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A Study on Oil, Gold, Us Dollar and Stock Market Interdependencies: A Global Analytical Insight

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ABSTRACT

This paper explores the interdependencies among oil prices, gold prices, the US dollar exchange rate, and stock markets on a global scale. Understanding these relationships is crucial for policymakers, investors, and economists due to their significant impact on global financial stability and economic performance. Oil prices play a pivotal role in global economics, affecting inflation, production costs, and consumer spending. Gold is traditionally seen as a safe-haven asset, inversely related to market volatility and currency fluctuations. The US dollar serves as the world's primary reserve currency, influencing international trade and financial flows. Stock markets are vital indicators of economic health and investor sentiment. Analyzing these interconnections involves econometric modeling, time-series analysis, and examining macroeconomic indicators. Factors such as geopolitical events, monetary policy decisions, and global economic trends contribute to the dynamic nature of these relationships.

This study aims to provide a comprehensive analytical insight into how fluctuations in oil and gold prices, movements in the US dollar exchange rate, and shifts in stock market indices collectively influence global economic conditions. By identifying these interdependencies, stakeholders can make informed decisions to mitigate risks and capitalize on opportunities in the interconnected global financial system.

Keywords*: stock market, global scale, economic performance, inflation.*

INTRODUCTION

The global framework of our study offers valuable insights for various stakeholders, including investors, managers, and governmental executives. Investors can leverage our findings to make informed decisions regarding portfolio diversification and risk management strategies. Managers can utilize the insights to optimize resource allocation and strategic planning efforts, considering the implications of global market dynamics on their operations. Additionally, governmental executives can draw upon our research to formulate policies that promote economic stability and facilitate international trade and investment. The occurrence of unprecedented events and the scarcity of liquid financial assets have prompted investors to reevaluate their perceptions of market risk, leading to a heightened interest in precious metals and energy markets.

The sustained increase in global market interdependence and international financial integration has accelerated the financialization process of commodity markets, as noted. The stock and foreign exchange markets have become more sensitive to commodity prices. Moreover, unprecedented events and a scarcity of liquid financial assets have prompted investors to reassess the risks associated with equity investing, leading to a heightened interest in precious metals and energy markets. Commodity markets have thus garnered international attention, serving not only as a "safe haven" for hedging against economic and financial risk but also as an alternative investment offering greater certainty during periods of financial market instability, as emphasized. Oil and gold, being among the most widely traded commodities, have emerged as key economic indicators with significant popularity.

Commodity markets have emerged as focal points for international investors seeking not only safe havens but also alternative investments offering a greater sense of certainty during periods of turmoil. With the financialization process of commodity markets, assets such as oil, gold, the US dollar, and stock prices have gained further diversification properties, shared similar statistical characteristics and became correlated with each other and with the outlook of the global business cycle. These price dynamics serve as vital indicators of market expectations regarding the future state of the world economy and investment horizons, reflecting investors' sentiments and outlooks. Understanding the interplay and co-movements of these prices holds great significance for portfolio managers and policymakers. The aim of this study is to elucidate the interdependent relationships among all markets, providing a comprehensive analytical insight and highlighting potentially crucial direct and indirect interactions.

Our investigation encompasses all four markets simultaneously, presenting a holistic view of their interrelationships. Operating within a global framework, we rely on international data to ensure a comprehensive analysis. Specifically, our study incorporates the Brent oil price, gold price, broad trade-weighted US dollar index, and the international stock market index. This approach circumvents country-specific effects that may arise from domestic sectoral or industrial specialization, foreign exchange regimes, purchasing power parity (PPP), inflationary economies, financial development, and domestic market sizes. The utilization of a simultaneous equation approach enables us to address numerous inquiries regarding bilateral interactions while controlling for both direct and indirect effects

The study investigates the interdependencies among oil, gold, US dollar, and stock prices, aiming to discern direct and indirect linkages among them. Utilizing a methodology based on simultaneous equations systems, the analysis covers the period from 1995 to 2015. The authors initially seek theoretical insights by examining causal bilateral relationships and multilateral interactions.

REVIEW OF LITERATURE

Vivian and Wohar (2012), Chkili et al., (2014)

Due to the financialization process of commodity markets, oil price, gold price, the US dollar, and stock prices have gained additional diversification properties, exhibiting similar statistical characteristics and other common traits.

Caballero et al., (2008)

Unforeseen disruptive events and a scarcity of liquid financial assets have prompted investors to reevaluate their perceptions of the risks associated with equity investments. This has sparked a notable interest in precious metals and energy markets.

John Wiley & Sons Inc., (1991)

"Intermarket Technical Analysis Trading Strategies for the Global, Stock, Bond, Commodity, and Currency Markets" focuses primarily on exploring the connections between various assets.

Scott et al. (2016)

Technical analysis is hailed as revolutionary within the realm of technical theories, particularly for intermarket analysis. Its significance lies in its ability to facilitate seamless transitions between markets and effortless comparison of charts, empowering traders with valuable insights across multiple financial instruments.

Yousefi and Wirjanto (2003)

The propose a dynamic equilibrium model wherein changes in terms of trade and unstable relationships between quantities are primarily driven by fluctuations in oil prices. They assert that oil prices are intricately influenced by the movements of the U.S. dollar and exchange rates, highlighting the interconnectedness of these variables in shaping global economic dynamics.

Akbar et al.

The research confirmed that, in times of recession, prices of stocks and the value of the rupee go down while prices of gold go up, and vice versa. This indicates the role of gold as a safe haven and the place to hide in times of adverse volatility, both in the stock and foreign exchange markets of Pakistan. This forms the basis for considering gold as a good hedging instrument and means of diversification by investors seeking stability during times of market turbulence.

RESEARCH METHODOLOGY

RESEARCH GAP

Extensive research has explored the interdependencies among oil, gold, and stock markets, several significant gaps persist. One notable gap lies in the dynamics of these relationships over time, particularly during periods of economic turbulence or geopolitical uncertainty. While many studies have analyzed static relationships, there is a need for research that delves deeper into how these interactions evolve dynamically. Addressing these gaps could provide deeper insights into the nature and dynamics of the interrelationships between oil, gold, and stock markets, enhancing our understanding of the global financial system.

NEED OF THE STUDY

The study of interdependencies between oil, gold, and stock markets is crucial for several reasons. These markets play significant roles in the global economy, influencing investment decisions, business strategies, and government policies worldwide. Understanding the relationships between them is essential for investors, policymakers, and financial analysts to make informed decisions and mitigate risks effectively. The fluctuations in oil prices can have profound impacts on inflation, economic growth, and consumer spending, making it essential to examine how these changes affect gold and stock markets and vice versa. Additionally, gold is often considered a safe-haven asset during times of economic uncertainty, but its relationship with oil and stock markets under different market conditions requires thorough investigation.

PURPOSE OF THE STUDY

The purpose of studying the interdependencies between oil, gold, and stock markets is multifaceted. It aims to provide insights into the complex interactions among these key assets, which are integral to the global economy. Understanding their relationships can aid investors, policymakers, and financial institutions in making informed decisions and managing risks effectively. The study seeks to elucidate how fluctuations in oil prices, often influenced by geopolitical events and economic factors, impact gold and stock markets, and vice versa. By examining the interdependencies between these markets under various market conditions, the study can contribute to the development of more robust investment strategies and risk management techniques.

PROBLEM STATEMENT

The problem statement lies in the lack of comprehensive understanding regarding the intricate interdependencies between oil, gold, and stock markets. Despite numerous studies exploring these relationships, several gaps persist. Existing research often focuses on static correlations, overlooking the dynamic nature of market interactions over time. The limited attention has been given to regional variations in these relationships, hindering the development of context-specific investment strategies.

OBJECTIVES OF THE STUDY

1. To analyze the relationship between oil, gold and stock market and trends in their interdependencies under economic conditions.
2. To investigate the impact of interest rate and exchange rates in between relationship of oil, gold and stock market interdependencies.

RESEARCH DESIGN

The research design is a systematic to guide a research project. It involves employing scientific methods to investigate a phenomenon and gain new knowledge by relating it to existing information.

RESEARCH TYPE

Descriptive in nature

Sampling Technique: Random sampling technique was utilized for the purpose of the study.

Random Sampling: Random sampling is a technique where participants are selected from a population in a purely random manner, ensuring that each member has an equal chance of being included.

DATA COLLECTION METHODS

Primary data are those that have been personally collected or have been obtained with direct observation. It refers to original information collected specifically for a study from the filled of inquiry. It mainly obtained through the survey method using a questionnaire as the tool.

Secondary data refers to information that has already been gathered and subjected to statistical analysis. It developed through different articles, publications, journals and websites for the company.

Population: 80

Sample Size: 30

Sample Unit: Hyderabad

QUESTIONNAIRE

For data collection, a well-designed questionnaire with clear questions was utilized. The survey instrument consisted of closed-ended questions, multiple-choice options and Likert-scale items.

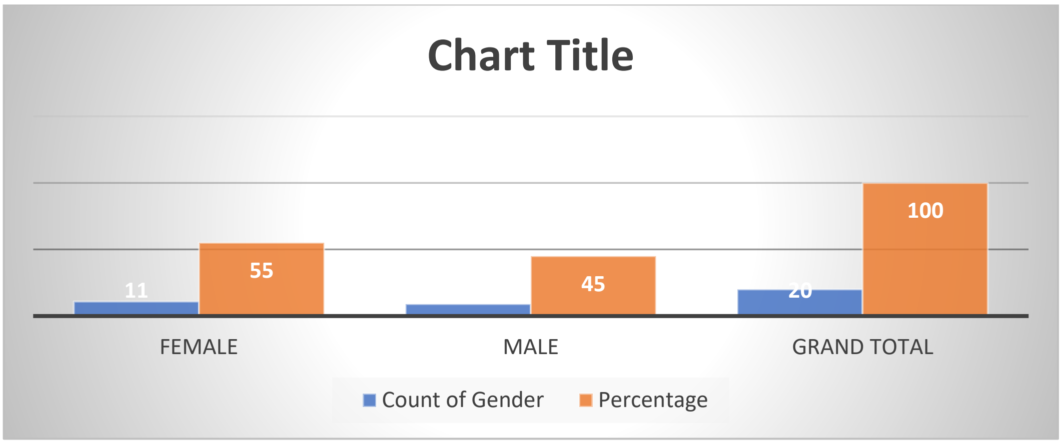
TOOLS USED: Google forms, Microsoft Excel, Charts, Bar graphs and Chi-square test.

HYPOTHESIS:

1. H0: There is no significant that Gold is often considered a safe- haven investment during times of global economic uncertainty.
2. H1: There is significant that Gold is often considered a safe- haven investment during times of global economic uncertainty.

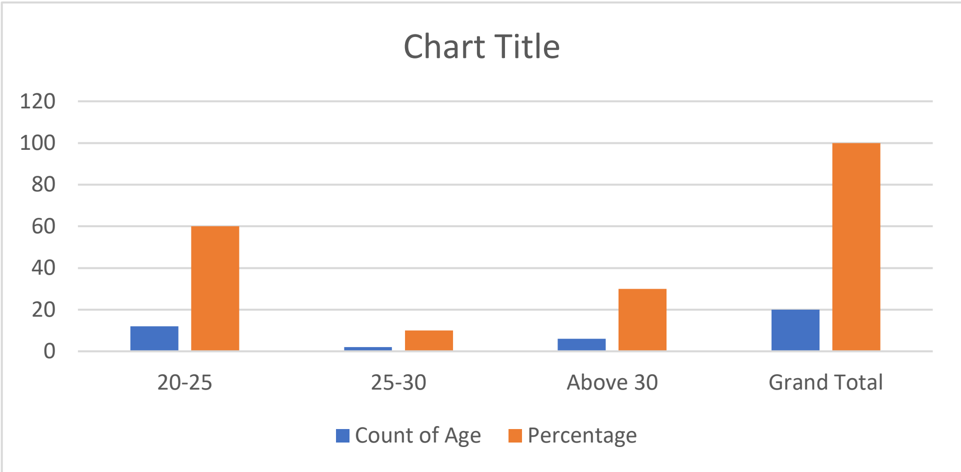
DATA ANALYSIS

1. Row Labels	Female	Male	Grand Total
Count of Gender	11	9	20
Percentage	55	45	100



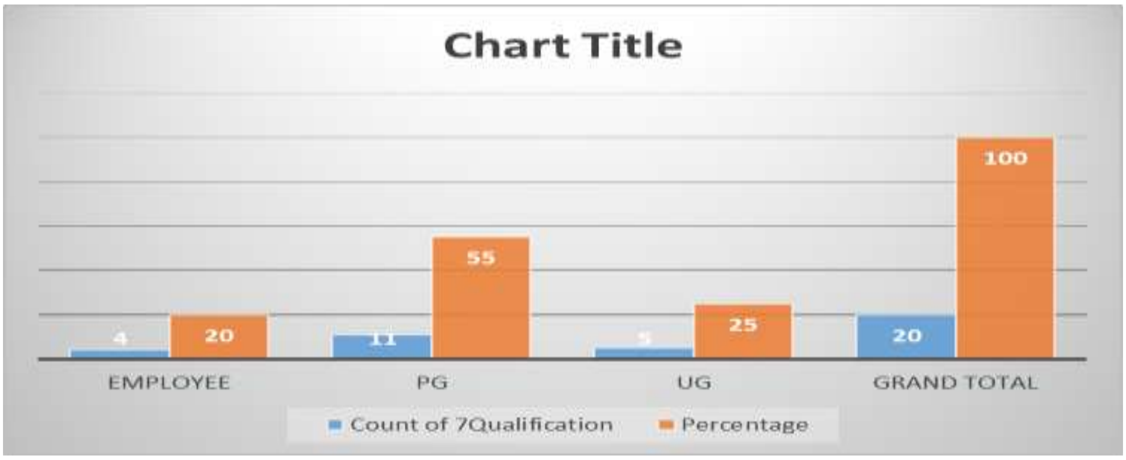
Interpretation: 55% respondents are male and remaining left are female with 45%.

2	20-25	25-30	Above 30	Grand Total
Count of Age	12	2	6	20
Percentage	60	10	30	100



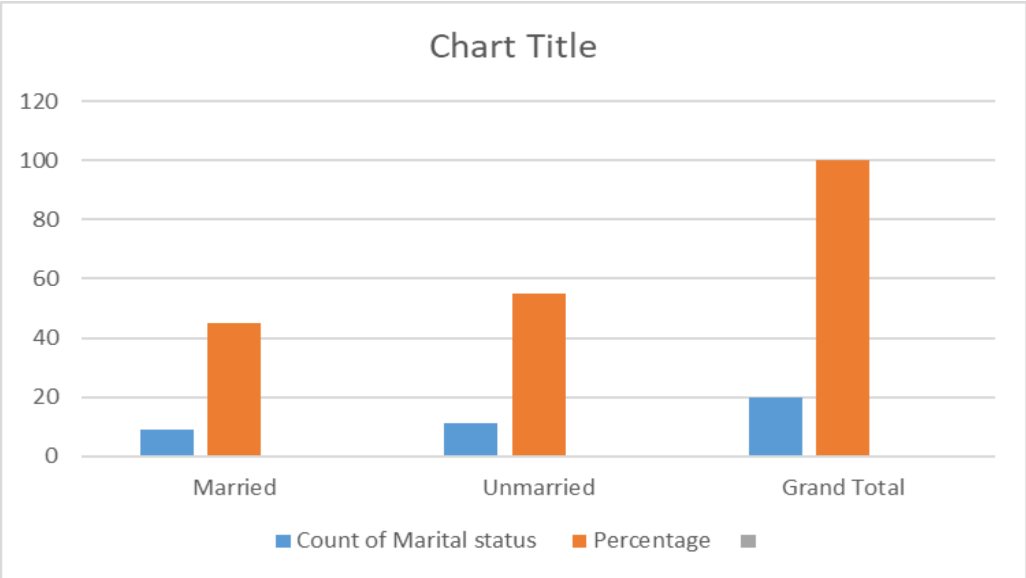
Interpretation: 60% respondents are in the age group of 20 – 25 years and 30% respondents are of above 30 years.

3	Employee	Pg	Ug	Grand Total
Count of 7Qualification	4	11	5	20
Percentage	20	55	25	100



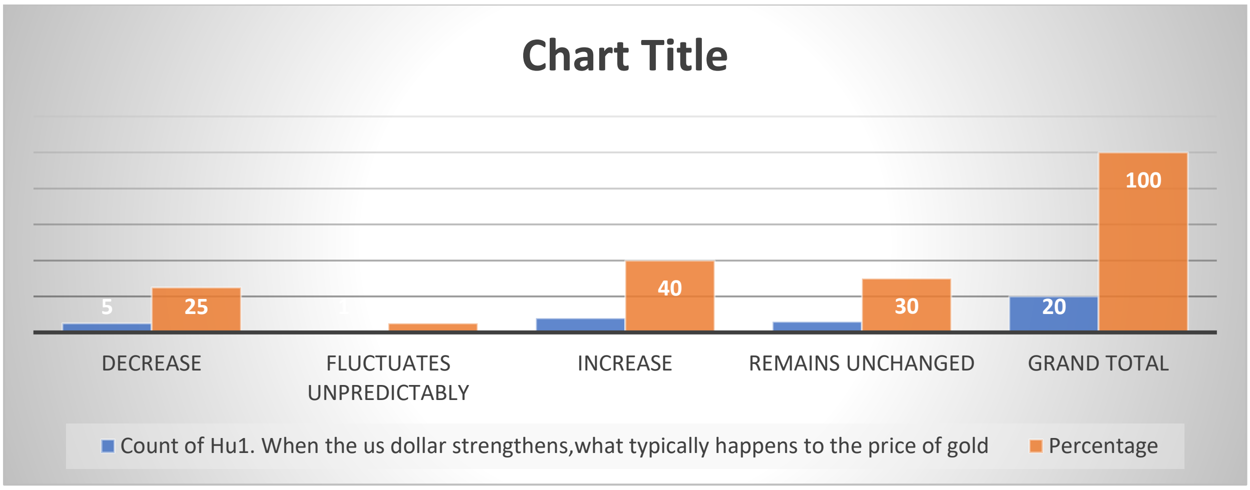
Interpretation: Most of the respondents with 55% are under PG qualification and 25% with UG.

4	Married	Unmarried	Grand Total
Count of Marital status	9	11	20
Percentage	45	55	100



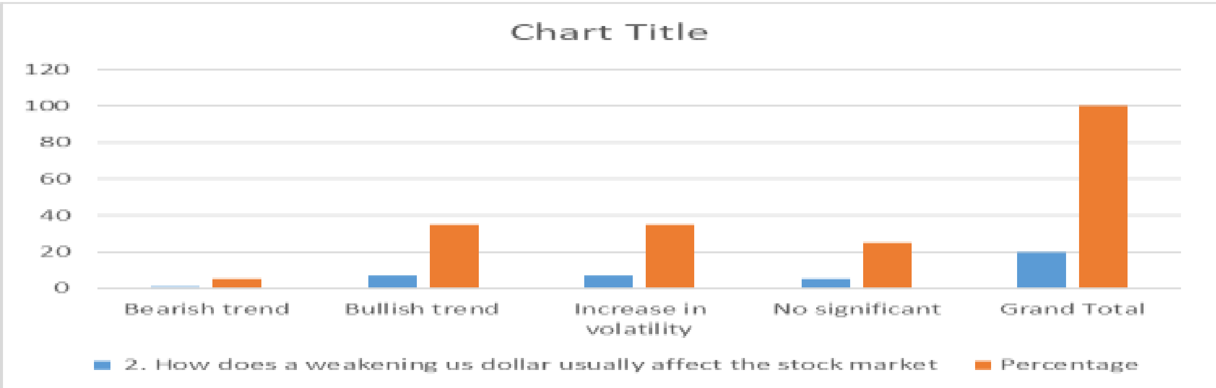
Interpretation: Most of the respondents are unmarried with 55%.

5	Decrease	Fluctuates unpredictably	Increase	Remains unchanged	Grand Total
When the us dollar strengthens, what typically happens to the price of gold	5	1	8	6	20
Percentage	25	5	40	30	100



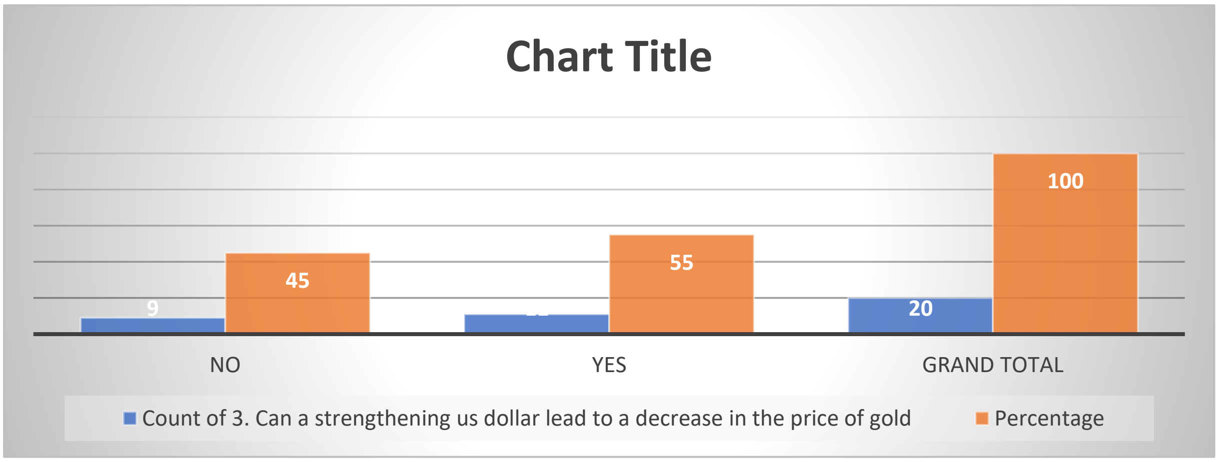
Interpretation: 40% respondents thinks that US Dollar increases the price of gold increases.

6	Bearish trend	Bullish trend	Increase in volatility	No significant	Grand Total
How does a weakening us dollar usually affect the stock market	1	7	7	5	20
Percentage	5	35	35	25	100



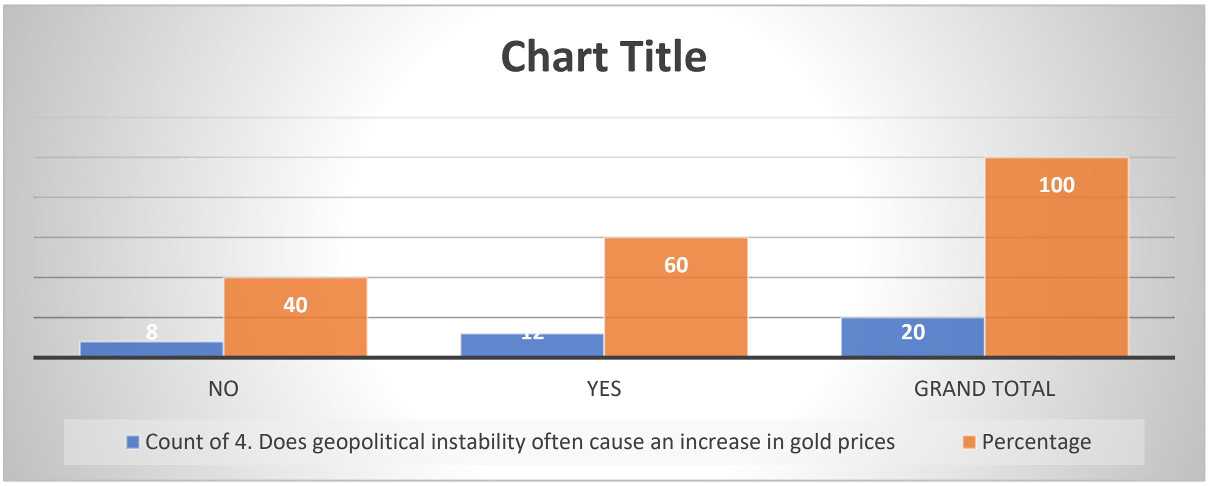
Interpretation: 35% respondents with Bullish trends and increase in volatility will weakening the US Dollar which effect the stock market.

7	No	Yes	Grand Total
Can a strengthening us dollar lead to a decrease in the price of gold	9	11	20
Percentage	45	55	100



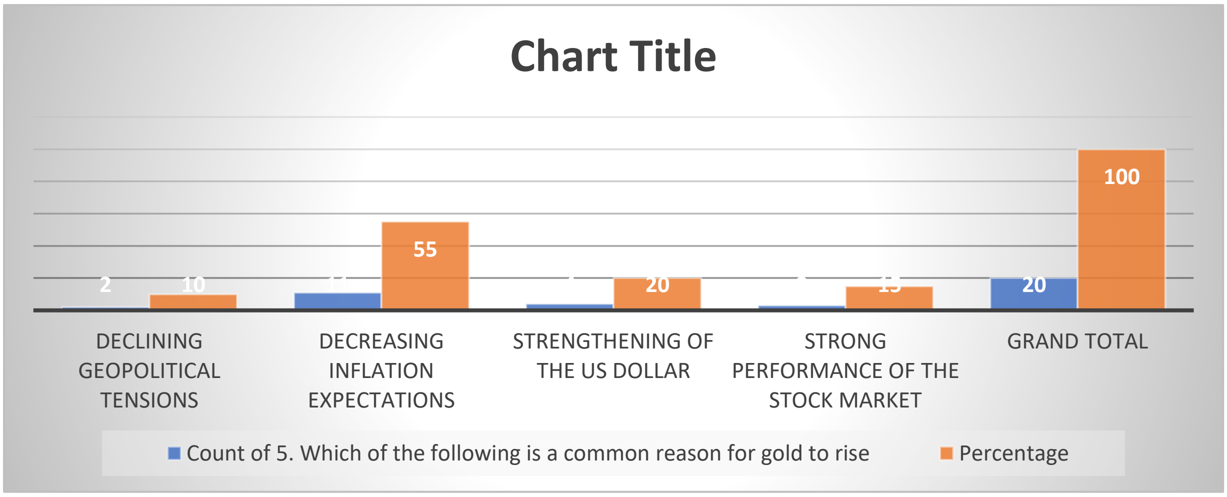
Interpretation: Yes, 55% respondents that strengthening of US Dollar leads to decrease in price of gold.

8.	No	Yes	Grand Total
Does geopolitical instability often cause an increase in gold prices	8	12	20
Percentage	40	60	100



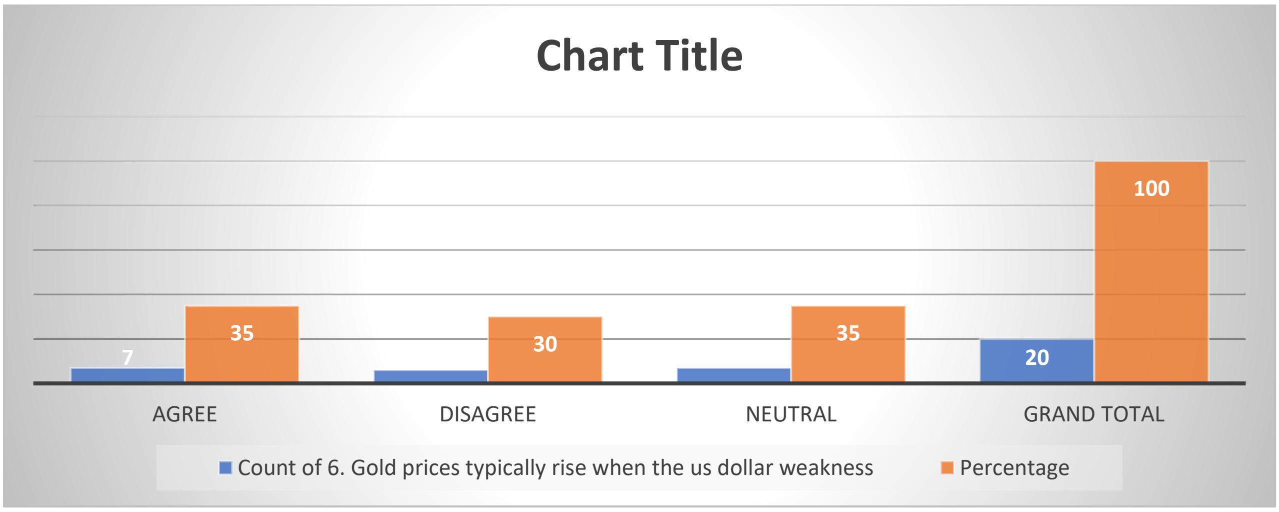
Interpretation: 60% respondents' poll "Yes" on geopolitical instability often cause an increase in gold prices.

9	Declining geopolitical tensions	Decreasing inflation expectations	Strengthening of the us dollar	Strong Performance of the stock market	Grand Total
Which of the following is a common reason for gold to rise	2	11	4	3	20
Percentage	10	55	20	15	100



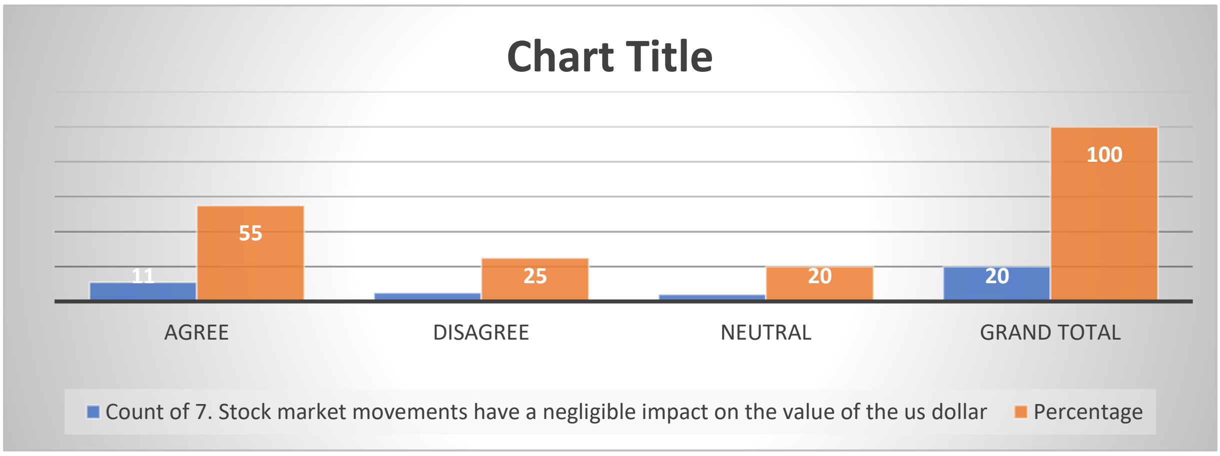
Interpretation: 55% respondents voted on deceasing inflation expectations as a common reason for gold to rise.

10	Agree	Disagree	Neutral	Grand Total
Count of 6. Gold prices typically rise when the us dollar weakness	7	6	7	20
Percentage	35	30	35	100



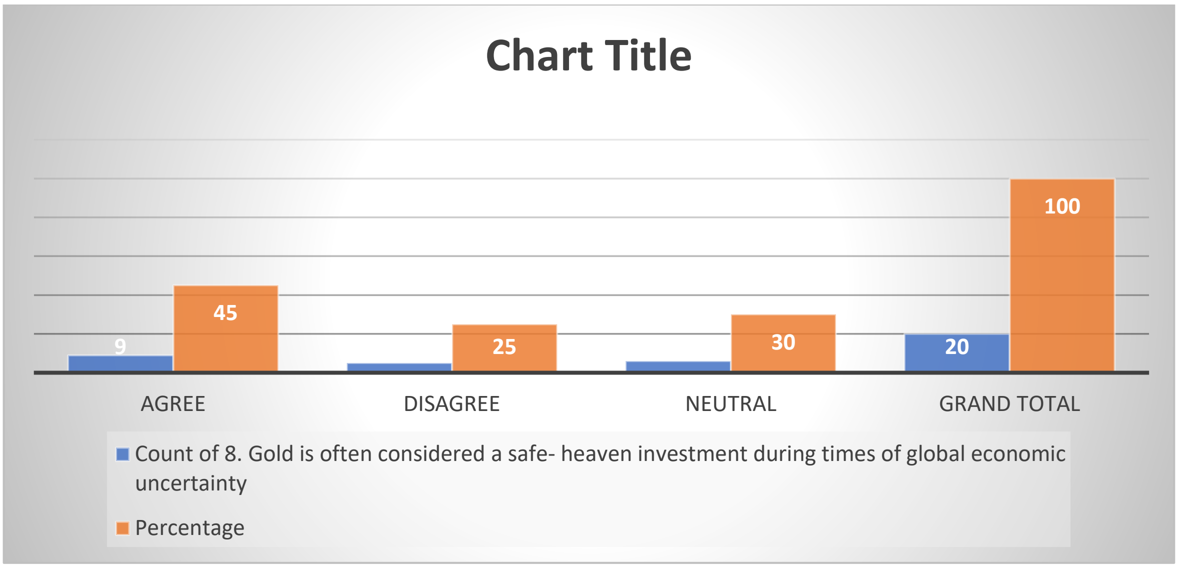
Interpretation: Both Agree and Neutral will share equally with 35% that rise when the US Dollar weakness.

11.	Agree	Disagree	Neutral	Grand Total
7. Stock market movements have a negligible impact on the value of the us dollar	11	5	4	20
Percentage	55	25	20	100



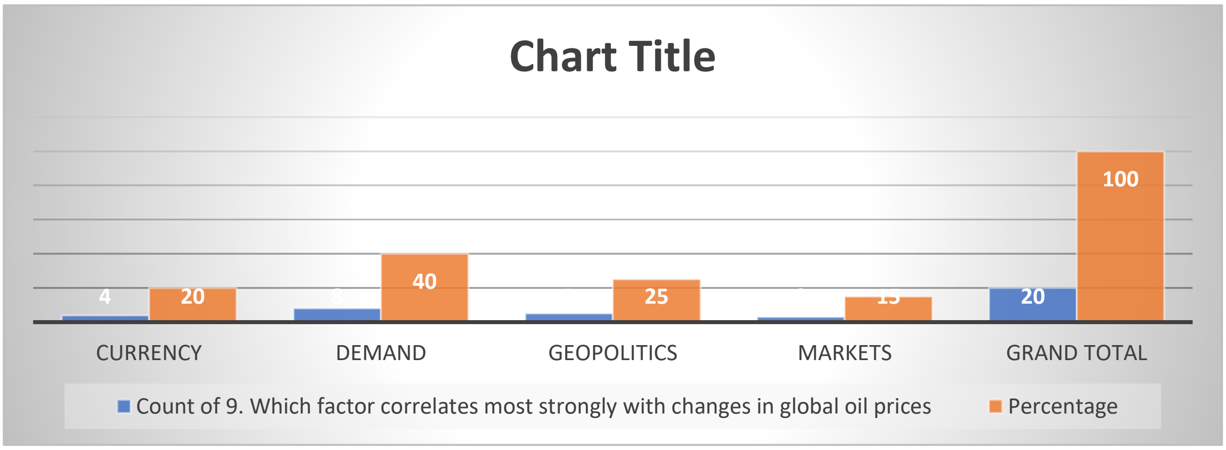
Interpretation: 55% agree that stock market movements have a negligible impact on the value of the US Dollar.

12	Agree	Disagree	Neutral	Grand Total
Gold is often considered a safe- haven investment during times of global economic uncertainty	9	5	6	20
Percentage	45	25	30	100



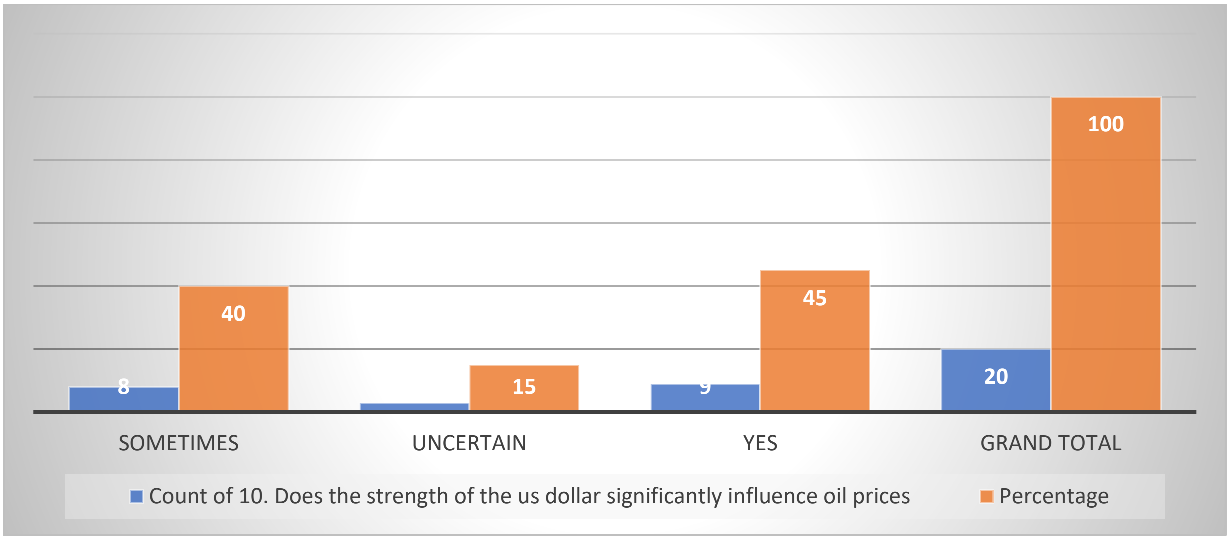
Interpretation: 45% respondents agree that gold is often considered a safe-haven investment during times of global economic uncertainty.

13	Currency	Demand	Geopolitics	Markets	Grand Total
Which factor correlates most strongly with changes in global oil prices	4	8	5	3	20
Percentage	20	40	25	15	100



Interpretation: 40% respondents demand correlates most strongly with changes in global oil prices.

14.	Sometimes	Uncertain	Yes	Grand Total
Does the strength of the us dollar significantly influence oil prices	8	3	9	20
Percentage	40	15	45	100



Interpretation: 45% respondents "Yes" that strength of the US Dollar significantly influences oil prices.

STATISTICAL TOOL FOR ANALYSIS

The chi-square statistic, p-value and statement of significance appear beneath the table. Blue means you're dealing with dependent variables; red, independent.

Results						
	Agree	Disagree	Neutral			***Row Totals***
Male	4 (4.05) [0.00]	3 (2.25) [0.25]	2 (2.70) [0.18]			9
Female	5 (4.95) [0.00]	2 (2.75) [0.20]	4 (3.30) [0.15]			11
Column Totals	9	5	6			**20 (Grand Total)**

The chi-square statistic is 0.7856. The p-value is .675152. The result is not significant at $p < .05$.

Since $p < 0.05$, we reject H0 and accept H1 i.e. there is a significant that Gold is often considered a safe- haven investment during times of global economic uncertainty.

FINDINGS

- 55% respondents are male and remaining left are female with 45%.
- 60% respondents are in the age group of 20 – 25 years and 30% respondents are of above 30 years.
- Most of the respondents with 55% are under PG qualification and 25% with UG.
- Most of the respondents are unmarried with 55%.
- 40% respondents thinks that US Dollar increases, the price of gold increases.
- 35% respondents with Bullish trends and increase in volatility will weakening the US Dollar which effect the stock market.
- 60% respondents' poll "Yes" on geopolitical instability often cause an increase in gold prices.
- Both Agree and Neutral will share equally with 35% that rise when the US Dollar weakness.
- 55% respondents voted on deceasing inflation expectations as a common reason for gold to rise.
- 55% agree that stock market movements have a negligible impact on the value of the US Dollar.
- 45% respondents agree that gold is often considered a safe-haven investment during times of global economic uncertainty.
- 40% respondent demand correlates most strongly with changes in global oil prices.
- 45% respondents "Yes" that strength of the US Dollar significantly influences oil prices.

SUGGESTIONS

Oil, gold, and the stock market are intricately interconnected, with their dynamics often reflecting broader global economic trends and geopolitical developments. Firstly, oil prices are heavily influenced by supply and demand dynamics, which in turn are impacted by global economic growth, production levels, and geopolitical events. When economic growth accelerates, oil demand typically rises, leading to higher prices. However, geopolitical tensions in key oil-producing regions can disrupt supply, causing prices to spike. Gold, traditionally viewed as a safe-haven asset, tends to perform well during times of economic uncertainty, geopolitical instability, or inflationary pressures. Investors flock to gold as a store of value and a hedge against currency depreciation or market volatility. The events such as conflicts, trade disputes, or central bank policies can drive fluctuations in both gold prices and stock market indices. Moreover, currency movements play a crucial role in determining the prices of oil, gold, and stocks, as commodities are priced in U.S. dollars and currency fluctuations impact their affordability and attractiveness to investors. A weaker dollar typically leads to higher commodity prices, including oil and gold, while boosting the earnings of multinational corporations listed on stock exchanges. Conversely, a stronger dollar may suppress commodity prices and hinder the profitability of export-oriented companies, influencing stock market performance accordingly.

Understanding the interdependencies among oil, gold, and the stock market requires a holistic analysis of economic indicators, geopolitical developments, and monetary policies on a global scale. The stock market's response to economic indicators and geopolitical events directly affects project financing and investor sentiment. In project financing, monitoring stock market indices and investor sentiment can provide valuable insights into market liquidity and funding availability. Geopolitical tensions or economic downturns impacting stock market performance may signal potential challenges in securing project funding or investor buy-in.

CONCLUSION

The presence of both direct and indirect routes in the interdependence of oil, gold and stock prices necessitates a thorough analytical approach. Traditional econometric methods may fail to capture the complex interactions and feedback loops between these factors. As a result, applying a simultaneous methodology becomes important. explores the relationships between oil, gold, the US dollar, and stock prices, seeking to identify both direct and indirect connections among them. Simultaneous equation systems enable researchers to model and analyze numerous connected variables at the same time, taking into account both direct and indirect routes of effect. In the study of oil, gold, forex, and stock prices, a simultaneous equation system allows researchers to capture the complex system of interactions between these variables. It enables for the investigation of how changes in one variable affect others, as well as how these effects spread across the system over time. This study holds immense importance for portfolio managers and policymakers alike. Its objective is to clarify the interconnected dynamics among various markets, offering a thorough analytical perspective and emphasizing significant direct and indirect correlations.

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QUESTIONNAIRE				
Gender	Male	Female		
Qualification	UG	PG	Employee	
Marital status	Married	Unmarried		

Age	20-25	25-30	> 30 years	
When the US dollar strengthens, what typically happens to the price of gold?	Decrease	Fluctuates unpredictably	Increase	Remains unchanged
How does a weakening us dollar usually affect the stock market?	Bearish trend	Bullish trend	Increase in volatility	No significant
Can a strengthening us dollar lead to a decrease in the price of gold?	Yes	No		
Does geopolitical instability often cause an increase in gold prices?	Yes	No		
Which of the following is a common reason for gold to rise?	Declining geopolitical tensions	Decreasing inflation expectations	Strengthening of the us dollar	Strong performance of the stock market
Gold prices typically rise when the US dollar weakness?	Agree	Disagree	Neutral	
Stock market movements have a negligible impact on the value of the USdollar.	Agree	Disagree	Neutral	
Gold is often considered a safe- haven investment during times of global economic uncertainty.	Agree	Disagree	Neutral	
Which factor correlates most strongly with changes in global oil prices?	Currency	Demand	Geopolitics	Markets
Does the strength of the US dollar significantly influence oil prices?	Sometimes	Uncertain	Yes	