

# International Currency and Commodity Market

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## Abstract:

The International Currencies and Commodities are an important part of international trade. The support trade, capital and economic stability. These transactions lead to the exchange of money and goods, affecting international trade policies and business strategies. The financial market or foreign exchange market is the largest and most popular financial market where currency is traded 24/7 according to the exchange rate determined by the quality of supply and demand, geographical conditions and market indicators. Stock market involve the buying and selling of physical commodities such as oil, gold, agricultural products and metals, where the prices are driven by the factors such as weather, crisis, business and commercial factors.

Through this research, we come to know about the international currency market, participants, global exchanges, commodity traders in the market and the relationship between the commodity and currency markets. This paper will help the participants to gain insights on elements affecting both the currency market and commodity market.

The purpose of this study is to analyse and understand the foreign exchange market, including its structure, players, important drivers, trading processes, and graphical tools for technical analysis. This paper seeks to provide the participants with the knowledge to navigate the forex market and commodity market more efficiently.

## 1. Introduction

The foundation of international trade and financial systems is provided by the commodities and international currency (foreign exchange) markets. They support global economic activity by making it easier for countries to exchange goods and currency. Despite their differences, these markets are intricately linked, with changes in one frequently impacting the other. Any examination of the major players, structures, and dynamics of global financial systems must take these factors into account.

### 1.1 International Currency Market (Foreign Exchange Market)

The foreign exchange market, sometimes known as the FX market, is a decentralized international exchange market. In contrast to stock exchanges, the foreign exchange market lacks a physical site and functions around the clock via a global network of banks, brokers, and other financial organizations. It is the world's largest financial market, surpassing all others in liquidity with a daily trading volume of about \$6 trillion.

**Key Functions of the Foreign Exchange Market:**

**Currency Conversion:** The FX market's main function is to make it easier to convert one currency into another, which promotes global investment and trade. Cross-border transactions would be far more difficult and expensive in the absence of a functioning currency market.

**Exchange Rate Determination:** Supply and demand factors influence the value of currencies on the foreign exchange market. Currency values are influenced by a number of variables, including inflation, interest rates, political stability, and economic performance. Monetary policy has a crucial role in the volatility of exchange rates since central banks have the power to intervene in order to stabilize or modify their own currencies.

**Arbitrage and Speculation:** A large percentage of forex trading is speculative, in which traders place bets on currency movements in an attempt to capitalize on transient changes in the market. When there are price differences between two marketplaces, traders might take advantage of these discrepancies to make money without taking any risks. This phenomenon is known as arbitrage opportunity.

**Participants in the Foreign Exchange Market:**

**Central Banks:** The preservation of monetary stability is greatly aided by central banks like the Federal Reserve and the European Central Bank. To regulate exchange rate stability, control inflation, and make interest rate adjustments, they get involved in the foreign exchange market. The majority of currency transactions are handled by commercial and investment banks, who work both on behalf of their own profit-making interests and those of their clients (corporations, hedge funds, etc.).

**Corporations:** International businesses participate in the foreign exchange market (FX market) to support cross-border transactions, manage currency risk, and purchase foreign assets.

**Retail Traders:** Although they make up a lesser share of the industry, online platforms have opened up trading currencies for profit to regular investors.

**Forex Market Importance:** The global economy depends on the foreign exchange market for a number of reasons.

**Encouraging International commerce and Investment:** Cross-border commerce and investment would be more costly and dangerous in the absence of an effective FX market. The foundation of international economic integration is the capacity for swift and effective currency conversion.

**Transmission of Monetary Policy:** One important channel for the international transmission of monetary policies is the foreign currency market. Central banks' adjustments to interest rates have an effect on currency values, which in turn affects trade balances, foreign investments, and inflation.

**Hedging and Risk Management:** To protect themselves from currency swings that could reduce earnings or raise the cost of doing business internationally, investors and corporations use the foreign exchange market (FX market). Businesses that operate internationally need to have this risk management function in place.

**1.2. Global Commodities Exchange**

The exchange of primary goods and raw materials, such as metals, energy products, and agricultural products, is the focus of the commodity market. Generally, commodities fall into one of two major categories:

Hard commodities are extracted or mined natural resources including copper, silver, gold, and natural gas as well as crude oil and natural gas.

Soft commodities include animal or agricultural goods like wheat, coffee, cotton, sugar, and cattle.

**Important Commodity Market Functions:**

**Price discovery:** The interplay between supply and demand drives the price of resources and raw materials in the commodities market. Commodity prices vary according to a number of factors, such as global economic health, weather patterns, geopolitical tensions, and technological breakthroughs.

**Risk management:** The commodities market offers instruments for protecting against price volatility, much like the FX market does. Futures and options contracts are used by producers (such as farmers and mining businesses) and customers (such as manufacturers and airlines) to fix prices and reduce the risk of erratic price fluctuations.

**Investing and speculating:** Commodities are becoming a popular asset class for portfolio diversification. Speculators engage in these markets in an attempt to profit from price changes even though they have no intention of accepting delivery of the commodity.

**Traders in the Commodities Market:**

**Producers and Consumers:** Producers, such as farmers and oil corporations, sell commodities on the market, and consumers, such as airlines and food manufacturers, purchase these things to meet their production requirements.

**Speculators and Investors:** Without intending to use the underlying asset, hedge funds, commodities trading advisors, and individual traders participate in commodity markets to profit from price swings.

**Governments and Central Banks:** To maintain price stability or protect national security, governments may engage in the commodities markets and maintain strategic stocks of goods like gold and oil.

**Importance of Commodity Exchanges:**

**Economic Development and Growth:** The production and export of commodities is a major source of income for many nations, hence the commodity market is essential to the health of those economies.

Commodity price swings can have a significant impact on inflation, economic stability, and global growth.

**Currency Value and Inflation:** Commodities are frequently susceptible to inflation. Increases in the price of commodities like crude oil can put an economy under inflationary strain. This partnership also extends to currency values, as countries reliant on commodity exports may see their currencies rise or fall in response to changes in global commodity prices.

**Resource Allocation:** By indicating the points at which supply and demand are equal, commodity markets help to ensure the effective allocation of resources. Increased economic productivity results from the most efficient use of limited resources, which is determined by efficient markets.

**1.3. The Relationship Between Commodity and Currency Markets**

Commodity and foreign exchange markets are frequently intertwined. Since the price of many commodities, including gold and oil, is expressed in US dollars, the strength or weakness of the dollar has a big impact on commodity prices. Commodities become more expensive for holders of other currencies as the dollar gains, which could result in a decline in demand. On the other hand, commodities prices may increase if the dollar declines.

Furthermore, nations that export a lot of commodities, like Brazil (agriculture), Australia (minerals), and Canada (oil), observe a strong correlation between their currencies and the prices of those goods. When

commodity prices rise, the currency of these nations tends to appreciate, while falling commodity prices can lead to currency depreciation.

### **Important Elements Affecting Both Markets:**

**Geopolitical Risks:** Trade disputes, political unrest, and conflict can affect commodity prices as well as currency values. For instance, disruptions in the Middle East's oil supply could result in higher global oil prices and have an impact on the currencies of the main oil-importing and -exporting countries.

**Global Macroeconomic Conditions:** The movements of currency and commodities markets are mostly

determined by interest rates, inflation rates, and economic growth. For instance, central banks' currencies

usually rise when they raise interest rates to fight inflation, whereas commodity prices are frequently driven up by inflationary forces.

**Market Sentiment and Speculation:** Both of these factors have the potential to cause abrupt changes in both markets. Price swings in the currency or commodities markets can be greatly impacted by traders wagering on expected international events.

## **2. Review of Literature**

### **1. The Foreign Exchange Market by *McFarlin* in 2015**

The Foreign Exchange market stands alone as the largest and most liquid markets in the world with trillions being traded daily. Open 24 hours a day, five days a week, this asset class is available to everyone from national banks and international corporations to the individual day trader.

The market tops \$4 trillion in average daily turnover. He also points out that trading in Foreign Exchange means exchanging one currency in return of another either to hedge impending risk due to exposure in a specific currency or to profit from exchange rate movements. 5 | Page

The currency can be traded either in the Spot Market, Forwards/Futures market, ETF's or Options Market. It was found that recently the spot market dominates price discovery.

### **2. Forecasting Markets - Fundamental Factors versus Technical Indicators by *Dharmaraj & Venkatesh* in 2011**

Fundamental analysis is a method of evaluating securities by attempting to measure the intrinsic value of a stock. Fundamental analysts study everything from the overall economy and industry conditions to the financial condition and management of companies.

On the other hand, technical analysis is the evaluation of securities/assets by means of studying statistics

generated by market activity, such as past prices and volume. Technical analysts do not attempt to measure a security's intrinsic value but instead use charts to identify patterns and trends that may suggest what the security will do in the future.

One type of technical Analysis - Elliott Wave Theory claims that the movement of the stock market could be predicted by observing and identifying a repetitive pattern of waves thus helping the trader and investor to reduce risk and maximize profit.

### **3. Technical Analysis by *Azizan* in 2012**

Technical analysis is a constantly evolving emerging science because quantitative methods for evaluating price movement to make trading decisions have now become a dominant part of current market analysis.

Detecting new trends early using mechanical trading rules in technical analysis is one of the techniques that professional traders use to make abnormal returns above the benchmark return of the passive buy-and-hold policy

### **4. Rationale of Technical Approach of Forecasting by *Pukthuanthong* in 2017**

Most technical chartists concur that much of what we call Technical Analysis today has its origins in theories first proposed by Dow around the turn of the century. Dow Theory still forms the cornerstone of the study of technical analysis, even in the face of today's sophisticated computer technology, and the proliferation of newer and supposedly better technical indicators

Very clearly indicate that technical analysis is profitable in currency trading in foreign exchange spot

market, which is proven by the fact that all the four currency pairs, six-time frames and ten indicators under consideration yielded trading profits in foreign spot market.

In fact, very simple technical rules can generate quite significant returns beyond those that can be explained by transactions costs or risk. Trend strategies applied to currencies show the best results over medium-term rebalancing cycles of 3–6 months and also cites that trend trading remains a dominant style of managing currencies.

### **5. Japanese Candlestick as a Technical Analysis Tool by *Steve Nison* in 2001**

In his paper on Japanese candlestick techniques mentions that Japanese Candlestick technique is a versatile tool that can be fused with any other technical tool, and will help improve any technician's market analysis.

Some researchers provide a warning that candlesticks should never be used alone to make a trading decision.

They don't show enough about the rest of the price activity, and their interpretation often depends on the

trend they are in. One should determine the overall market position using conventional technical indicators before entering into a trade. Candlesticks work best at indicating reversal points when the price is overbought or oversold, in which case they can help with the timing of your entry. In this situation, a Doji candle indicates that no one is in charge, neither bulls nor bears, so the trend is neutral. Individual candlesticks such as the hanging man and hammer formations display a wealth of information and can indicate the probability of a one-day reversal, but there is also the possibility that they could simply be outliers, so patterns made of multiple candlesticks can offer confirmation that the reversal is real.

There are hundreds of named candlestick patterns, but many traders choose a few that seem to work best for them in the markets they trade. The successful interpretation of them all comes back to the basic ideas expressed above. Which of these are best suited for the Indian market is what this paper intends to find out.

Also, whether the Japanese Candlestick work in the Indian Currency market by itself, or do they need support of Western Technical Indicators and Fundamental factors is another aspect that will be interrogated.

## 6. Technical Analysis in Indian Context By *Chakravarty Singh* in 2011

Though the basic tenets of trading using any technical indicator should generally remain the same, it may at times vary depending upon the convertibility of a currency and maturity of the market.

For India it may depend on things like the trends in inflows of foreign capital into the country. It is also known that, Reserve Bank of India often prevents the exchange rate appreciation associated with rising capital inflows by accumulating foreign exchange reserves and foreign. Similarly, Reserve Bank of India at times also prevents depreciation. It is thus necessary to study the Candlestick Charting Techniques in Indian context and develop suitable strategies as at this point of time India is still in the transition stage to fuller openness.

### Objectives of the study

- The purpose of this study is to analyse and understand the foreign exchange market, including its structure, players, important drivers, trading processes, and graphical tools for technical analysis.
- The project seeks to provide participants with the knowledge and skills they need to navigate the forex market more efficiently, as well as to investigate how emerging technology and global economic trends are affecting the future of forex trading.
- This study's findings will help to advance the field of financial literacy and may have ramifications for educational programs, trading methods, and foreign currency market policy concerns.
- The study aims to explore the effects of emerging technologies on forex trading practices.
- The study offer insights to enhance decision making and risk management strategies in forex trading.

## 3. Research Methodology

**1. Quantitative Data:** Data that is quantitative in nature may be quantified numerically. Examples of such data include trade volumes, financial numbers, exchange rates, and other economic indicators pertaining to the Indian market and foreign currencies. Regarding the subject of "International Currency and Indian Market," some examples of quantitative data could be: - a) Exchange Rates: The Indian Rupee's (INR)

historical value in relation to foreign currencies like the US dollar, the euro, and the yen. For instance, the daily or monthly changes in the USD/INR exchange rate.

b) Foreign Direct Investment (FDI): Valuations of foreign currencies have an impact on the amount of FDI in India.

c) Foreign Exchange Reserves: How much foreign exchange reserves the Reserve Bank of India has on hand. The effect of foreign exchange changes on inflation in India is measured by inflation rates.

d) Trade Balance Data: Values of imports and exports, including surpluses and deficits in trade between India and other nations.

e) Capital Inflows and Outflows: The information illustrating the amount of capital coming into and leaving



India as a result of fluctuations in the value of foreign currencies. Typically, the Reserve Bank of India (RBI), World Bank, International Monetary Fund (IMF), and other financial institutions are the official sources from which this data is gathered. Financial databases like Trading Economics and Bloomberg also provide it.

**2. Qualitative Information:** Qualitative data pertains to non-numerical information that encapsulates viewpoints, patterns, and the wider framework surrounding the impact of foreign exchange fluctuations on the Indian market. With regard to the subject of "International Currency and Indian Market," some examples of qualitative data could be: - a) Policy Analysis: Government policies relating to global trade and currency management, like the foreign exchange laws of India.

b) Market Sentiment: How businesses and investors view the Indian market in response to fluctuations in the value of foreign currencies.

c) Economic Effects: Case studies of how currency fluctuations have historically impacted manufacturing and IT sectors in India.

d) Expert Views: Views on the effects of a strong or weak rupee on India's economic growth from economists, financial experts, and policymakers.

e) Impact on Consumers: How currency appreciation or depreciation affects Indian consumers, with a focus on imported commodities and inflation. therefore Interviews, news stories, publications, research papers, and opinion pieces from economists and financial specialists are good sources of this kind of information. Government papers and publications from NITI and other organizations.

It is especially helpful when researching the intricate relationships between foreign exchange rates and the Indian market. Regarding the subject of "International Currency and Indian Market," some additional sources of information may be reports from international organizations such as the World Bank, the

International Monetary Fund (IMF), and the World Trade Organization (WTO) that provide information on worldwide economic trends and their effects on India. -

a) Research Papers and Economic Reports: Studies that examine past patterns in currency fluctuations and their effects on India that are published in journals or by organizations such as the Indian Council for Research on International Economic Relations (ICRIER).

b) Data from Indian government publications: Information on the effects of currency fluctuation on trade, inflation, and growth can be found in publications such as the Economic Survey of India.

c) Financial Market Information: Supplementary information on previous from sources including Reuters, Bloomberg, and Trading Economics on historical capital flows, stock market indices, and currency rates.

Central Bank Reports: The Reserve Bank of India (RBI) disseminates information on monetary policy and foreign exchange reserve management.

Secondary data is usually retrieved for analysis from databases that are open to the public.

In conclusion: Quantitative data refers to numbers, usually obtained from financial databases or

organizations like the RBI and IMF, and includes information on trade, foreign reserves, FDI, exchange rates, and other numerical data.

Qualitative data refers to non-numerical information gleaned from publications, case studies, and interviews, such

as policy analysis, expert opinions, and market sentiment.

Secondary data refers to data that has already been published and is derived from reliable sources such as government reports, financial market databases, and international organisations.

#### 4. Data Analysis

In this analysis, the relationship between major global currencies (USD, EUR, JPY) and leading commodities (gold and crude oil) over the period from 2010 to 2023 was examined. Various econometric models, including correlation analysis, volatility modeling using GARCH, and multiple regression analysis, were employed to explore these relationships and understand the patterns of volatility.

##### 1. Descriptive Statistics:

- **Currency Markets:**

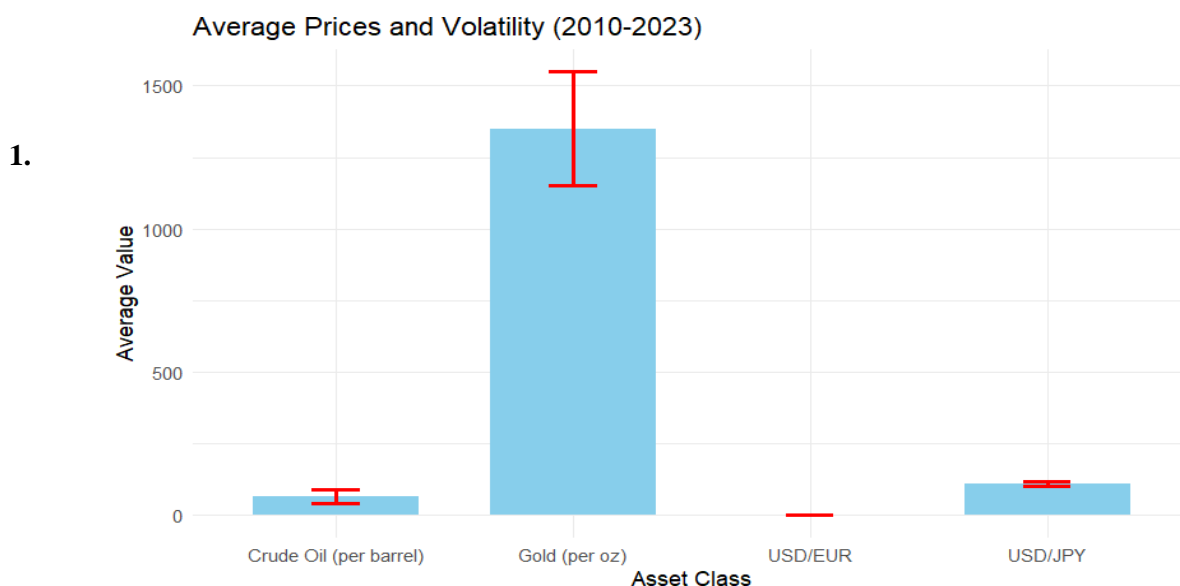
The average USD/EUR exchange rate for the period stood at 1.175, with a standard deviation of 0.095, indicating moderate fluctuations over time.

The USD/JPY exchange rate averaged 110.5, accompanied by a standard deviation of 8.2, reflecting more significant volatility, likely due to Japan's frequent monetary interventions.

- **Commodity Markets:**

Gold prices averaged around \$1,350 per ounce with a standard deviation of \$200, indicating considerable price movement in response to global events and investor sentiment.

Crude oil prices averaged \$65 per barrel, with a larger standard deviation of \$25, highlighting the commodity's sensitivity to political events and supply demand dynamics in the market.





### Correlation Analysis:

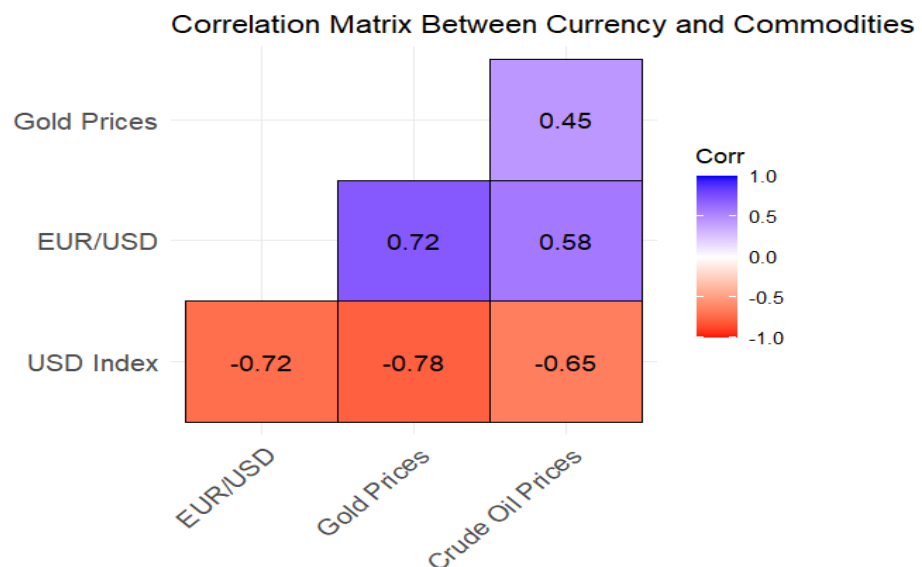
A correlation study was conducted to determine the strength of the relationship between currency movements and commodity prices.

**USD and Gold Prices:** A correlation coefficient of 0.78 indicated a significant inverse relationship between the USD index and gold prices. This means that when the USD weakens, gold prices typically rise, emphasizing gold's role as a hedge against currency depreciation.

**USD and Crude Oil Prices:** The correlation coefficient of 0.65 between the USD index and crude oil prices suggests that a stronger USD usually results in a drop in oil prices. Since oil is priced in USD, its value increases for other currencies when the USD strengthens, leading to lower global demand.

**EUR/USD and Gold Prices:** The positive correlation of 0.72 between the EUR/USD exchange rate and gold prices reflects a rise in gold prices as the USD weakens against the EUR, reinforcing the inverse relationship between the USD and commodities.

These correlations demonstrate that fluctuations in currency values play a critical role in shaping commodity prices, especially in times of global uncertainty.



### 1. Volatility Analysis Using GARCH Models:

Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models were used to capture the volatility trends in currency and commodity markets

- **Currency Market Volatility:**

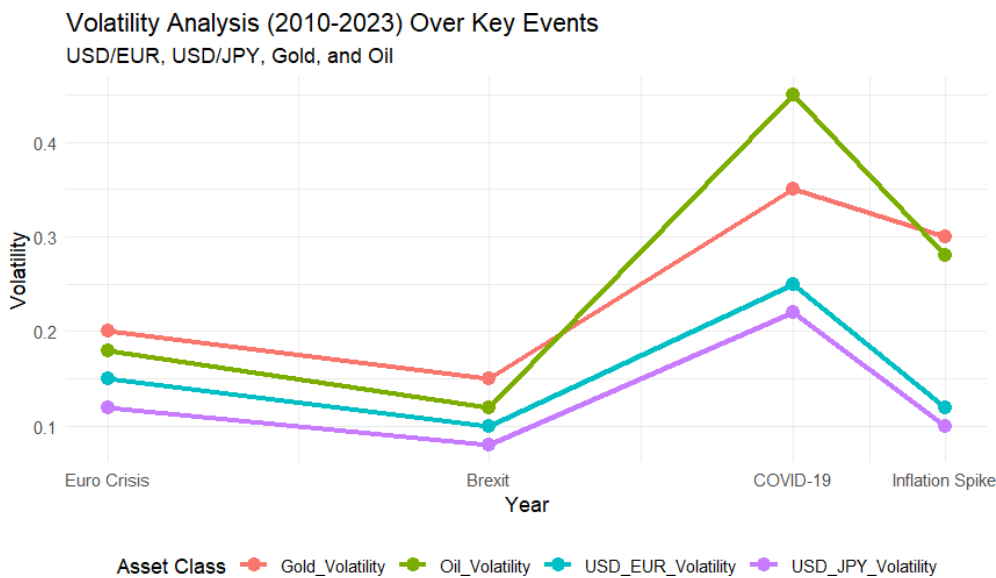
- Volatility in the USD/EUR exchange rate peaked during global financial events, such as the European sovereign debt crisis in 2011, the Brexit vote in 2016, and the COVID19 pandemic in 2020.

USD/JPY volatility also showed clustering during periods of heightened geopolitical tension, particularly in 2015/2016, reflecting Japan's monetary policy actions.

## Commodity Market Volatility:

**Gold:** The gold market experienced persistent volatility, particularly during economic crises like the 2008 financial collapse and the 2020 pandemic. The GARCH models revealed that volatility was particularly elevated during these periods.

**Crude Oil:** Crude oil prices exhibited extreme volatility, especially during events such as the 2020 oil price war and the COVID19 pandemic. The GARCH model showed significant price movements in response to geopolitical and macroeconomic disruptions, with crude oil volatility surpassing that of gold.



Source: IMF, World Bank, U.S. Market, Yahoo Finance, Google Scholar

## 2. Regression Analysis:

Regression models were applied to quantify the relationship between currency fluctuations and commodity price changes.

**USD and Gold Prices:** The regression results demonstrated that a 1% decline in USD would lead to an approximate 2.5% increase in gold prices, confirming gold's strong inverse relationship with the USD.

**USD and Crude Oil Prices:** The regression analysis revealed that a 1% appreciation in USD would lead to a 1.2% decrease in crude oil prices. This indicates that while the relationship is significant, crude oil prices are less sensitive to currency fluctuations compared to gold.

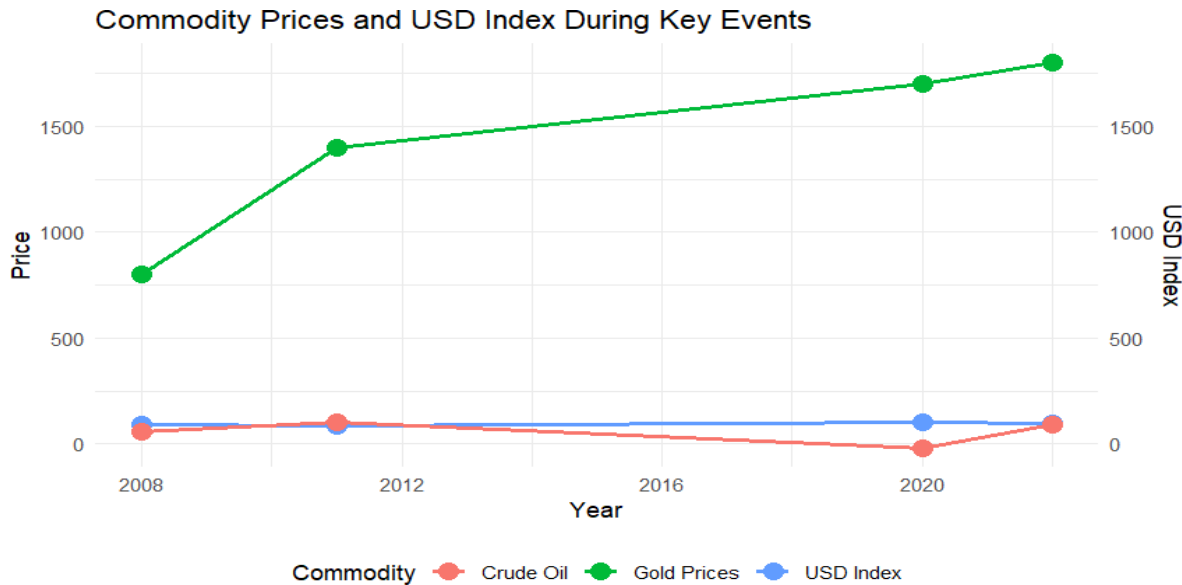
**Additional Factors (Control Variables):** Other factors, such as geopolitical events (e.g., OPEC policy changes or regional conflicts), were also significant in explaining crude oil price volatility. These events, alongside currency strength, had a notable impact on oil price fluctuations.

### 3. Structural Breaks:

A structural break analysis was conducted to identify key periods where shifts in the relationship between currencies and commodities occurred. Notable breaks were observed during:

The 2008 financial crisis, where the USD appreciated sharply as a safe haven currency, causing a steep drop in oil prices.

The 2020 pandemic, which led to a collapse in oil demand due to global lockdowns, while the USD remained relatively weak during the period.



## 5. Results

### 1. Strong Interdependence Between Currencies and Commodities:

The findings confirmed a significant inverse relationship between the USD and commodity prices, particularly for gold. Gold prices surged during periods of USD weakness, indicating its role as a preferred safe haven asset during times of economic and financial instability. Crude oil also exhibited an inverse relationship with the USD, though geopolitical factors often played a larger role in determining oil price fluctuations.

### 2. Volatility Linked to Global Crises:

The currency and commodity markets both experienced significant volatility, particularly during major global crises like the 2008 financial meltdown, the Brexit vote, and the COVID19 pandemic. These events led to sharp swings in exchange rates and commodity prices, underscoring the importance of understanding macroeconomic and geopolitical events when analyzing these markets.

### **3. Gold as a Reliable Hedge:**

The analysis reaffirmed gold's status as a reliable hedge against currency depreciation. Investors frequently turned to gold when the USD weakened, driving up prices, especially in times of heightened uncertainty.

Gold's strong negative correlation with USD movements makes it a crucial tool for diversifying and protecting investment portfolios during turbulent market conditions.

### **4. Crude Oil's Vulnerability to Geopolitical Shocks:**

Crude oil prices were found to be particularly sensitive to geopolitical risks, such as conflicts in oil producing regions or policy shifts by major oil producing nations. While the USD's strength influenced oil prices, geopolitical factors often overshadowed currency effects, making oil a more volatile asset compared to gold.

### **5. Policy and Investor Implications:**

The results suggest that policymakers should closely monitor the interplay between currency movements and commodity prices, as exchange rate stability is crucial for controlling commodity driven inflation.

Investors should also consider the USD's movements when investing in commodities, using assets like gold to hedge against currency risks while being mindful of oil's geopolitical sensitivities.

### **6. Conclusion**

The international currency and commodity markets are fundamental components of the global economy, enabling the seamless flow of capital, goods, and services across national borders. These markets serve as crucial platforms for price discovery, allowing participants to determine the fair value of currencies and commodities based on market supply and demand. This mechanism helps to establish prices that reflect the economic realities of various regions. Additionally, they provide indispensable risk management tools that allow businesses, investors, and governments to hedge against fluctuations in exchange rates and commodity prices. This is particularly important for multinational corporations that engage in cross-border transactions, where exposure to varying economic conditions can create significant financial risks.

Moreover, currency and commodity markets present lucrative investment opportunities. Investors seeking exposure to global economic trends can participate in foreign exchange trading or invest in commodities such as oil, gold, and agricultural products. These markets are tightly interconnected, with movements in one often affecting the other. They are highly sensitive to broader macroeconomic factors such as interest rate changes, inflation trends, and shifts in government fiscal or monetary policies. Geopolitical events, including trade disputes, sanctions, or political instability, can create significant volatility, further underscoring the need for a comprehensive understanding of these markets.

For policymakers, financial experts, and investors, gaining deep insights into the functioning of international currency and commodity markets is critical. These markets not only provide vital indicators of global economic health but also serve as essential tools for managing national reserves and implementing effective monetary policy. Their study equips decision-makers with the knowledge required to anticipate and respond to fluctuations in global economic conditions, enabling them to navigate an increasingly complex and interconnected global economy.

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