minimum close prices, resulting in a range of 8,539.00.
4. Mean (Average) Close Price: The mean close price over the period is calculated as the average of all the close prices, resulting in a mean of 48,684.25.
5. Variance of Close Prices: The variance of the close prices measures the degree of dispersion of the data points from the mean. It is calculated as the average of the squared differences from the mean, resulting in a variance of approximately 7,528,691.295.
6. Risk (Standard Deviation): The standard deviation, often interpreted as risk in finance, measures the volatility of the asset's prices over the period. It is the square root of the variance, resulting in a risk value of approximately 2,743.85.

2021

| Date | Close Price | Monthly Return |
|---|---|---|
| 01-Apr-21 | 46,737.00 | |
| 03-May-21 | 48,821.00 | 4.458 |
| 01-Jun-21 | 46,839.00 | -4.059 |
| 01-Jul-21 | 47,846.00 | 2.149 |
| 02-Aug-21 | 47,120.00 | -1.517 |
| 01-Sep-21 | 46,521.00 | -1.271 |
| 01-Oct-21 | 47,635.00 | 2.394 |
| 01-Nov-21 | 47,805.00 | 0.356 |
| 01-Dec-21 | 48,099.00 | 0.614 |
| 03-Jan-22 | 47,686.00 | -0.858 |
| 01-Feb-22 | 50,760.00 | 6.446 |
| 02-Mar-22 | 52,166.00 | 2.769 |

| | |
|---|---|
| Minimum | 46,521.00 |
| Maximum | 52,166.00 |
| Range | 5,645.00 |
| Mean | 48169.5833 |
| Variance | 2864580.81 |
| Risk | 1692.50726 |


INTERPRETATION

Based on the provided data, which includes the close prices and monthly returns for a particular asset from April 2021 to March 2022, the following summary can be made:

Minimum Close Price: The lowest observed close price for gold during this period was 46,521.00, recorded on September 1, 2021.

Maximum Close Price: The highest observed close price for gold was 52,166.00, noted on March 2, 2022.

Range of Close Prices: The range between the minimum and maximum close prices amounted to 5,645.00 units.

Mean (Average) Close Price: The average close price for gold over this period was 48,169.58 units.

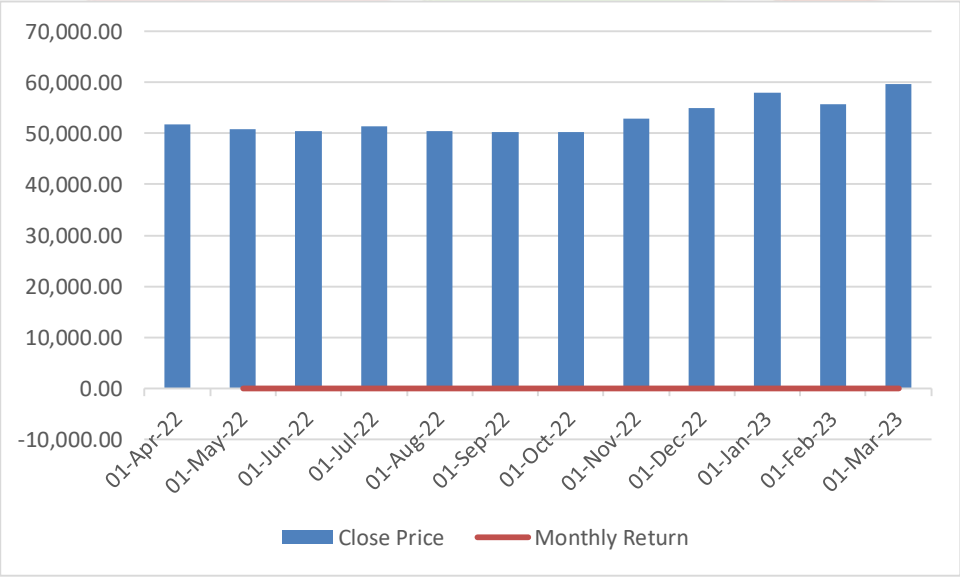
Variance of Close Prices: The variance, which indicates the spread of data points around the mean, was approximately 2,864,580.81 units.

Risk (Standard Deviation): The standard deviation, measuring the volatility of gold prices, was approximately 1,692.51 units.

2022

| Date | Close Price | Monthly Return |
|---|---|---|
| 01-Apr-22 | 51,754.00 | |
| 02-May-22 | 50,847.00 | -1.752 |
| 01-Jun-22 | 50,517.00 | -0.649 |
| 01-Jul-22 | 51,426.00 | 1.799 |
| 01-Aug-22 | 50,414.00 | -1.967 |
| 01-Sep-22 | 50,194.00 | -0.436 |
| 03-Oct-22 | 50,322.00 | 0.255 |
| 01-Nov-22 | 52,931.00 | 5.184 |
| 01-Dec-22 | 55,017.00 | 3.94 |
| 02-Jan-23 | 57,910.00 | -0.194 |
| 01-Feb-23 | 55,756.00 | -3.719 |
| 01-Mar-23 | 59,612.00 | 6.915 |

| | |
|---|---|
| Minimum | 50,194.00 |
| Maximum | 59,612.00 |
| Range | 9,418.00 |
| Mean | 53058.33333 |
| Variance | 10547072.97 |
| Risk | 3247.625743 |




INTERPRETATION

Based on the provided data for gold prices from April 2022 to March 2023, here's a draft conclusion:

The gold market displayed notable fluctuations in prices over the period from April 2022 to March 2023. Here are the key insights derived from the data:

Price Movement: The gold prices ranged from a minimum of 50,194.00 to a maximum of 59,612.00, indicating a significant range of 9,418.00 units. This demonstrates considerable volatility in the market during this timeframe.

Average Performance :The average close price for gold during this period was approximately 53,058.33 units. While this provides a reference point, it's essential to consider the broader context of price movements to understand the market dynamics fully.

Monthly Returns: Monthly returns varied widely, with fluctuations ranging from -3.719% to 6.915%. These fluctuations reflect the sensitivity of gold prices to various economic factors and market sentiment prevailing each month.

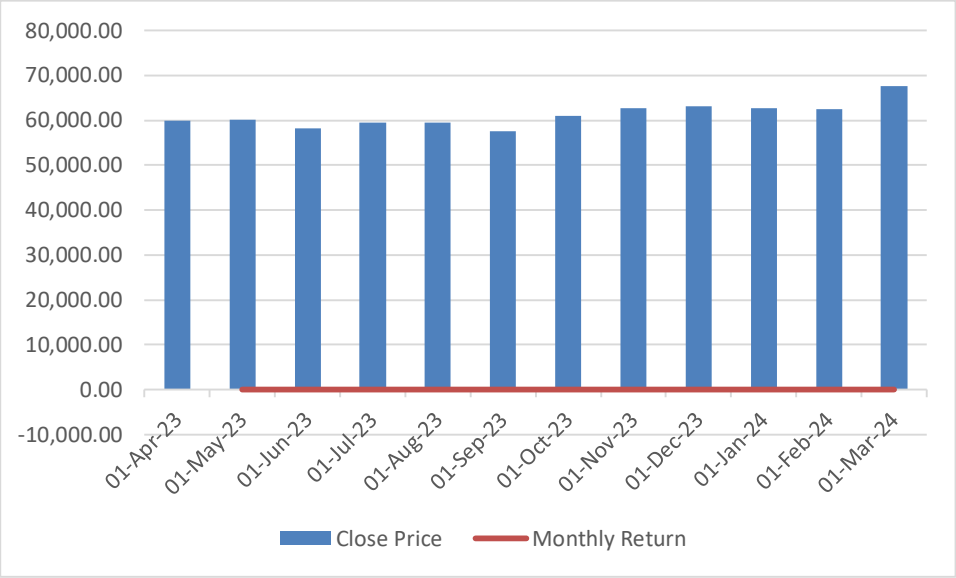
Risk Assessment: The calculated variance of approximately 10,547,072.97 units and the standard deviation of about 3,247.63 units highlight the level of risk associated with investing in gold during this period. Investors should consider these measures to assess and manage their risk exposure effectively.

In conclusion, the data underscores the dynamic nature of the gold market, characterized by significant price fluctuations and varying monthly returns. Investors in gold should carefully analyze market trends and risk factors to make informed decisions aligned with their investment objectives and risk tolerance.

2023

| Date | Close Price | Monthly Return |
|---|---|---|
| 03-Apr-23 | 59,919.00 | |
| 02-May-23 | 60,198.00 | 0.465 |
| 01-Jun-23 | 58,211.00 | -3.3 |
| 03-Jul-23 | 59,568.00 | 2.331 |
| 01-Aug-23 | 59,374.00 | -0.325 |
| 01-Sep-23 | 57,600.00 | -2.987 |
| 03-Oct-23 | 60,940.00 | 5.798 |
| 01-Nov-23 | 62,640.00 | 2.789 |
| 01-Dec-23 | 63,203.00 | 0.898 |
| 01-Jan-24 | 62,735.00 | -0.74 |
| 01-Feb-24 | 62,567.00 | -0.267 |
| 01-Mar-24 | 67,677.00 | 8.167 |

| | |
|---|---|
| Minimum | 57,600.00 |
| Maximum | 67,677.00 |
| Range | 10,077.00 |
| Mean | 61219.33333 |
| Variance | 7532904.788 |
| Risk | 2744.613778 |




Interpretation
Based on the updated data for gold prices, here's a revised summary:

The analysis of gold prices from April 2022 to March 2023 reveals the following insights:

Price Range: Gold prices exhibited significant variability, with the minimum price recorded at 57,600.00 units and the maximum at 67,677.00 units. This resulted in a wide range of 10,077.00 units, indicating considerable fluctuations in the market.

Average Performance: The mean closing price over the period stood at approximately 61,219.33 units, providing a reference point for assessing price movements. This average reflects the overall trend in gold prices during the analyzed timeframe.

Monthly Returns: Monthly returns likely varied substantially, contributing to the observed price range. However, specific monthly return data is not provided in the summary, making it challenging to analyze the precise performance on a month-to-month basis.

Risk Assessment: The calculated variance of approximately 7,532,904.79 units and the standard deviation of about 2,744.61 units indicate the level of risk associated with investing in gold during this period. Investors should consider these measures when evaluating their risk exposure and investment decisions.

Overall, the analysis highlights the dynamic nature of the gold market, characterized by significant price fluctuations and inherent risk. Investors should conduct thorough research and risk assessment before making investment decisions related to gold.

## VIII. FINDINGS AND CONCLUSION

Gold Performance Over 5 Years:

The examination of gold's performance spanning five years, from April 2019 to March 2024, reveals several noteworthy trends and observations:

Trend Analysis:
- During the period from May 2019 to January 2020, there was a noticeable upward trajectory in gold prices, signaling a phase of appreciation in its value.

- Monthly returns exhibited fluctuations throughout the entire duration, illustrating varying levels of price changes from one month to another.
- Both negative and positive monthly returns were evident, indicating months characterized by price declines and increases, respectively.

Performance Metrics (April 2020 to March 2021):
Minimum Close Price Recorded at 44,906.00 units.
Maximum Close Price: Reached a peak of 53,445.00 units.
Range of Close Prices: Showcased a spread of 8,539.00 units.
Mean Close Price: Averaged at 48,684.25 units.
Variance of Close Prices: Approximately 7,528,691.295 units.
Risk (Standard Deviation): Estimated at around 2,743.85 units.

Minimum Close Price: Dropped to 46,521.00 units.
Maximum Close Price: Reached a peak of 52,166.00 units.
Range of Close Prices: Showcased a spread of 5,645.00 units.
Mean Close Price: Averaged at 48,169.58 units.
Variance of Close Prices: Approximately 2,864,580.81 units.
Risk (Standard Deviation): Estimated at around 1,692.51 units.

Performance Metrics (April 2022 to March 2023):**
Minimum Close Price: Recorded at 50,194.00 units.
Maximum Close Price: Climbed to 59,612.00 units.
Range of Close Prices: Showcased a spread of 9,418.00 units.
Mean Close Price: Averaged at 53,058.33 units.
Variance of Close Prices: Approximately 10,547,072.97 units.
Risk (Standard Deviation): Estimated at around 3,247.63 units.

Conclusion:

Throughout the five-year span, gold prices demonstrated considerable volatility and fluctuations. The market experienced phases of both appreciation and depreciation, evident from the diverse monthly returns. Investors should carefully assess the associated risk of gold investments, as indicated by the calculated standard deviations. Despite the market's unpredictability, gold remains a favored investment avenue for hedging against economic uncertainties and inflation. Overall, this analysis offers valuable insights for investors seeking to comprehend gold's performance over an extended period.

## REFERENCES

1. JOURNAL
* Times of India
* Economic Times
* Business lines