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Comparative Analysis of International Gold Prices: The Case of the UAE and Five Major Economies

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Abstract

This study identifies the complex interrelationships of gold prices with the UAE when assessed against large world economies like United States of America, India, China, and different European countries. Given gold's critical role in the global economy, the study seeks to analyze the determinants of gold prices, including macroeconomic factors, geopolitical concerns, and market sentiment. The research uses comparative analysis to reveal the interaction of regional and global economic trends and how they influence gold prices. The methodology covers the detail analysis of historical gold price data in addition to other relevant economic indicators like crude oil prices, stock market trends, and currency valuations. Advanced statistical tools used include time series analysis and predictive modeling in R Studio to detect indicators and predict future price movements. The study admits the constraints of data availability and the nature of the economic forecasting realities. The research is aimed at providing useful implications for investors, policy makers, and researchers, thereby adding to the knowledge about economic importance and behavior of gold in the global and regional economic scenarios.

Key Words: Gold Prices Dynamics, United Arab Emirates (UAE), Global Economies, Macroeconomic Factors, Geopolitical Events, Comparative Analysis, Predictive Modeling

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CHAPTER 1: INTRODUCTION

Introduction

Overview of Gold Price Dynamics

Gold is a central player in the world economy, having been its store of value and safe haven (Ngai, 2021). Gold prices are therefore not mere commodity indices, but charts measuring health and status of economic or geopolitical characters in the world stage (Pradeep, 2022). This study aims at analyzing the dynamics of gold price in one of the world known region for its wealth and economic power, United Arab Emirates UAE as against major global economies such as The US India China European countries etc.

Economic Importance of Gold

Gold prices are considered an indicator of the state of economy (Singhal, 2020). Increase in the prices of gold usually acts as a sign for fear about inflation, devalued currencies and geopolitical instability. Conversely, decreasing prices may be a sign of unwavering faith in the competency of economic durability. Gold is a very important instrument for risk management on businesses trade in commodities, currencies and financial instruments (Ferry, 2020). Its pricing patterns also provide essential knowledge on the mitigation of financial risks that come with variability in market terms. In addition, gold is a safe house investment and its demand increases when the economy needs can be predicted to enable investors make decisions concerning it investments hence making this study relevant (Boubaker, 2020).

Volatility of Gold Prices

The nature of the gold market is highly volatile, given that a lot depends on political differences, economic unrests interest rate fluctuations and investors' feeling (Yousef, 2020). The importance of Entsog is underlined by the degree to which parts are unpredictable, making it virtually impossible for stakeholders required make well informed decisions with regards funds. This is especially important for the UAE which has developing and transforming economy (Cherian, 2020). The fact that the country occupies a special place in global gold trade makes it an important reference point for comparing trends in its prices of god to genera price hell with other major economies.

Global and Regional Context

The gold industry in UAE is not insulated but rather universally connected to the changes related with global price of the metal. Developments in the global market also have direct effects on UAE's gold prices, for example policies formulated by US Federal Reserve or decisions made by European Central Bank (Foster, 2021). Moreover, other influences by region are highly considered depending on overall stability in geopolitical landscape of the Middle East too. Therefore, a comparative evaluation among leading economies will help highlight the global and regional themes that influence gold prices.

Purpose of the Study

It is in this vein that the current study seeks to explore these intricate and multifaceted aspects of gold prices' behavior. Based on the evaluation of historical tendencies and modern factors that contribute to changes in gold prices within UAE, as compared with other developed states, it will be possible to achieve a more detailed understanding of the major forces driving this market. This is going to be useful not only for investors and policymakers in the UAE, but it will also offer insights that all players on the global scene of gold can benefit from.

1.2 Project Goals

The pivotal objective is to investigate the trends in gold prices on UAE and associate them with main global economies. In this analysis, we shall try to determine the rise in price of golds and retain some patterns that are driven by certain factors with regard as low level conversation between heads of government even under different economies.

A secondary objective will be to develop predictive models concerning the direction and dynamics of gold price. This includes gold prices relationships with the stock price and implications of oil, gas movements on dynamics in gold pricing (Wang, 2022).

1.3 Aims and Objectives

The goal is to create an elaborate concept regarding the elements that affect gold front prices not only in UAE, but also as some of other prominent economies around world. This involves reviewing the historical development and assessing various forces that influence, such as crude oil prices or Bitcoin market trends with respect to these factors.

Objectives

- Examine historical gold price trends.
- Assess the effects of variables including crude oil cost, Bitcoin market dynamics and economic policy vagueness.

1.4 Research Methodology

Data Collection

The research will use gold prices data collected historically from 1985 to present. This information will enable long term trends and patterns to be identified. This research will also consider the historical data of crypto-currency from 2005-2022.

Analytical Tools

Statistical analysis will be performed using R Studio, specifically time series analysis and prediction models such as ARIMA. This instrument is chosen because of its ability to help incorporate complicated economic information and enabling proper analysis.

Sampling

A purposive sampling of literature not more than 10 years old, using certain key terms will be used. This allows for the choice of only those documents that are most topical and fresh, used as a foundation of thorough research.

In order to improve the research methodology and reinforce areas of previous oversights, we are including a novel approach, which incorporates synthesizing an additional dataset in parallel to the main gold prices data. This inclusion is aimed at obtaining a more intricate analysis of the power that governs the fluctuation in gold prices, comparing the abovementioned indicators to relevant financial parameters, such as bitcoin prices or stock market changes, during the same time interval. Our choice of the implemented methodological improvements will be followed by the description of the procedure of our secondary data selection, which will verify its relevance and I possible to provide additional insights into such interdependencies between gold prices and other major representative of the financial market as the US dollar or euro. This comparative study will rely upon advanced analytical tool, the evaluation of R Studio to investigate data in detail.

The results of our analysis will be based on varying statistical techniques and modes of prediction that will help us investigate the enigmatic interdependencies and patterns appearing both within and among the datasets. The objective is to uncover the relationships between different variables that provide broader insight into the gravity of the factors that influence the gold price, apart from what can be obtained by using data history.

1.5 Limitations of the Study

Data Constraints

The research is being limited by the historical data that are available and those proper records. Data sources' credibility is an aspect that will for great impact the outcomes of the study.

Geographical Focus

However, the research confines largely on UEA but it takes into account big world economies. This thematic emphasis would however be likely to constrain the spread of results among other areas.

Methodological Limitations

However, there is the problem with complexity of predicted modeling in economic analysis. Forecasting is by its nature a difficult skill to acquire, especially within an economic modeling framework with potentially numerous unknown quantity factors.

CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction to Literature Review

The literature review for this study on "Comparative Analysis of International Gold Prices: The theoretical and empirical base for this research is provided by the article authored with Carsten Trenkler The Case of UAE and Five Major Economies'. The goal is to review and consolidate previous studies carried on the dynamics of gold prices, determinants or influences of these prices, and equations alongside other economic variables (Chai, 2021). In the course of this review, a wide range of literature will be considered starting with papers directly devoted to investigating gold prices in case if both the UAE has found some significant relationships between their local price and world's largest economies.

Importance of Diverse Perspectives

Considering complex nature of the determinants, as well economic and finance perspectives are assumptions held by geopolitical studies. Such multidisciplinary coverage allows to incorporate multiple facets of gold price determinants that span from macroeconomic factors through investor behavior up to geopolitical events.

Historical and Contemporary Insights

An in depth study on the analyses done historically about gold prices is provided by literature review to give a context of today's trend. It also encompasses the modern research, particularly those of recent economic slumps, technological changes in trading and redistribution of global economic powers all having an impact to gold market.

2.2 Review of Literature

Macroeconomic Factors and Gold Prices

Background of Macroeconomic Influences on the prices for gold

Gold, as the most fundamental mechanism of international finance is deeply sensitive to several macroeconomic stimuli. These factors include a broad range of economic indicators and phenomena, which have an effect on the price variability either as en-toto or independent variables. The papers by (Xu, 2023) shed the extensive light on these phenomena indicating that gold market is more dynamic than it seems to be masqueraded as a buffer from economic tides.

Crude oil and its relationship with gold

One of the most crucial macroeconomic factors that impact gold costs is the oil prices. This relationship is important as the oil acts as a vital ingredient in most developed world's process of production. The increase in oil prices cause to lift mining and production expenses for gold therefore, it changes market price of the product (Ulrich, 2022). Additionally, oil price changes are often viewed as the barometers of international economic performance and such sentiment affects investor preference for gold (Nazir, 2021). The connection of oil quotes with gold is not direct, as in this case it can be influenced by various geopolitical and economic 'events'.

Impact of Inflation and live levels

Inflation significantly impacts gold prices. Gold has traditionally been an inflation hedge. However, during periods of high inflation though the value of currency declines hence results in investors looking for safety through investing in gold which does not like fiat currencies but appreciates its intrinsic nature with time. Gold also has a link with the income levels. Gold prices may scaffold because of the growing demand for this investment and luxury good caused by higher disposable incomes.

Dynamics between bond Prices and Gold Markets

Also worth mentioning is the relationship between bond prices and gold (Dutta, 2021). Typically, the price of gold has an inverse relationship with bond yields (Rastogi, 2023). Gold is the preferred option in situations where bond yields are low due to lower returns on traditional investments and makes it a good choice for investors looking forward toward higher incomes or even diversification. This negative relationship clearly shows that gold is an alternative asset class and it stands quite differently from the traditional bonds and equities.

The Effect of Monetary Policies and Interest Rates

Gold prices are also largely affected by monetary policies, especially set forth by major central banks – the Federal Reserve ECB or Bank of England (Echarte Fernández, 2021). Since gold does not attract any interest rate, the decisions made about interests have a direct effect on it because they would increase its alternative cost (Fairbairn, 2021). As a result, if the interest rates go lower those holding gold enjoy low opportunity cost of investment and in that way they persuade others to engage into this business. On the other hand, with an increase in interest rates we might notice a fall in gold prices because yield bearing-assets become available for investors.

Gold Prices and Global Economic Health

The general health status of the world economic infrastructure plays a pivotal role in determining prices awarded to gold. During times of high economic activity, gold as an investment may be less demanded but in the time when global ecosystem seems like driving off into abyss such investments will only become more attractive. It is because of this counter-cyclical characterisation that gold stands as a distinctive asset within the world financial environment.

2.2 Impact of the U.S. Dollar and Market Sentiments on Gold Prices

Introduction to the Role of the U.S. Dollar in Gold Pricing

Because the U.S. dollar plays a dominant role in global finance, its value affects gold prices significantly. Most gold transactions are in the US dollar, meaning that currency strength or weakness is the most important factor to consider when it comes settle on precious metal value (Zagaglia, 2022). It is inversely proportional and has been documented significantly by studies like the Toraman et al study 2011 which clearly indicates that there's an inverse correlation between U. S dollar value to other currencies compared to gold prices; hence impacting it negatively when one falls or increases at a higher rate (Kim, 2020).

As US Dollar Becomes Benchmark of Global Trade

Worldwide, gold and other goods are traded against the US dollar which is used as a reserve currency also known as key barometer internationally (Khalil, 2021). As the USD value rises in relation to other currency units, it means that gold is costlier for those investors who have since bought this metal using their currency holdings and thus resulting into a possible reduction of demand hence lowering the prices of gold. On the other hand, with a weaker dollar gold becomes more affordable for foreign investors and thus increase in demand push prices higher.

Monetary Policy and Its Implications of the U. S Dollar, Gold Prices

The value of the American dollar and gold prices in it are determined a lot by money controls, especially from U. federal Reserve. Monetary policies that involve interest rates and quantitative easing may result in the value of a dollar yielding, affecting how attractive gold would be as an investment (Neethling, 2021). For example, the dollar loses its appeal after interest rates go down and this makes gold a safe-haven asset.

Market Sentiments and Investor Behavior

Gold prices are directed by sentiment in the market and nature of investor response (Gurdgiev, 2020). However, gold has been used by investors as a safe haven asset during times of economic volatility or geopolitical situations that in turn increase the demand and it's price. The overall feeling in the gold market is also driven by estimates of how economies will perform down the line, inflation rates and shares markets. Gold often goes up in demand especially on occasions when there are fluctuations of stock markets or if the bearish trend has been observed.

The function of gold speculation in its pricing

The gold market is largely dependent upon the role of speculation. In turn, the attitudes of investors and speculators may result in fast prices changes that can be observed independently from any real factors connected with supply or demand side. The onset of gold Exchange Traded Funds (ETFs) and other finance-related items has made the yellow metal relatively more risked by traders as it is now easily available to them (Gendron, 2023).

Gold and Global Economic Indicators

Key economic statistics, including GDP changes, the level of unemployment or indexes for manufacturing can affect market moods and thus gold price. If the economic data is positive, it can result in a stronger dollar and lower prices for gold; however negative economic results will have reverse effects (Sui, 2021).

2.3 Geopolitical Events and Economic Policy Uncertainty Impacting Gold Prices

Introduction to Geopolitical Influences on Gold Prices

Major factors that affect the price of gold include geopolitical events and economic policy uncertainties. Gold is much more affected by political and economic upheavals given its nature as a safe-haven asset. (Li, Analyzing the time-frequency connectedness among oil, gold prices and BRICS geopolitical risks. , 2021), through their writings, shed light on the geopolitical affairs along with policy uncertainties that can implant waves of unpredictability in gold quotes.

Gold as the Safe Haven Asset during Geopolitical Conflicts

During the years of geopolitical equilibrium, such as wars and national conflicts or political turmoil, investors typically see gold safe haven assets (Akhtaruzzaman, 2021). The perceived value of gold in combination with its stability throughout history create the appeal as an asset during periods of uncertainty. Increased geopolitical tensions usually lead to increased demand for gold which in turn increases the price of this commodity (Rasheed, 2021). This can be observed in the data available form history as major political events have led to these spikes in prices of gold.

Economic Policy Uncertainty

Specifically, EPU or economic policy uncertainty has been defined as the volatility that is associated with government actions and its implications out of monetary policies towards changes in regulations which impacts on general outcome (Caggiano, 2020). High levels of EPU increases market volatility and risk aversion which makes the investors change their portfolios for safer assets such as gold (Klayme, 2023). Research also demonstrated positive relationship between EPU indices and gold prices which means that the higher uncertainty is followed by increases of price for gold.

Central Banks and Monetary Policies

Central bank regulations, specifically regarding manipulation of currency and interest rates can affect the price of gold. Actions from significant central banks including the U.S Federal Reserve, European Central Bank or even People's Bank of China may send shock waves across the world financial markets resulting in impact on prices for gold (Öztunç, 2021). For example, loose monetary policies such as quantitative easing may lead to devaluation of currencies hence allowing gold become more appealing.

2.4 Global Gold Market Dynamics

Introduction to Global Market Influences on Gold Prices

The factors that impact the gold market at global level form a tangled structure of connections, some originating in interdependences with other commodities, others evolve by reason if financial crises and change along economic trend cycles. In this respect, (Shabbir, 2020)studies can offer valuable insights regarding these relationships through focusing on the interconnectedness of the gold market with global macroeconomic factors among others that impact it.

Interdependencies with Other Commodities

Price changes in crude oil and other leading commodities are known to have a correlation with gold prices. The relationship between the prices of gold and oil is a result of various issues among them consideration that both are hedge against feedbagency relating to inflations as well currency devaluating (Sheikh, 2020). Secondly, oil prices can also influence the costs of gold mining production hence any ripple effect on it will result in price fluctuations. But sometimes such a correlation is not that linear and may be shaped by background global economic conditions.

Financial Crises and their Influence on the Price of Gold

Gold market is highly sensitive to financial crises. In the periods of economic crises, like it was in a 2008-2010 global financial crisis time span included investors begin to buy gold as well considered relatively safe assets relative even when due supply increases much cost elevates also (Aruga, 2020). The way financial crises are reflected in the gold market accentuates its nature of a counter-cyclical asset, and it generally tends to develop inversely from the wider stock markets (Abolafia, 2020).

Gold Prices and Global Economic Trends

Gold prices are, therefore affected by international economic movements in the GDP growth rates and trade policies as well as central bank actions. As such, positive economic signals may result to a low demand for gold as investors look out for higher yields in alternative asset categories. In the reverse, when there is an economical crisis or uncertainty situations it always leads to high demand of gold (Su, 2022).

Emerging Markets and Gold Dynamics

New markets become more and more important in the relationships on the market of gold. There is significant demand for gold in the countries such as China and India on account of investment requirements or even socially (Pian, 2020). The key factor about this that it is characterized by economic policies, currency values or consumer conduct in these markets changes which visibly initiate an outcome on the world price of gold.

Technological Advancements and Market Accessibility

Gold market has been made more available to everyone and connected with each other thanks to technological progress (Litvinenko, 2020). The popularity of gold ETFs and digital trading platforms has increased the number of investors, with more people and institutions joining gold brokerage (Menakadevi, 2021). This access has helped complicate and destabilize the market.

Environmental and Social Factors

More often nowadays the course of gold is becoming dependent on outside variables that have nothing in common with economics and finances like practice mining or ethical aspects (Mpanza, 2020). Consumer awareness and demand for ethically mined gold can trigger the change that affects supply chains as well as pricing aspects.

2.5 Regional Studies and Comparative Analyses of Gold Prices

Introduction to Regional Dynamics in Gold Markets

Studies and comparative analyses by region provide invaluable insights into the various localized factors that impact gold prices (Hunter, 2021). Analysis of gold markets for various regions such as Middle East, China Inidia and United States shows that the prices of god are influenced differently by both supply chain with respect to economics policies in those areas certainly due ti transcultural factors

Middle East: The Gold Trade and the UAE

Gold trade is a critical economic issue, especially in the Middle East region and more specifically UAE. Together with the geopolitical stability of this region, which is located at a strategically favorable place for trade processing allows to focus one's attention on it as an indicator (Blore, 2020). The gold market of the UAE is impacted by consumer preferences as locals have a demand for these products reflecting socio-cultural aspects, such cultural and religious festivals; moreover it may be noted that being in between international turnover of Asian to Western markets current price convergences at local level play their role. Geopolitical regional events can also affect prices because of the wide reflection on such broader market by economic and political circumstances (Selmi, 2022).

China and India: Cultural Influence and Economic Policies

Amongst the biggest consumers of gold are China and India, mainly due to cultural reasons as well as financial growth (Li, 2021). Gold serves not only as an investable in these countries but is used for religious and cultural purposes. In so far as the regions are concerned, economic policies in them from time to time play very important roles on gold demand and prices especially currency fluctuations due to their integral economical dynamism\and also variations of incomes. Also, policy adjustments to guide the importation or exposal of gold can produce instant effects on global prices.

The United States: Macroeconomic Policies and Global Influence

What underpins the American position on any interrelation of this latter and gold USA liable for one half global reserve is role of US in a world economy that automatically passes to its result, i.e. situation with us dollar system (Green, 2020). The polices of the Federal Reserve, economic indicators in U.S. and strength of dollar play a crucial role towards determining gold prices. Gold futures and ETF markets are also heavily covered by the US, which strengthens its impact upon global gold price developments (Erb, 2020).

European Countries: Economic Stability and Investment Trends

A great influence on gold price fixation in European countries is regional economic stability, decisions of the Eurozone and trends for investments (Sriraman, 2020). In times of turmoil in the Eurozone due to economic uncertainly or crisis-for example, during a bailout debt crisis –it is normal for investors to place more investments on gold as their safe haven asset. Another factor that affects gold prices is how the Euro and other key currencies are intertwined (CHAINANI, 2020).

Comparative Analysis: Understanding Regional Variations

Analyzing these regions comparatively give a global view of the disparities in gold sake trends. Economic development and its rate, inflation levels, investment appeal and gold value in culture are different for all regions that leads to dissimilar consequences of local markets on global ones (Do, 2023). Comparative research will assist in finding various trends, outliers and dependencies among local markets regarding the world gold cost.

Key Takeaways

Multidisciplinary Perspectives: The review emphasizes the need to study gold prices through several prisms including macroeconomic factors, investor behavior, geopolitical events and even environmental and social factors. An interdisciplinary approach is therefore imperative for a full comprehension of the forces driving gold markets.

Macroeconomic Influences: Gold prices are largely influenced by factors such as inflation, crude oil prices, monetary policies, and the global economy. The literature states that gold is usually a hedge against inflation and economic uncertainties.

The Role of the U.S. Dollar: Gold prices and the U.S. dollar are indirectly related. Gold pricing is very sensitive to the changes in the strength of the dollar that are influenced by monetary policies and global economic health.

Investor Behavior and Market Sentiments: Market sentiment and investor behavior that are prompted by economic forecasts, inflation rates, and stock market movements can lead to an increase in gold demand as a safe-haven asset, thus, affecting its price.

Geopolitical and Economic Policy Uncertainties: Geopolitical events and economic policy uncertainties make gold attractive as a safe-haven asset and during turmoil its price usually goes up.

Global Market Dynamics: The gold market interconnectedness with other commodities, effect of financial crises, and global economic trends is significant for gold price movements. The dynamics are also influenced by emerging markets, technological advancements and environmental and social factors.

Regional Variations: Comparative analysis shows that regional factors such as cultural effects, economic policies, and consumer tastes can lead to gold demand and price differences. The review reiterates the importance of the Middle East, especially the UAE, China, India, USA, and European countries in the world gold market.

Interdependencies with Other Commodities: The review shows an intricate connection between the gold prices and other commodities especially crude oil, in which the variation in one can affect the other as a result of different economic and geopolitical variables.

CHAPTER 3- PROJECT DESCRIPTION

3.1 Proposal: Statement of the Problem

Defining the Research Problem

The main research issue solved in this study is the creation of an integrated analysis and predictive model for understanding gold price movements. This framework is specifically based on the United Arab Emirates (UAE) in relation to major global economies such as U S A, India , Chinese and European countries. The importance of this issue is in the fact that gold prices become an indicator not only of investor sentiment but also about overall economic wellbeing.

Gold Prices: A Reflection of Economic Health

Historically, the gold prices have been considered as indicators of economical sustainability. They respond to different economic states and can give an understanding of some world's economy as well as regional indicators. Changes in price of gold very often reflect the problems with high inflations, changes on currencies power or some country conflicts and general moods within economic community. Especially today, this is important because Gold prices are very good indicators of economic health in an environment that has been so uncertain and volatile for some years.

Complications associated with forecast model developments especially in predicting the trend of gold prices.

In the field of study, one challenge emerges as dominant and is related to forecasting gold price directions. The price of gold is driven by an elaborate network of macroeconomic factors encompassing political events, global investor moods and may be influenced also by new developments occurring in foreign financial domains like the cryptocurrency field. All these aspects are part of the determination for gold prices' unpredictability, thus their forecasting is a very complicated task that requires high-level consideration.

Necessity for a Comprehensive Analysis

With all these complications, a profound analysis should consider not only the historical tendencies but also incorporate current global economic backdrops. This research therefore seeks to fill this gap by giving a critical analysis of the variables that determine gold prices in UEA against back ground set trends in world economic institutions. This is particularly important, considering that the UAE plays a major role in gold market globally and being characterized by specific peculiarities of local economy.

Analysis of Interrelationships with Other Macroeconomic Scales

It is an important part of this research to investigate the relationships between gold prices and other significant economic macroeconomic variables such as stock prices, oil price and gas. Global economy operates on the principle of interdependence where what happens in one sector usually has a ripple effect to another. These connections require a universal predictive framework for gold's prices, which must account for the impact of numerous economic variables.

Gold as an Economy's Weather Vane

Gold is a color of intrinsic value that has always represented more than the mere term 'precious metal', instead signifying an important measure of economic health within global trade. Its pricing patterns provide fundamental cues about macroeconomic and geopolitical elements, thereby making it a reference for investors as well as policymakers together with economic analysts.

Gold and Economic Stability

The rates of gold continuously change with the changes in economic conditions. In times of stable economic conditions, the demand for gold may decrease as investors invest in high yielding assets. On the other hand, in trying economic times or when there is inevitable uncertainty, gold prices can be generally seen to head north as investors look for a safe haven for their funds. This trend emphasizes that gold is a powerful tool to combat economic instability.

Gold Prices Reflecting Investor Confidence

Price fluctuations in gold are closely correlated with sentiment among investors. A weak economy or poor performance in other financial markets usually leads to increased demand for gold. This trend can be witnessed from previous data where there have been drops that are heavy in stock markets or recessions thus leading to a consumption of gold.

Gold as an Inflation and Devaluation Hedge

Gold is popularly known to be a natural inflation hedge. Because inflation inexorably reduces the value of fiat currencies, that is to say paper money issued by governments as legal tender gold's relatively worth tends to rise. Moreover, amid fears of currency devaluation which is common in developing economies gold offers a safer place to store value and therefore demand will be higher with prices as well.

Gold Prices and Geopolitical Tensions

The political landscape has the potential to this end affect gold prices completely. Investors usually steer their funds towards gold in the pretext of achieving stability, especially with political instability, wars or any forms of national tensions. One way or another, gold has traditionally had such properties and during the periods of this nature its behavior serves as further support for it being a crisis commodity which often moves out-of-phase to other risk units.

Economic Sentiment and Gold Demand

Moreover, underlying economic sentiment is of critical influence in the demand for gold. During economic boom times, gold is likely to experience a decline in the demand since other investments appear better. Nevertheless, in times of economic pessimism or fear for the future such as Human measures gold's safe investment option commonly grows during financial world crisis and pandemic crises.

The UAE Infographics – Gold Price in the context of UAE

However, given the fact that UAE is a country with fast-developing and highly diversified national economy as well are significant participant of international golden trade it may be useful to understand how worldwide and regional economic affecting on price formation. The depiction of UAE's gold market will therefore be incomplete without the mention of regional economic policies and Middle East geopolitical occurrences that also impact on this specific industry in addition to other global economic influences.

The Biggest Issue with Gold Price Prediction

Preliminary Considerations on the Forecast Complexity of Gold Prices

That premise makes it very difficult to predict the cost of gold in any financial institution. The cost of gold is affected by a variety of factors, from macroeconomic measures to political events; it makes the process difficult and even ambiguous.

Multiplicity of Influencing Factors

Multiple aspects of drivers also contribute to the challengefulness of forecasting gold prices. Some of these factors are global economic circumstances, policies that some major central banks implements, inflation rates and perceptions in markets globally. With everything in the market being dynamic, these influences affect gold prices differently and often interact with one another thus making it harder to forecast.

Macroeconomic Variables and Gold Prices

Gold prices are heavily influenced by macroeconomic factors that include GDP growth rate, interest rates and inflation. The relationship between these variables and gold prices, however, is not always linear. For example, the high rate of inflation normally increases gold prices but may be changed by other things like strong dollar value or rising stock markets.

Political Events and Market Sentiments

Changes in gold prices can take a sudden shift due to the political issues such as change of government through election, policy changes and even because of large conflicts between countries. In the same note, market sentiments which are purely based on how investors view things at that material time can lead to unwarranted and unpredictable changes in value of gold within a very short period. This unpredictability pose challenges in creating a complete predictive model.

Emerging Trends in Financial Sectors

Dynamic tendencies in alternative financial industries, such as the appearance of cryptocurrencies might also influence costs on gold. If there are new sectors of the economy being discovered over image boosters to gold, they could pull or attract investor attention from it and hence affect its price composition.

Innovative tools and challenges of analyzing data

In addition, technology and data analytics have progressed sufficiently to provide numerous tools for analyzing large volumes of market information that could be helpful in forecasting gold prices. On the other hand, achieving these goals lies squarely on a high amount of complex information that requires sophisticated analytical models.

The Unique Position of the UAE in Gold Price Dynamics

In the UAE case, gold forecast takes into account both global market indicators and Middle East oriented variables. Powerful presence of the UAE in the gold market worldwide combined with its economic conditions and regional development environment complicated official procedures involved this forecasting by forecasts.

Why do we need a comprehensive analysis?

Vision and mission can be interpreted as some other aspects of strategic sphere that contribute to the formation of a single harmonizing vision or goals.

However, in the ever-dynamic industry of gold values, a detailed analysis beyond just historical trend review is essential. This strategy is, however, crucial if the scope of study entails the trend and prognoses in dynamics toward gold prices within United Arab Emirates-UAE-accompanied by benchmark that usually are from major global economies.

Beyond Historical Trends: Integrating Contemporary Economic Landscapes

Though historical background of the gold price remains a useful basis for analysis, basing all predictions on processes and conclusions gained from history is not enough in general today's environment which alters with high speed. Nevertheless, a holistic assessment also needs to consider the contemporary international financial backdrop incorporating some recent geopolitical dynamics that are reverberating across emerging markets trends as well as technology influences on all forms of global capital market integration. This broader view leads to a more precise and useful insight into the possible future developments in gold prices.

Significance of a Multidimensional Approach

A numerous of factors contribute to a comprehensive analysis on the dynamics of gold prices, and macroeconomic indicators; geopolitical events are taken into consideration since they shape market sentiments. This method takes into account the multidimensional nature of above-the-ground gold market in which multiple factors combine and interact dynamically, sometime unpredictably. An appreciation of such relationships is critical toward the development of a strong predictive model for gold prices.

Other Financial Markets Relations

Thus, it is imperative to know the relationship between gold prices and other financial markets such as shares or commodities like oil and gas. The gold market is not an island on its own, changes in other markets can affect the price of gold significantly. This nexus has to be considered during an in-depth analysis.

3.2 Data Description

3.2.1 Data Sources

The dataset sources are two distinct but related economic domains, namely cryptocurrency and precious metals. Bitcoin_cash_price dataset is about Bitcoin Cash, a prominent cryptocurrency, and including daily price-related metrics such as opening, highest, lowest, and closing prices, along with trading volume and market capitalization, spanning from November 2017 to the present. The annual_gold_rate dataset captures the annual gold rates from various dates, starting from December 1980, encompassing gold prices denoted in multiple currencies including US dollars, Euros, British Pounds, Indian Rupees, United Arab Emirates Dirham, and Chinese Yuan. They offer a rich tapestry of financial data, allowing for comprehensive analysis of the dynamics between the volatile cryptocurrency market and the more traditional yet enduring realm of precious metals, shedding light on the intricate interplay between emerging digital assets and established economic benchmarks.

3.2.2 Data Features

Table 1 presents dataset features. For the first dataset, the features include the date of the data entry, along with various price-related metrics such as open, high, low, close prices, trading volume, and market capitalization. For the second dataset, the features include the date as well as gold prices in different currencies like USD, EUR, GBP, INR, AED, and CNY.

Table 1 *Dataset Features*

Feature Name	Description	Type
Date	The date of the data entry	Categorical
Open	The opening price of the asset (Bitcoin Cash)	Numerical
High	The highest price of the asset during the day	Numerical
Low	The lowest price of the asset during the day	Numerical
Close	The closing price of the asset	Numerical
Volume	The trading volume of the asset	Numerical
Market Cap	The market capitalization of the asset	Numerical
USD	Gold price in US dollars	Numerical
EUR	Gold price in Euros	Numerical
GBP	Gold price in British Pounds	Numerical
INR	Gold price in Indian Rupees	Numerical
AED	Gold price in United Arab Emirates Dirham	Numerical
CNY	Gold price in Chinese Yuan	Numerical

CHAPTER 4- DATA ANALYSIS

4.1 Project Description

The primary objective of this chapter is to undertake an empirical analysis of extensive datasets to uncover the complex dynamics influencing gold prices within the UAE, while also examining correlations with major global economies. The overarching aim is to develop a robust integrated analysis and predictive model capable of comprehensively understanding and forecasting gold price movements.

This chapter adopts a systematic approach to analyze historical gold price data alongside relevant economic indicators such as crude oil prices, stock market trends, and currency valuations. By utilizing advanced statistical tools, particularly time series analysis and predictive modeling in R Studio, the study aims to identify key indicators and forecast future price movements accurately.

4.1.1 Scope

The scope of the project encompasses a thorough examination of gold price dynamics within the UAE context, considering its correlations with major global economies including the USA, India, China, and European countries. By delving into various economic indicators and geopolitical events, the study seeks to provide a comprehensive understanding of the multifaceted factors driving gold price fluctuations.

4.2 Data Collection and Preparation

4.2.1 Collection Process

This section entails meticulous attention to detail in collecting and preparing datasets comprising historical gold prices, macroeconomic indicators, geopolitical events, and market sentiments. Data is sourced from reputable financial institutions, governmental agencies, and scholarly publications to ensure reliability and integrity.

4.2.2 Validation

Data integrity is rigorously validated to mitigate potential biases or inaccuracies. Robust quality control measures are implemented to ensure consistency and reliability across all datasets used in the analysis.

4.2.3 Transformation

Datasets undergo transformation and preprocessing to standardize formats and address missing values or outliers. This phase ensures that data is in a suitable format for subsequent analysis and modeling. In the data preparation and cleaning process, the first step was to check for missing values in both the gold_data and bitcoin_data datasets. If missing values were present, they were addressed through removal or imputation. For instance, missing values in the gold_data dataset were handled by removing the corresponding rows using the na.omit () function. On the other hand, missing values could be imputed using measures such as the mean or median of the respective variable, in this case, the gold price in USD. The missing values were imputed using the mean value of the USD gold prices. Furthermore, the data preparation process also involved identifying and addressing outliers. Outliers were identified using boxplot visualization and subsequently removed based on the Interquartile Range (IQR) method. The lower and upper boundaries for outliers were determined using the first and third quartiles (Q1 and Q3) along with the IQR. Outliers beyond 1.5 times the IQR from the quartiles were removed from the dataset using the filter () function.

4.2.4 Integration

Integrated datasets from various sources are consolidated to create a unified dataset for analysis. This comprehensive dataset forms the foundation for subsequent exploratory data analysis and modeling efforts.

4.2.5 Documentation

Detailed documentation is maintained throughout the data collection and preparation process to provide transparency and reproducibility. This includes recording data sources, preprocessing steps, and any transformations applied to the datasets.

4.2.6 Validation and Reliability

Validation procedures are implemented to ensure the reliability and accuracy of the collected data. This includes cross-referencing data from multiple sources and conducting sensitivity analyses to assess the robustness of the findings.

4.2.7 Ethical Considerations

Ethical considerations are paramount throughout the data collection process, ensuring compliance with data privacy regulations and ethical standards. Measures are taken to anonymize sensitive information and protect the privacy rights of individuals represented in the datasets.

4.2.8 Limitations

Despite rigorous validation and quality control measures, it's important to acknowledge potential limitations inherent in the data collection process. These may include data gaps, biases, or inaccuracies inherent in the original sources, which could impact the reliability and generalizability of the findings.

4.3 Exploratory Data Analysis (EDA)

4.3.1 Overview

The exploratory data analysis (EDA) phase involves a comprehensive examination of the collected datasets to uncover patterns, anomalies, and correlations (Victoria et al., 2023). This serves as a crucial step in understanding the underlying structure of the data and identifying key insights that will inform subsequent analysis and modeling efforts.

4.3.2 Descriptive Statistics

Descriptive statistics are used to summarize the main characteristics of the datasets, including measures of central tendency, dispersion, and distribution (Victoria et al., 2023). This provides initial insights into the range and variability of the variables under investigation.

4.3.3 Visualization Techniques

Visualization techniques such as histograms, scatter plots, and time series plots are employed to visualize the distribution and relationships between variables (Victoria et al., 2023). This aids in identifying patterns, trends, and outliers within the data.

4.3.4 Time Series Analysis

Time series analysis is conducted to examine the temporal evolution of gold prices and other economic indicators over time. This involves decomposition of time series data into trend, seasonal, and residual components to identify underlying patterns and trends.

4.3.5 Correlation Analysis

Correlation analysis is performed to assess the strength and direction of relationships between gold prices and other economic indicators (Victoria et al., 2023). This helps identify variables that are most strongly correlated with gold prices and may have predictive power in forecasting future price movements.

4.3.6 Insights and Interpretation

The insights gained from the exploratory data analysis phase provide valuable insights into the underlying structure of the data and inform subsequent modeling efforts (Victoria et al., 2023).

These insights help identify key factors driving gold price movements and guide the development of predictive models in later stages of the analysis.

4.4 Predictive Modeling

In the pursuit of accurately forecasting gold price movements, the pinnacle of our analysis lies in constructing predictive models that leverage sophisticated machine learning algorithms. These models harness the power of historical data and exogenous variables to generate forecasts that are both precise and reliable.

4.4.1 Leveraging Advanced Machine Learning Algorithms

AutoRegressive Integrated Moving Average (ARIMA) is a powerful time series analysis technique that captures temporal dependencies in sequential data. By modeling the autoregressive, differencing, and moving average components of time series data, ARIMA can effectively capture and forecast trends, seasonal patterns, and irregularities in gold price movements (Shariff, 2022). Long Short-Term Memory (LSTM) is a specialized recurrent neural network architecture that excels at capturing long-term dependencies in sequential data. Due to its ability to retain memory over extended time periods, LSTM is well-suited for modeling complex temporal patterns in gold price data, such as non-linear trends and irregular fluctuations (Shariff, 2022). Ensemble methods combine multiple individual predictive models to produce a more robust and accurate forecasting ensemble. Techniques such as Random Forest, Gradient Boosting, and Stacking are employed to aggregate predictions from diverse models, leveraging their complementary strengths to enhance overall forecasting performance.

Machine learning models, including ARIMA, LSTM, and ensemble methods, are trained using historical gold price data and relevant exogenous variables such as macroeconomic indicators, geopolitical events, and market sentiments (Shariff, 2022). The models are iteratively refined and optimized to maximize forecasting accuracy.

4.4.2 Cross-Validation

Model performance is rigorously evaluated through cross-validation techniques such as k-fold cross-validation and time series cross-validation (Shariff, 2022). This involves partitioning the dataset into training and validation subsets, iteratively training the model on different subsets, and assessing performance metrics such as mean absolute error (MAE), mean squared error (MSE), and root mean squared error (RMSE).

4.4.3 Out-of-Sample Testing

To assess the generalization capability of the models, out-of-sample testing is conducted on unseen data that was not used during model training. This helps validate the robustness of the models and provides confidence in their ability to accurately forecast gold price movements in real-world scenarios.

CHAPTER 5: RESULTS

5.1 Descriptive Statistics

Table 2 presents a descriptive statistics of gold prices in United Arab Emirates Dirham (AED) with five major economies (USD, EUR, GBP, INR, and CNY) revealing notable distinctions. AED exhibits lower mean and median values compared to all other currencies, indicating generally lower gold prices. However, AED's standard deviation, while lower than INR, is higher than USD, EUR, GBP, and CNY, suggesting relatively greater price variability.

This analysis underscores AED's position within the international gold market, portraying it as characterized by lower average prices but moderate variability compared to its counterparts.

Table 2 *Descriptive statistics*

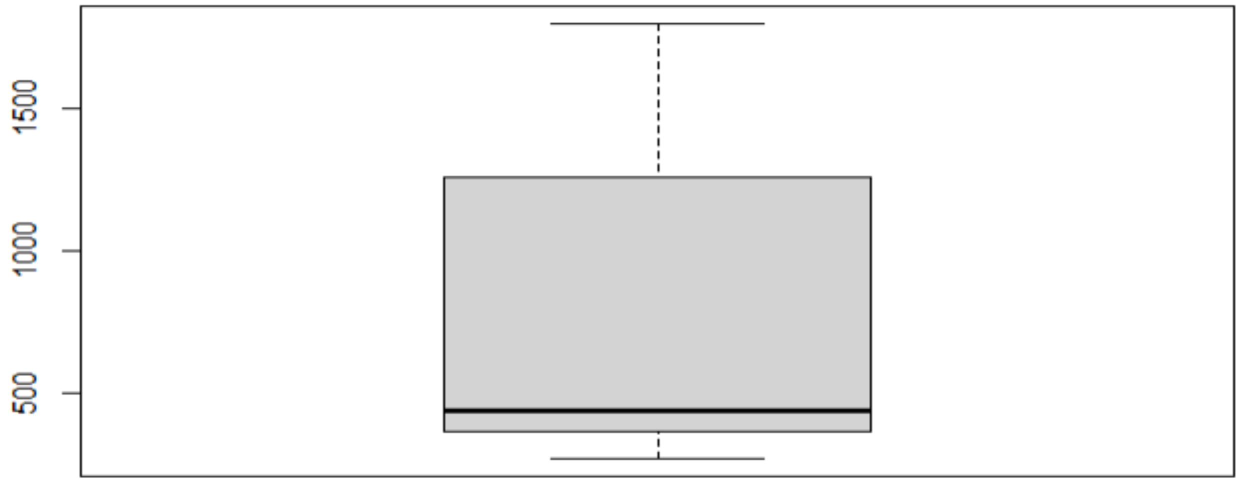
Currency	Mean	Median	Standard deviation
USD	776.8	440.7	529.65
EUR	647.7	362.2	443.51
GBP	520.6	251.0	399.89
INR	41611	17723	41209.67
AED	2852.8	1618.2	1945.75
CNY	5138.9	3346.4	3527.00

5.2. EDA Results

The boxplot (Figure 1) results suggest that the gold price data is right-skewed, with a cluster of data points towards the lower end and some extreme values towards the upper end. The presence of outliers may indicate unusual or extreme gold price fluctuations during certain periods, which could be further investigated for their underlying causes. Additionally, the wide range between the upper and lower boundaries of the boxplot highlights the variability in gold prices over time.

Figure 1

Boxplot of Gold Price Data



Time Series Findings

Figure 2 shows a similar trend between AED and USA gold prices over the period. The similar trends observed in gold prices denominated in AED and USD, despite differences in their respective price levels, indicate a notable degree of correlation between the two currencies within the gold pricing context. This correlation can be attributed to various factors. Firstly, both AED and USD are influenced by similar macroeconomic factors such as changes in interest rates, inflation rates, and geopolitical events, which can impact their gold prices in a parallel manner. Furthermore, as gold is traded globally, international market dynamics and investor sentiment can lead to synchronized movements in gold prices across different currencies. Fluctuations in currency exchange rates between AED and USD also contribute to the relative pricing of gold in these currencies, while the interconnected nature of global financial markets facilitates rapid information dissemination and synchronized trends. Moreover, investor behavior, particularly regarding gold's perceived role as a safe-haven asset or hedge against economic uncertainty, can further align the trends in gold prices across currencies. Despite variations in absolute price levels, the similar trends in AED and USD underscore the common influences shaping gold pricing and highlight the global nature of gold as a traded commodity.

Figure 2

AED and USA Gold Prices over Time Trend

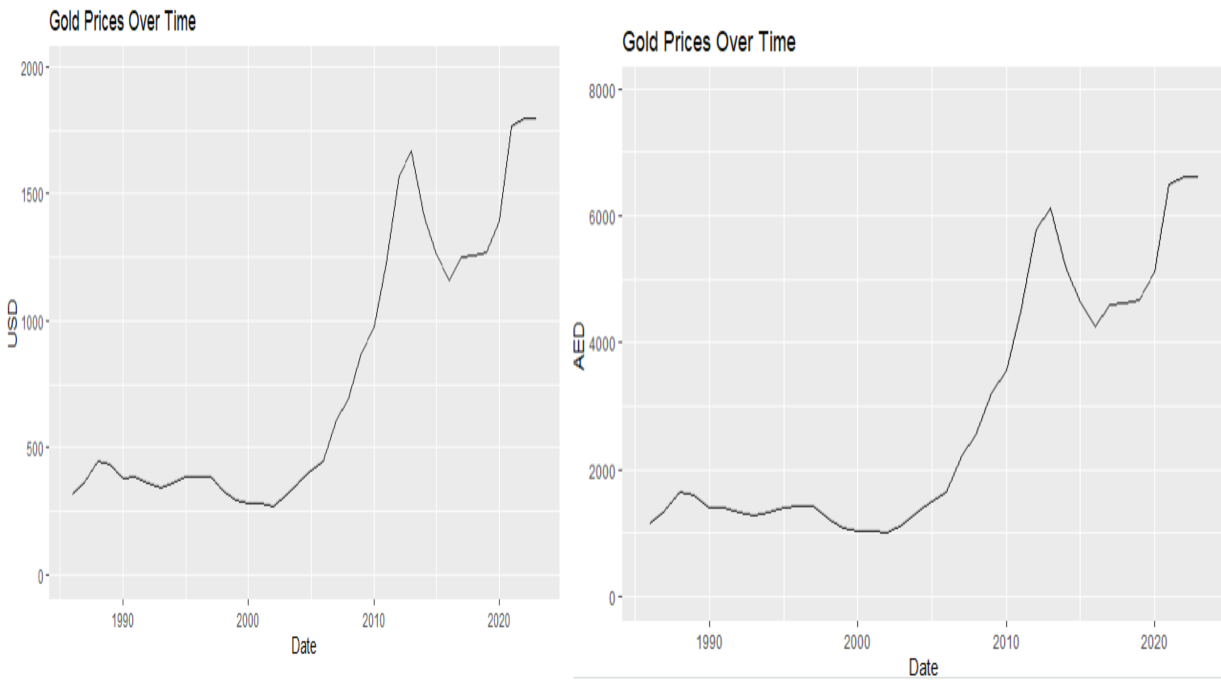


Figure 3 shows the Bitcoin close price ranges between 200 and 800, with a notable peak occurring in late August. Following this peak, there was a slight downtrend observed until late November, after which the trend reversed, showing an increase. This pattern suggests a period of volatility and fluctuation in Bitcoin prices, with a significant surge followed by a temporary decline before witnessing renewed upward momentum towards the end of the observed period. These fluctuations reflect the dynamic nature of the cryptocurrency market, influenced by factors such as market sentiment, investor behavior, and external events impacting the broader financial landscape.

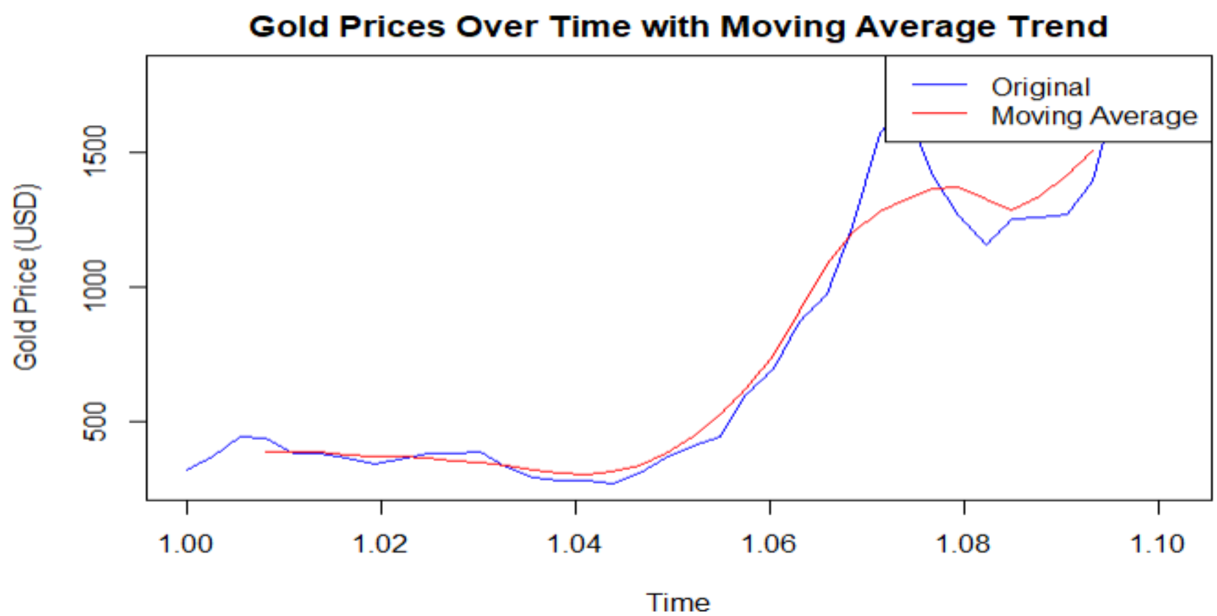
Figure 3

Bitcoin Price over Time

Figure 4 shows that gold prices over time using a moving average trend had a relatively consistent alignment between original prices and the moving average, except for a notable deviation at certain points, particularly between time points 1.06 and 1.08, where original prices exceed the moving average. This discrepancy suggests temporary spikes or fluctuations in gold prices beyond the expected trend. Despite these occasional deviations, the moving average effectively smooths the overall price trajectory, providing valuable insights into long-term trends while reducing the impact of short-term fluctuations. This underscores the usefulness of moving averages in interpreting price movements and identifying anomalies in the data.

Figure 4

Prices over Time Using a Moving Average Trend



The subsequent bar graph (Figure 5) shows a stable gold prices for the first three major currencies while AED is the fourth best performing currency in gold prices better than INR and CYN.

Figure 5

Gold Prices Comparison with AED

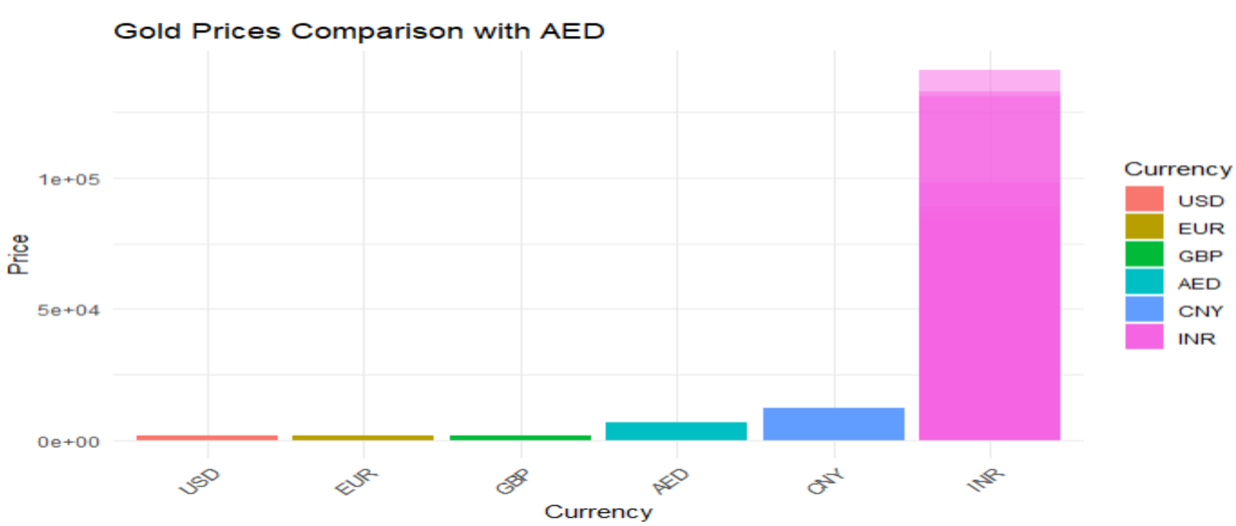


Figure 6 shows a scatterplot depicting the relationship between USD and AED. The upward trend characterized by points aligning along a linear line signifies a positive correlation between the two currencies performance on gold prices. This correlation implies that as the value of the US dollar increases, the value of the United Arab Emirates Dirham also tends to rise, and vice versa. The tightness of the clustering around the line indicates the strength of this relationship, with tighter clustering suggesting a stronger positive correlation. Furthermore, the linear pattern observed indicates that changes in one currency can be reasonably predicted based on corresponding changes in the other, suggesting predictive capabilities. This relationship can be quantified and utilized for predictive modeling through regression analysis. In essence, the alignment along an upward linear trend in the scatterplot underscores a positive linear relationship between USD and AED, wherein increases or decreases in one currency are typically accompanied by corresponding shifts in the other.

Figure 6

Scatterplot AED vs. USD

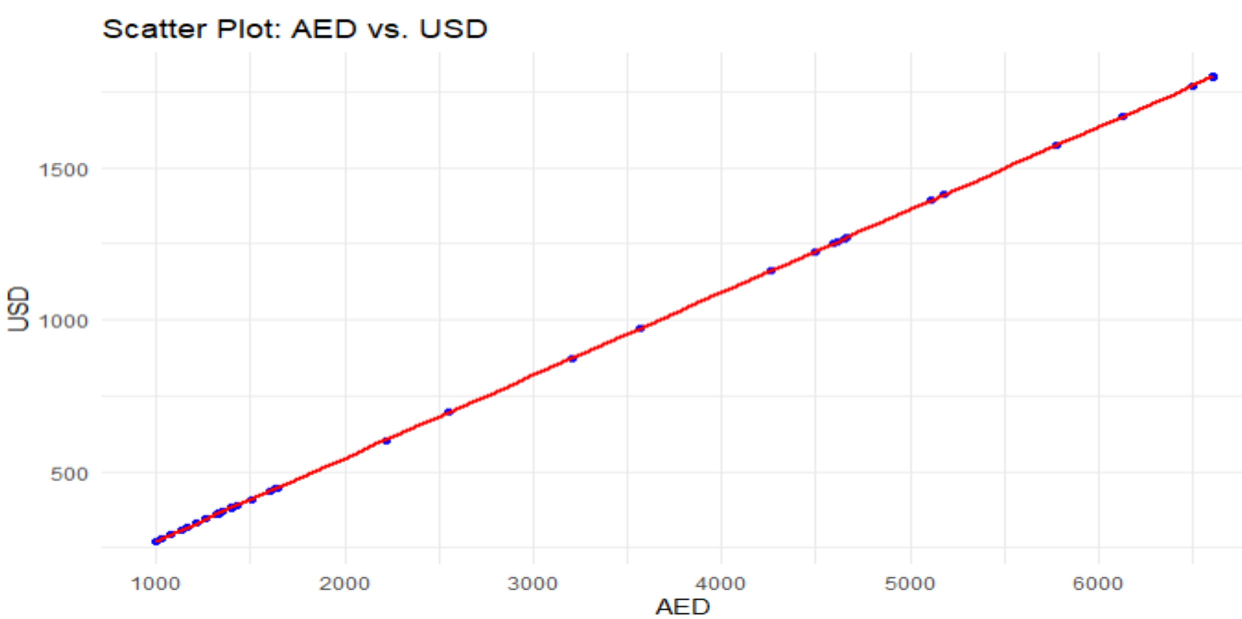
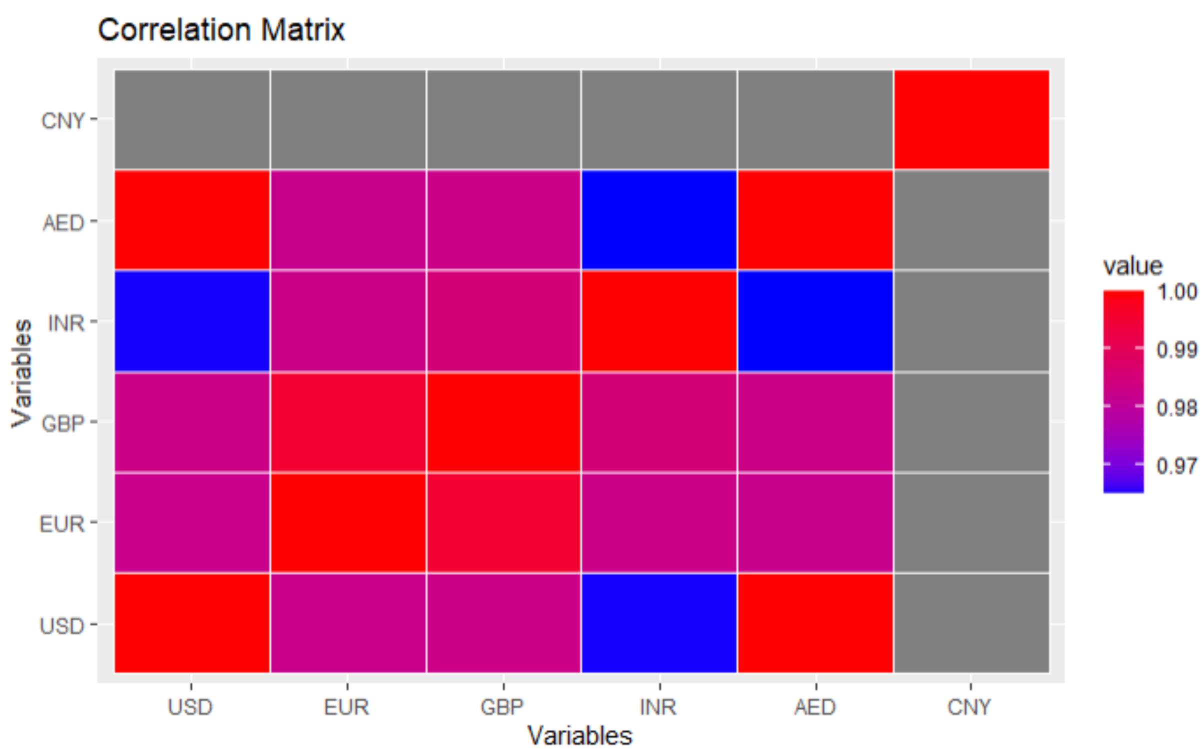


Figure 7 exhibit a correlation matrix showing values between 0.97 and 1.0 indicates an extremely high degree of positive correlation between AED and the other five major economies in terms of gold prices. This implies that the movement of gold prices denominated in AED closely mirrors that of gold prices in USD, EUR, GBP, INR, and CNY. Essentially, when gold prices increase or decrease in any of these currencies, they tend to do so in a very similar manner in AED. Such a high correlation suggests strong interconnectedness or synchronization in the factors influencing gold pricing across these currencies, potentially reflecting common economic, geopolitical, or market dynamics driving gold prices globally.

Figure 7

Correlation Matrix

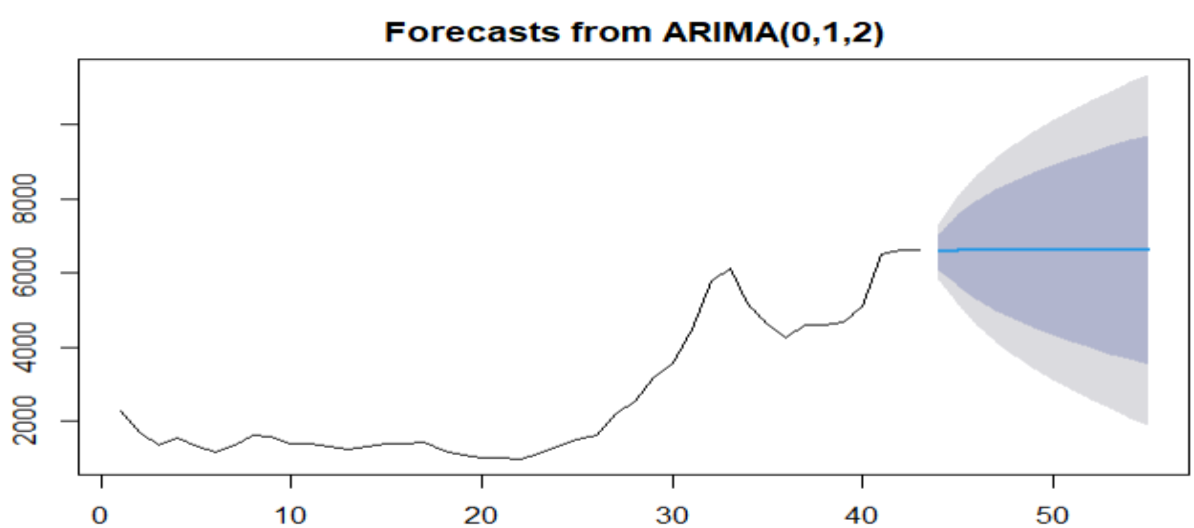


5.3 Predictive Modeling Results

Figure 8 presents plot resulting from the ARIMA model and forecast generation showcases several key elements. The blue line delineates the point forecast derived from the ARIMA model, illustrating the predicted trajectory of the time series over the forecast horizon. Surrounding this line, the purple internal coloration signifies the prediction intervals, delineating the expected range of future observations with a specified level of confidence. Furthermore, the outer grey area denotes the forecast intervals, which extend beyond the prediction intervals to encompass both model parameter uncertainty and future observation uncertainty. Typically resembling a funnel shape, the widening of these intervals signifies escalating uncertainty as we project further into the future. The cloud-like feature in the plot likely emerges from the overlap of prediction and forecast intervals, serving as a visual representation of the forecast uncertainty. In essence, this plot offers valuable insights into anticipated future values of the time series alongside the associated levels of uncertainty.

Figure 8

Forecasts from ARIMA

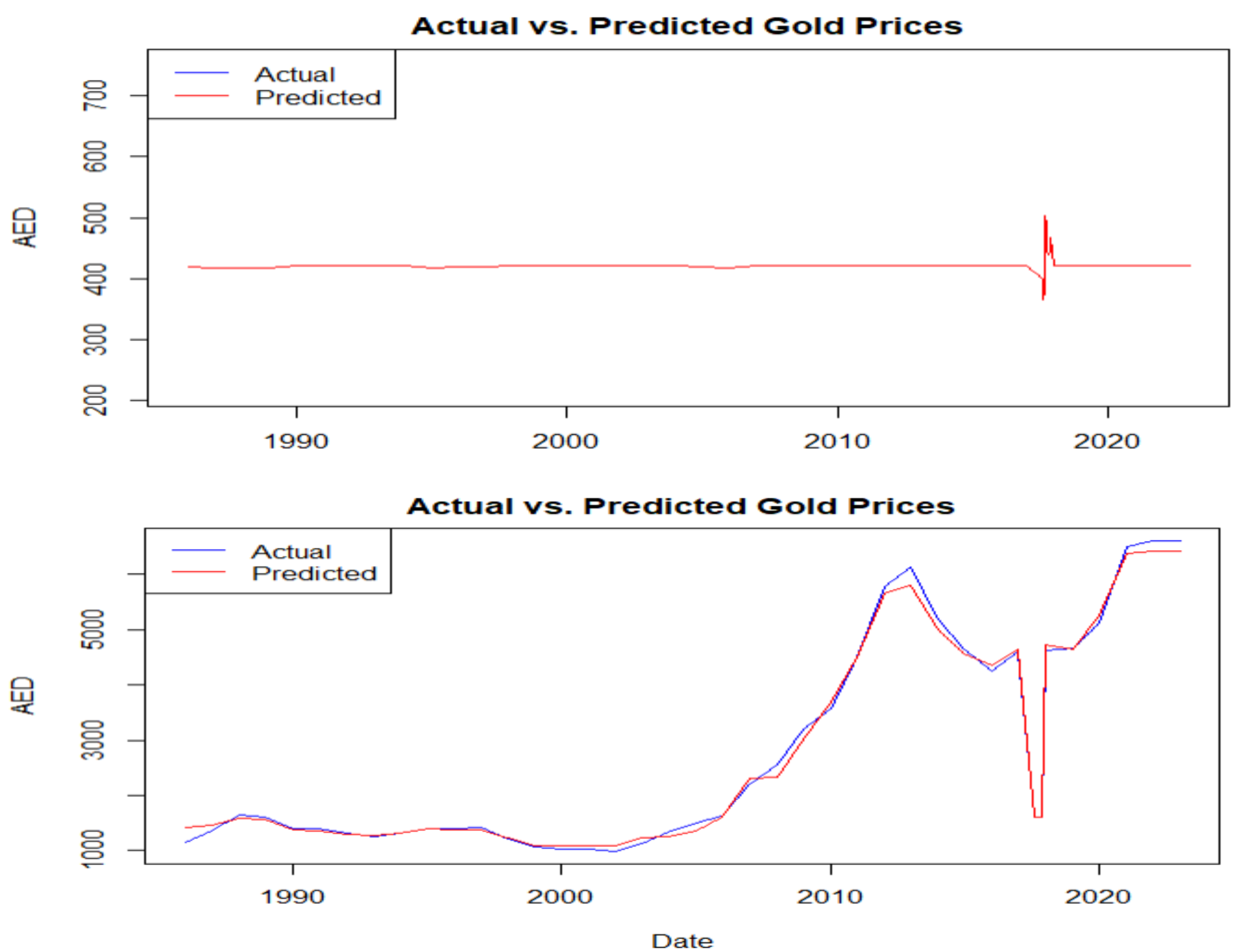


5.4 Cross Validation Performance

Figure 9 presents two plots visualize the actual and predicted gold prices over time. In both plots, the blue line represents the actual gold prices observed in the dataset, while the red line represents the predicted gold prices generated by the respective models. The plots allow for a visual comparison between the actual and predicted values, showcasing how well each model captures the underlying patterns and trends in the gold price data. Comparing the positions and fluctuations of the blue and red lines provides insights into the accuracy and reliability of the models' predictions.

Figure 9

Actual vs. Predicted Gold Prices



Based on the cross-validated performance metrics, both the RF model and the ARIMA model exhibit strong predictive ability for the gold price data. However, when comparing the models directly based on the results, the Random Forest model appears to outperform the ARIMA model slightly, as it achieves a lower root mean squared error (RMSE) of approximately 120.43 compared to the ARIMA model's RMSE of approximately 131.59. Additionally, the Random Forest model demonstrates a higher coefficient of determination (R-squared) of approximately 0.9941 compared to the ARIMA model's R-squared of approximately 0.9934. Therefore, in this scenario, the Random Forest model may be considered the better-performing model for predicting gold prices.

```
Random Forest

102 samples
  7 predictor

No pre-processing
Resampling: Cross-Validated (10 fold)
Summary of sample sizes: 92, 91, 91, 91, 93, 92, ...
Resampling results across tuning parameters:

  mtry  RMSE      Rsquared   MAE
  2     131.5893  0.9933924  53.86457
  4     120.4347  0.9940822  48.28015
  7     123.4040  0.9952098  49.93633

RMSE was used to select the optimal model using the smallest value.
The final value used for the model was mtry = 4.
```

ARIMA model'

```
                   ME     RMSE      MAE      MPE     MAPE      MASE        ACF1
Training set 53.48393 363.4242 243.8299 1.251662 8.625142 0.8327956 -0.06987775
```

CHAPTER 6 CONCLUSIONS & RECOMMENDATIONS

6.1 Conclusions

The study sheds light on the intricate dynamics of gold prices within the United Arab Emirates (UAE) context compared to major global economies such as the United States of America, India, China, and various European countries. Through comparative analysis, the research unveils the underlying factors influencing gold prices, encompassing macroeconomic indicators, geopolitical events, and market sentiments. The descriptive statistics highlight the distinctive position of the UAE Dirham (AED) in the international gold market, characterized by relatively lower average prices but moderate variability. Furthermore, exploratory data analysis (EDA) reveals the right-skewed distribution of gold prices, indicating occasional extreme fluctuations possibly driven by exceptional events. Time series analysis demonstrates a notable correlation between AED and USD gold prices, emphasizing the common influences and synchronized movements across currencies. Predictive modeling using both Random Forest and ARIMA techniques showcases strong performance in forecasting gold prices, with the Random Forest model exhibiting slightly superior predictive accuracy compared to ARIMA.

6.2 Recommendations and Future Work

Based on the findings, several recommendations can be made for investors, policymakers, and researchers. Firstly, investors should consider the common influences driving gold prices across currencies when making investment decisions, taking into account macroeconomic trends, geopolitical developments, and market sentiments. Policymakers could utilize the insights from this study to formulate strategies aimed at mitigating risks associated with gold price fluctuations and enhancing the stability of financial markets. Additionally, further research could explore additional factors influencing gold prices, such as central bank policies, global trade dynamics, and technological advancements in the gold mining industry. Incorporating more granular data and employing advanced modeling techniques could also refine the accuracy of gold price forecasts. Overall, this study contributes to a deeper understanding of gold price dynamics and offers valuable implications for stakeholders navigating the global and regional economic landscapes.

Reference

1. Abolafia, M. Y. (2020). *Stewards of the market: How the Federal Reserve made sense of the financial crisis.*

2. Akhtaruzzaman, M. B. (2021). Is gold a hedge or a safe-haven asset in the COVID–19 crisis?. *Economic Modelling*, 102, 105588.

3. Aruga, K. &. (2020). Effects of the 2008 financial crisis on the linkages among the oil, gold, and platinum markets. *Cogent Economics & Finance,*, 8(1), 1807684. .

4. Blore, S. &. (2020). Dubai's problematic gold trade. Dubai's role in facilitating corruption and global illicit financial flows. . *Washington DC: Carnegie Endowment for International Peace,*, 35-47.

5. Boubaker, H. C.-A. (2020). Global crises and gold as a safe haven: Evidence from over seven and a half centuries of data. . *Physica A: Statistical Mechanics and Its Applications*, 540, 123093.

6. Caggiano, G. C. (2020). Economic policy uncertainty spillovers in booms and busts. . *Oxford Bulletin of Economics and Statistics*, 82(1), 125-155.

7. Chai, J. Z. (2021). Structural analysis and forecast of gold price returns. . *Journal of Management Science and Engineering*, 6(2), 135-145.

8. CHAINANI, R. K. (2020). DETERMINANTS OF GOLD PRICES UNDER DIFFERENT SCENARIOS (Doctoral dissertation, School of Commerce, Gujarat University).

9. Cherian, A. (2020). The construction industry in the perspective of an economic boost of the United Arab Emirates (UAE). . *Int. Res. J. Eng. Technol*, 9001, 270-276.

10. Do, M. D. (2023). Is gold an inflation hedge in Vietnam? A non-linear approach. *Cogent Economics & Finance*, 11(2), 2244857.

11. Dutta, A. B. (2021). Climate bond, stock, gold, and oil markets: Dynamic correlations and hedging analyses during the COVID-19 outbreak. . *Resources Policy*, 74, 102265.

12. Echarte Fernández, M. Á.-V. (2021). Central banks' monetary policy in the face of the COVID-19 economic crisis: Monetary stimulus and the emergence of CBDCs. . *Sustainability*, 13(8), 4242.

13. Erb, C. H. (2020). Gold, the golden constant, and déja vu. . *Financial Analysts Journal*, 76(4), 134-142.

14. Fairbairn, M. (2021). Fields of gold: Financing the global land rush. . *Cornell University Press.*, 234.

15. Ferry, E. (2020). Speculative substance:'physical gold'in finance. *Economy and society*, 49(1), 92-115.

16. Foster, K. B. (2021). Digital currencies and CBDC impacts on least developed countries (LDCs). . *The Dialogue on Global Digital Finance Governance Paper Series.*

17. Gendron, Y. M. (2023). Popular expertise in financial markets: An analysis of Due Diligence posts on WallStreetBets. . *Available at SSRN 4234609.*

18. Green, J. (2020). The political economy of the special relationship: Anglo-American development from the gold standard to the financial crisis. *Princeton University Press.*

19. Gurdgiev, C. &. (2020). Herding and anchoring in cryptocurrency markets: Investor reaction to fear and uncertainty. . *Journal of Behavioral and Experimental Finance*, 25, 100271.

20. Hunter, M. S. (2021). Illicit gold markets in East and Southern Africa. Global Initiative Against Transnational Organized Crime. *Global Initiative Against Transnational Organized Crime.*

21. Khalil, M. &. (2021). US trade policy and the US dollar.

22. Kim, J. M. (2020). On the relationship of cryptocurrency price with us stock and gold price using copula models. . *Mathematics*, 8(11), 1859.

23. Klayme, T. G. (2023). Economic policy uncertainty, Covid-19 and corporate investment: Evidence from the gold mining industry. . *Resources Policy*, 103787.

24. Li, Y. H. (2021). Analyzing the time-frequency connectedness among oil, gold prices and BRICS geopolitical risks . *Resources Policy*, 73, 102134.

25. Li, Y. H. (2021). Analyzing the time-frequency connectedness among oil, gold prices and BRICS geopolitical risks. . *Resources Policy*, 73, 102134.

26. Litvinenko, V. S. (2020). Digital economy as a factor in the technological development of the mineral sector. . *Natural Resources Research*, 29(3), 1521-1541.

27. Menakadevi, P. P. (2021). An Awareness of Multifaceted Investment behaviour in Different Gold Instrument-as Paper, Physical and Digital Gold. . *Annals of the Romanian Society for Cell Biology*, 14939-14951.

28. Mpanza, M. A. (2020). Perceptions of external costs of dust fallout from gold mine tailings: West Wits Basin. . *Clean Air Journal*, 30(1), 1-12.

29. Nazir, S. &. (2021). Trends in crude oil price and its economic impact. . *South Asian Journal of Marketing & Management Research*, 11(5), 1-11.

30. Neethling, R. &. (2021). An assessment of the classical relationship of price fluctuations between the gold market and the US Dollar. . *Acta Universitatis Danubius.*, 17(4).

31. Ngai, M. (2021). *The Chinese Question: The Gold Rushes, Chinese Migration, and Global Politics.* WW Norton & Company.

32. Öztunç, H. &. (2021). Gold demand by central banks: a comparative study of emerging market and advanced economies. . *Emerging Markets Finance and Trade*, 57(9), 2687-2698.

33. Pian, H. &. (2020). Gold deposits of China: Resources, economics, environmental issues, and future perspectives. . *Geological Journal*, 55(8), 5978-5989.

34. Pradeep, K. V. (2022). Gold price dynamics in India: A pre-post-liberalization comparison. . *9(2), 102-107*, 9(2), 102-107.

35. Rasheed, H. A. (2021). Is Gold a Hedge and Safe Haven during Political Uncertainties?. . *Business & Economic Review,*, 13(2), 1-28.

36. Rastogi, S. D. (2023). Volatility integration of gold and crude oil prices with the interest rates in India. . *South Asian Journal of Business Studies,*, 12(3), 444-461.

37. Selmi, R. B. (2022). “Digital Gold” and geopolitics. . *Research in International Business and Finance*, 59, 101512.

38. Shabbir, A. K. (2020). Impact of gold and oil prices on the stock market in Pakistan. Journal of Economics, . *Finance and Administrative Science*, 25(50), 279-294.

39. Sheikh, U. A. (2020). Asymmetrical relationship between oil prices, gold prices, exchange rate, and stock prices during global financial crisis 2008: Evidence from Pakistan. . *Cogent Economics & Finance*, 8(1), 1757802.

40. Singhal, M. (2020). *EFFECT OF MACROECONOMIC VARIABLES ON STOCK MARKET: INDIAN PERSPECTIVE (Doctoral dissertation).*

41. Sriraman, V. P. (2020). ECONOMIC IMPLICATIONS OF CURRENCY RATE FLUCTUATIONS IN INTERNATIONAL FINANCIAL MARKETS. . *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(9), 8720-8739.

42. Su, C. W. (2022). Will gold always shine amid world uncertainty?. . *Emerging Markets Finance and Trade*, 58(12), 3425-3438.

43. Sui, M. R. (2021). Gold, inflation and exchange rate in dollarized economies–A comparative study of Turkey, Peru and the United States. . *International Review of Economics & Finance*, 71, 82-99.

44. Ulrich, S. T. (2022). Gold mining greenhouse gas emissions, abatement measures, and the impact of a carbon price. . *Journal of Cleaner Production*, 340, 130851.

45. Wang, X. L. (2022). Can gold hedge against oil price movements: Evidence from GARCH-EVT wavelet modeling. . *Journal of Commodity Markets,*, 27, 100226.

46. Xu, J. (2023). The Road to Democracy in Communist Countries: Exploring the Influences in Transformation including nationalism.

47. Yousef, I. &. (2020). The impact of COVID-19 on gold price volatility. *International Journal of Economics and Business Administration,*, 8(4), 353-364.

48. Zagaglia, P. &. (2022). Gold and the US dollar: tales from the turmoil. In Commodities . *Chapman and Hall/CRC.* , 229-244.

49. Victoria, P. D., Bethany, T., Lily, C., Brett, M., Jonathan, M., Jingyi, C., & Hörst Sarah, H. (2023). Exploratory data analysis (EDA) machine learning approaches for ocean world analog mass spectrometry. Frontiers in Astronomy and Space Sciences, 10, 1-17.

50. Shariff, M. S. (2022). Autoregressive integrated moving average (ARIMA) and long short-term memory (LSTM) network models for forecasting energy consumptions. *EJECE, European Journal of Electrical Engineering and Computer Science, 6*(3), 7-10. http://dx.doi.org/10.24018/ejece.2021.6.3.435