
THE IMPACT OF COMMODITIES PRICE ON STOCK MARKET PRICE: EVIDENCE FROM PAKISTAN

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ABSTRACT

The purpose of this study is to investigate the impact of oil price and gold price fluctuation on stock prices in Pakistan. The time series daily data was collected from the period of 1st Jan 2012 to 25th May 2021. The data was collected from Investing.com and Pakistan stock exchange (PSX). The dependent variable was the stock price and the independent variables were oil price and gold price. Descriptive statistics, unit root test, co-integration, correlation, ordinary least square regression, variance inflation factor, and Granger Casualty test were applied for this research. The results supported the previous studies' results, and predictions and developed hypotheses H1 and H2. The results found that gold and oil price have an inverse relationship with the stock market price of Pakistan. The results suggested that due to more cost of transportation, oil prices rise, which affect negatively stock prices. High oil prices negatively affect the stock price of Pakistan. Moreover, high gold prices have a negative effect stock market, suggesting that gold is a safe investment during high stock market prices. Moreover, the results found that the relation between oil price and stock price is uni-directional. The researchers could predict the stock market price by observing oil prices.

Keywords: Stock Price, Oil Price, Gold Price, KSE 100, Pakistan Stock Exchange

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INTRODUCTION

Investment became an important and necessary in modernization era. People invest their money by using many ways and different strategies for the particular purpose such as to earn more money in future, includes invest in foreign currency, properties, commodities, stock exchange

etc. (Najafabadi, Qazvini, & Ofoghi, 2020). people want to invest their money in gold, oil or stock market, but they do not identify the best time to invest in commodities or in stock market (Shabbir, Kousar, & Batool, 2020).. Historically, Pakistan stock exchange was established in 2016. It is the merger of Islamabad, Karachi and Lahore stock exchange. In 2020, 540 companies have been listing in PSX and capitalization of total market is US \$43 billion.

The total investors include foreign institutional (1886), domestic (883) and retail investors (0.22 millions) (Najaf, Najaf, & Yousaf, 2016). According to statistics, gold price GP has been increasing day by day, In 1952 the price per Tola was Rs.87, Rs. 100 (1954), Rs.132 (1964), Rs. 432 (1974), Rs. 2244 (1984),Rs. 4700 (1994), Rs. 9500 (2004), Rs. 49,500 (2014), now in 2020 gold rates of per Tola is Rs 111,200 on 9 December 2020. It has been increasing continuously. Gold investors' include jewelers, traders, bankers, individual investors etc. however, In Pakistan, gold reserve has increased by 64.38 to 64.64 Tonne from 2000 to 2020. However, Gold act as a safe haven and has less risk for the investors in financial crisis and inflation. While, stock market has high risk Najafabadi et al. (2020).

Furthermore, oil price has been considering as important factor that affects stock prices. In global economy, 1986 to 2006 was the stable period for OP. however, OP rose over the period of 2007 to 2009 from 60 dollar to 145 dollar. After 2009 in the world, OP reduced due to many factors such as high supply of crude oil. While, downturn faced by various countries in recession includes Japan and European country e.g. Germany. In addition demand and supply dynamics the world know about to live environment friendly. Now days, oil has replaced by gas, bio fuel etc. In contrast, Pakistan has been depending on oil resources more.

However, OP is more volatile in Pakistan that influences Pakistan economy as well. Pakistan imports 33% oil. High OP can effect badly on transportation and can benefit for SP return. Fall in the oil prices can also effect many factors positively such as electric bills, low imports bill, transportation and low stock prices by which people can buy more stocks. In 2014-15, the oil import bill decrease from \$15.36 billion to \$11.86 billion in 2013 and 2014. Previous researches found the impact of gold GP and oil prices OP changes on stock market prices SP and determine the economic factors such as inflation that effects the OP and GP which significantly effects the SP (Akbar, Iqbal, & Noor, 2019; Najaf et al., 2016; Najafabadi et al., 2020; Rastogi, 2016; Shabbir et al., 2020; Sheikh, Asad, Ahmed, Mukhtar, & McMillan, 2020)

However, Previous researchers found that, the relationship between gold and stock price is negative (Abootaleb Shirvani & Volchenkov, 2019; Gokmenoglu & Fazlollahi, 2015; Najafabadi et al., 2020; Rastogi, 2016). Shabbir et al. (2020), found that OP and GP have a significant influence on the SP. The researchers recommended that gold is good commodity as an investment. Therefore, people should invest in gold. The reason behind that inflation fluctuation decreases money's real value, so it would be the best idea for investors to find alternative opportunities such as invest in commodities like gold, to earn more returns and safe the assets' value. Moreover, gold investment is act like a tool, which decline or reduce the pressure of inflation to a level of sustainable. In addition, Gold is one of the best investment that have no risk of diversification (Akbar et al., 2019). Gokmenoglu and Fazlollahi (2015), found long run relationship exist between GP, OP and SP. Akbar et al. (2019), found short-run linkage between GP, SP, IR and ER. Moreover, Inverse bilateral association found between SP and GP. The result suggested that low or decline stock market prices boom or increases the gold prices, indicated that gold is a secure and alternative investment in recession periods. Furthermore, increases or decreases in gold price, tend to decreases or increases the stock price (Abootaleb Shirvani & Volchenkov, 2019; Najaf et al., 2016; Najafabadi et al., 2020; Nordin, Nordin, & Ismail, 2014; Rastogi, 2016; Raza, Jawad Hussain Shahzad, Tiwari, & Shahbaz,

2016; Shabbir et al., 2020; Sheikh et al., 2020; Singhal, Choudhary, & Biswal, 2019; Syahri & Robiyanto, 2020).

Moreover, Oil prices OP has negative impact on stock market prices SP (Ali et al., 2020). Historically, oil prices changes causes' economic activities volatility. According to (Siddiqui & Muhammad, 2014), OP changes negatively influence on activity of economy in countries of oil importing and OP changes positively influence on economic activity in oil exporting countries. Alqattan and Alhayky (2016), found that there is short-term and positive relationship between, OP and SP in (GCC) countries. Youssef and Mokni (2019), found that there is time varying link between OP and SP. In addition, there is strong association between crude OP and SP in oil importing countries than oil exporter countries due to the cost of transportation. However, changes in OP effects on SP, which effect the global business cycle. Siddiqui (2014), stated that stock market influence by external and internal economic factors such as inflation etc. Atiq and Farhan (2019), found that OP movement has negative impact on SP's return. The result implies that Pakistan is an oil importer, OP increase due to the production and transportation cost which effect SP negatively. Due to high usage of crude oil by importer countries, OP effect more on that countries than exporter countries. High OP effect on transport, effect the performance of firm and returns from SP (Ansar & Asghar, 2013),.

Past several studies have been conducted in the context of stock price, (Gokmenoglu & Fazlollahi, 2015) oil price and gold price movement such as Tehran (Abootaleb Shirvani & Volchenkov, 2019), Pakistan (Akbar et al., 2019; Ali et al., 2020), Turkey (Akkoc & Civcir, 2019), US (Gokmenoglu & Fazlollahi, 2015), China (Khan et al., 2019), Malaysia (Nordin et al., 2014), Mexico (Singhal et al., 2019), GCC countries (Alqattan & Alhayky, 2016), Oil importing countries (Russia, Canada and Norway) and oil exporting countries (China, US, and Japan) (Youssef & Mokni, 2019). In developed countries (US, China, Europe) OP and GP are more favorable for SP. increases in OP has significant impact of SP. While, in developing countries, the impact of OP and GP are negative on SP. Moreover, previous studies support that changes in OP and GP have great importance to variability in SP return (Alqattan & Alhayky, 2016; Chang, Meo, Syed, & Abro, 2019; Najafabadi et al., 2020; Shabbir et al., 2020; Sheikh et al., 2020; Singhal et al., 2019)

Investors always seek for opportunity for beneficial investment and they like to invest in commodities, stock, property etc. to survive in the financial crises or get more return or for secure future or earn more money for future. To identification of correct time or period and correct choice of way for investment is very necessary for investors. Wrong time (e.g. recession) and wrong choice (risky investment) always drop investor from high financial position to low financial position. From the last few years, to overcome these problems, investors always need to proper guideline and evidence to avoid risk and financial loss. As Pakistan is the developing country and oil, importing country as well, so the OP and GP changes will effect negatively on SP. Investor should choose correct commodities or stock for investment in correct time. Therefore, to fill the gap this study will add the growing literature to investigate the influence of OP and GP on SP in Pakistan.

Moreover, Increases in OP reduce the goods supply, economic growth, SP. and increases inflation and cost of transportation. In contrast, increases in inflation. Similarly, inflation fluctuation decreases money's real value, so it would be favorable to invest in commodities like gold, to earn more returns and safe the assets' value. Moreover, gold investment is act like a tool, which decline or reduce the pressure of inflation to a level of sustainable band effects negatively on SP.

Simultaneously, this research is inspired by supply and demand impact on investment and identify the right time to invest in commodities and stock market (Shabbir et al., 2020).

Therefore, the objective of this study is to find out the impact of commodities price on stock market price at Pakistan KSE100. The commodities prices include gold price GP and oil price OP. Over few decades, researcher has examined the impact of OP and GP movement on stock price (Akbar et al., 2019; Ali et al., 2020; Beckmann, 2017; Khan, Teng, & Khan, 2019; Nordin et al., 2014; Rastogi, 2016).

LITERATURE REVIEW

Theoretical Reviews

Over few decades, researcher has examined the impact of OP and GP movement on stock price (Akbar et al., 2019; Ali et al., 2020; Beckmann, 2017; Khan et al., 2019; Nordin et al., 2014; Rastogi, 2016). There are various theories discussed in research articles related to OP, GP and SP. Several theories applied for this research, which include economic theory, efficient market theory and demand and supply theory. According to J. B. Williams (1938), economic theory implies that price of assets indicated by its discounted flow of cash which effect on others asset price. However, increases in oil price reduce production because oil price become more expensive for oil importing countries, which effect business cycle, firm performance, stock markets and economic activities. In addition, high price of oil volatility tend to decrease price of stock (Singhal et al., 2019; Youssef & Mokni, 2019).

The theory of Efficient Market Hypothesis (EMH) proposed by Fama (1960), this theory considered important for this study as this theory stated as the stock markets are efficient consider availability of information of asset price in a financial market. Moreover, all available information reflects by stock prices. Efficient market hypothesis has three forms include strong form, semi-strong form and weak form. According to weak form of (EMH), the current stock price considers all previous available information only. While, the semi-strong form of (EMH) stated that the prices of asset do not only refer the public available information also incorporate adjusted new information as well. According to strong form of (EMH), that the market is efficient as the price of asset reflect past public available information, new adjusted information and contain hidden information. Strong form of (EMH) has all public and private information. Public information includes previous and present information respectively (Siddiqui, 2013).

The law of supply and demand is a theory proposed by Marshall (1890) describe the buyers and sellers interaction for the resources. The theory stated that the product price effect the people's willingness to either sell or buy the product. Moreover, as price become high individual are willing to supply more and demand less and vice versa when the price falls.

Hypothesis Development

Oil Price and Stock Market Price

Oil price OP is the balance between its demand and supply or it is the reference price for sellers or buyers of crude oil. It refers to the price of spot of 1 barrel of the crude oil benchmark (Byrne et al., 2019). on other hand, The stock price SP is a company's market value and its show stock trades at the price agreed upon by a seller or buyer (Pearce & Roley, 1985). Previous researchers found that, the relationship between oil and stock price is negative (Abootaleb Shirvani & Volchenkov, 2019; Gokmenoglu & Fazlollahi, 2015; Najafabadi et al., 2020; Rastogi, 2016)

However, SM prices changes occurred by change in OP (Shabbir et al., 2020).. Many researchers considered the variability in OP significantly affect stock market price (Sheikh et al., 2020; Siddiqui, 2014). Furthermore, OP changes caused economic activities volatility and the effect OP fluctuation or volatility indirectly or directly affects SP (Raza et al., 2016). According to Akbar et al. (2019) different results are found in exporting and importing oil

countries. Oil prices changes influence directly on activity of economy in countries of oil importing and oil prices changes affect indirectly on economic activity in oil exporting countries. In addition, there is positive relationship between OP and SP in oil exporting countries. In contrast, there is negative association between OP and SP in oil importing countries (Shabbir et al., 2020). Hence, based on the above empirical and theoretical studies, the relevant hypothesis has developed;

H1: There is negative association between oil and stock price.

Gold Price and Stock Market Price

Gold price is the price at which gold is being traded on the gold market (Abootaleb Shirvani & Volchenkov, 2019). Gold price GP is the price at which gold is being traded on the market of gold (Abootaleb Shirvani & Volchenkov, 2019). Gold is one of the best investment that have no risk of diversification(Akbar et al., 2019). The unit of gold's weight includes Oz, Kg, Tola, Gram, Baht, Tael, Bohri etc and karats e.g. 1K, 2k, 3k.....16k, 18k, 24k. The weight unit is the troy ounce. (31.1034) grams are equal to one troy ounce. (32.15) troy ounce is equals to 1 kilogram. (32,151) troy ounce is equals to 1,000 kilos. (3.75) troy ounces or 100 grams are equals to 10 Tolas. The degree of purity of gold is 24 karat indicates that gold is 99.5 % pure. 22 karat indicates that gold is 9.16% pure. 18 karat indicates that gold is 75% pure. 14karat indicates that gold id 58.3% pure. 10 karat indicates that gold is 41.67% pure.

Gold is one of the best investment that have no risk of diversification(Akbar et al., 2019). on other hand, The stock price SP is a company's market value and its show stock trades at the price agreed upon by a seller or buyer (Pearce & Roley, 1985). Previous researchers found that, the relationship between oil and stock price is negative (Abootaleb Shirvani & Volchenkov, 2019; Gokmenoglu & Fazlollahi, 2015; Najafabadi et al., 2020; Rastogi, 2016)

However, SM prices changes occurred by change in GP (Shabbir et al., 2020).. Many researchers considered the variability in GP significantly affect stock market price (Sheikh et al., 2020; Siddiqui1, 2014). Furthermore, GP changes caused economic activities volatility and the effect GP fluctuation or volatility indirectly or directly affects SP (Raza et al., 2016). According to Shabbir et al. (2020), gold is good commodity as an investment. Therefore, people should invest in gold. The reason behind that inflation fluctuation decreases money's real value, so it would be the best idea for investors to find alternative opportunities such as invest in commodities like gold, to earn more returns and safe the assets' value. Moreover, gold investment is act like a tool, which decline or reduce the pressure of inflation to a level of sustainable. Many researchers found that gold prices fluctuation has negative influence on SP (Abootaleb Shirvani & Volchenkov, 2019; Akbar et al., 2019; Akkoc & Civcir, 2019; Ali et al., 2020; Beckmann, 2017; Gokmenoglu & Fazlollahi, 2015). Furthermore, increases or decreases in gold price, tend to decreases or increases the stock price (Abootaleb Shirvani & Volchenkov, 2019; Najaf et al., 2016; Najafabadi et al., 2020; Nordin et al., 2014; Rastogi, 2016; Raza et al., 2016; Shabbir et al., 2020; Sheikh et al., 2020; Singhal et al., 2019; Syahri & Robiyanto, 2020) Hence, based on the above empirical and theoretical studies, the relevant hypothesis has developed;

H2: There is negative association between gold and stock price.

Empirical Reviews

(Shabbir et al., 2020) investigated the influence of OP and gold GP on the stock market SMP. In this study, prices of gold and oil are independent variables. However, stock market price is independent variable. The data collected from 1991 to 2016. The study applied regression test includes descriptive statistics, ADF test, correlation and ADRL. The results found that OP and GP have a significant influence on the SMP. The researchers recommend gold is good

commodity as an investment. Therefore, people should invest in gold. The reason behind that inflation fluctuation decreases money's real value, so it would be the best idea for investors to find alternative opportunities such as invest in commodities like gold, to earn more returns and safe the assets' value. The results suggested that gold investment is act like a tool, which decline or reduce the pressure of inflation to a level of sustainable. Moreover, the available data has used only from 1991 to 2016. Therefore, this study could not apply unit root test of structural break because this test require large data set. This study will be beneficial for the individual investors to investing in oil, gold, and SM who want to earn more diversification benefits. In contrast, their fluctuation can observe in daily basis in OP and GP. Sometime investors perceived that fluctuation in OP and GP may not be or mar be effected the return from stock. In addition, his study will be helpful and provide the unique idea for portfolio managers and financier or individual investor as it recognize the current issue related to fluctuation of OP and GP, and its impact on SM, importance. Different strategy will use by investors as this study provide solution for investment tricks.

Gokmenoglu and Fazlollahi (2015), investigated the association between financial and commodity. The aim of this paper was to examine GP, OP and significant effect on SP or not. The test applied for that study include, ARDL co-integration approach used to check the long-run relationship among OP volatility and GP volatility on SP. The results found that SP index converges to its long-run equilibrium level by 1.2% speed of daily adjustment by contribution of oil and gold market prices and their volatilities.

Akbar et al. (2019), investigated dynamic linkages among GP, SP, exchange rate ER and interest rate IR. The study collected data from 2001 to 2014. The study used Bayesian inference model to examine the linkage among GP, SP, IR and ER. This study used classical and Bayesian VAR model under, to compare the performance between those variables. Furthermore, correlation, ADF, GH, and HJ test have applied to examine the unknown structural and two structural breakdown. The results found short-run linkage between GP, SP, IR and ER. Moreover, Inverse bilateral association found among SP and GP stock prices. The result indicated that low or decline stock market prices boom or increases the gold prices, indicated that gold is a secure and alternative investment in recession periods.

Ansar and Asghar (2013), investigate the influence of price of oil on Stock exchange and index of consumer price at Pakistan. To determine the important of prices of oil movement as oil prices changes lead to change economic activities in positive and negative ways such as fall in prices of oil lead to change stock market return. To identify the relation between variables, the data has collected from secondary source. The data has collected over the period of 2007 to 2012. Eview's software, used to analyze the data. Multi regression technique has used for this study. First, (Augmented-Dickey Fuller (ADF)) unit root test was applied for this study to test whether the data is stationary or not. Second, Johansen Co-integration test has run to check the association among different variables. The results found that there is positive linkage between OP, consumer price index (CPI) and stock exchange of Pakistan but the results are not very strong. Due to high import and usage of crude oil by importer countries, OP effect more on that countries than exporter countries. High OP effect on transport, effect the performance of firm and returns of SP. This literature also found that high inflation rate effect SP returns, which bring difficulties to stay in the financial markets for investors. This paper is very helpful to determine and improving important factors of economy of Pakistan. By the help of research economic activity will also be improve by making certain strategies for Pakistan.

Alqattan and Alhayky (2016), investigate the influence of price of oil on financial markets in Gulf Corporation Council's (GCC) stock markets. The reason for this research is to investigate the impact of prices of oil on the long run and short run stock market prices as well in oil

producing countries. Oil exporters and producers' countries include Saudi Arab, Bahrain, Oman, UAE, Kuwait, and Qatar. The data is monthly and gather from November (2006) to February (2015). For this research, Autoregressive Distributive Lag Model (ARDL) technique has used. The results explored that there is no co-integration found among price of oil and price of stock in long run, countries include Saudi Arab, Kuwait, Bahrain Qatar and UAE. The long run co-integration between variable has found in Oman only. Furthermore, the shoestring relationship shows between prices of oil and prices of stock markets in all (GCC) countries. There is positive relationship between OP and SP in all (GCC) countries. Tie results suggest as in the short run co-integration found between price of oil movement and price of stock in exporter and producer country of oil.

Youssef and Mokni (2019), examine the relationship among price of crude oil and financial markets of oil exporting & oil importing countries. The purpose was to identify oil prices shocks impact on stock markets for oil importing & oil exporting countries. Oil importing countries include Norway, Canada and Russia. However, oil-exporting countries include China, United States and Japan. To identify relation between independent and dependent variables data has gathered over the time of 2000 to 2018. Dynamic Conditional Correlation (DCC-FIGARCH) technique has applied to find the relationship amid prices of crude oil movement and stock price changes. The results represent that there is time varying link among prices of oil and prices of stock market in oil importer and exporter countries. In addition, there is strong association between crude oil price and stock market in oil importing countries than oil exporter countries due to the cost of transportation. The result implies that the changes of oil prices effect on stock market, which effect the global business cycle.

Siddiqui1 (2014), determine the price of oil fluctuation impact on the performance financial markets in Pakistan. The reason of this study was to investigate the price of oil fluctuation impact on price of stock in Pakistan because stock market influence by external and internal economic factors such as global, local, etc. The study also examines the development level and investment activities in Pakistan. The results obtained from this research are that oil price has positive influence on stock market. The result implies that increase in oil price increase the stock price and vice versa.

Atiq and Farhan (2019), investigate the impact of prices of oil on stock return in Pakistan. The purpose of this study to found the oil prices fall reason, by decreasing oil demand, oil price also decrease. The main reason might be shale gases' discovery and rapidly increase in the demand of shale gases. These changes also influence on the financial and economical market all over the world. The monthly panel data has collected from 2014 to 2016 of non-financial companies. Multiple regression (pooled regression) technique used to analyze the impact of price of oil volatility on stock price return. The results found negative impact of price of oil movement on stock price return. the results implies that Pakistan is an oil importer, oil prices increase due to the production cost and transportation cost which effect stock price return in negative manner.

CONCEPTUAL MODEL

The research objectives of this study are to examine the impact of oil and gold price on stock market price in Pakistan KSE100. Figure 2.1 shows the conceptual framework of gold price, oil price and stock market price. In this conceptual framework gold price and oil price are independent variables whereas stock market price is dependent variable.

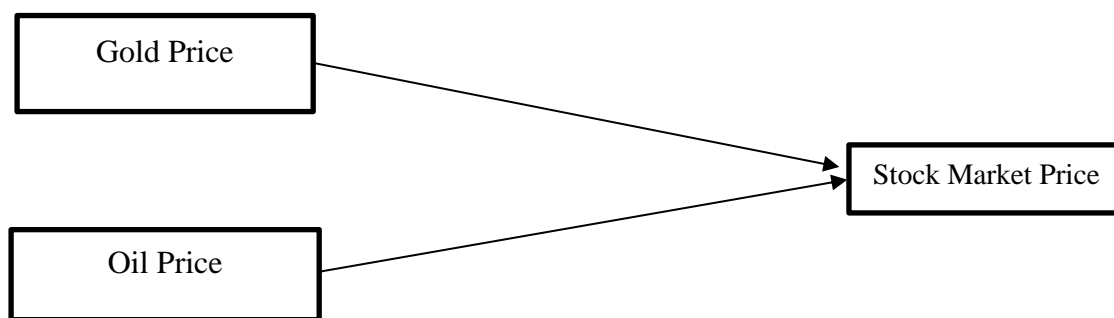


Figure 1 Conceptual model of the study

METHODOLOGY

Research Design

In this study explanatory research purpose has used to investigate the relationship among oil price OP, gold price GP and stock price SP. According to Baskerville and Pries-Heje (2010), explanatory research conduct to find out the effect and causes among variables, which did not conduct properly in previous research. The research purpose will provide the solution for the investment related problems for investors. This research applied quantitative approach. According to C. Williams (2007), in quantitative approach, data is in numeric form which gives possible outcomes. This approach gives most accurate, effective and valid results. However, there are many studies has been done that collected published data according to the need of the studies.

This research based on correlational research design, as this study investigate the casual model statistically (Curtis, Comiskey, & Dempsey, 2016). The research aims is to find out the influence of GP and OP, which are independent variable, and SP which is dependent variable. The aim of this study is to find out the OP and GP fluctuation (fall or rise) and stock market is inefficient or efficient in Pakistan. The study has used regression analysis to examine the influence of price of oil on price of stock and rate of exchange. The data got from secondary source.

Data

To find out the impact of OP and GP fluctuation on SP and price, this study will collect financial data from secondary source, Index Mundi and Investing.com. The time series, daily data of nine years were collected from the period of 1st Jan 2012 to 25th may 2025. for this research.

Research Model

In this study, OP and GP are independent variable. While, stock price SP is dependent variable. The model is used is as follows (Shabbir et al., 2020):

$$SP = c + OP + GP + \varepsilon_t \quad (1)$$

Where, Stock price is (SP), which is dependent variable, C is constant, (OP) is price of oil, which is independent variable, and (GP) is price of gold, which is also independent variable. The techniques will use for this study include descriptive statistics, Augmented Dickey–Fuller

ADF, correlation test, Granger Casualty and regression analysis tests respectively. In (augmented-dickey fuller (ADF)) test of unit root will apply to check the stationary of data. The test of correlation is applied to check the relationship among variable include OP, GP, and SP. OLS regression is applied to check the significant relation among commodities and stock market price. In the last, Granger Casualty test is applied for this research to check the unidirectional and bidirectional relationship among variables (namely, oil, gold and stock market prices) (Nkoro & Uko, 2016).

Data Analysis

To analyze and measure the gathered data of this research, following tests are performed; Descriptive analysis, co integration, correlation, ordinary least square and granger causality test. First, descriptive statistics was determined to analyze the mean, median, mode and variation of each variable. Second, unit root test (ADF) is applied to check, weather the variables are stationary or non-stationary.

Third, Co-integration test was used to check the long run relationship between variables. Fourth, ordinary least square regression with is applied to determine the relationship between commodities (namely, gold and oil prices) and stock market price. Fifth, Granger Casualty test is applied to check the unidirectional and bidirectional association between variables.

Descriptive Statistics

The descriptive statistics of variables are summarizes in the table 4.1. The mean of stock price SP was 146.03. The mean of gold price GP was 28197.80 per ounce. The mean of oil price OP is 68.81 per barrel. The standard deviation of stock price was high than other variables, indicates that SP is highly volatile during the sample period. The standard deviation of oil price was less volatile during the sample period.

Table 4.1 Descriptive Statistics

	GP	SP	OP
Mean	28197.80	1446.037	68.81082
Median	31721.80	1376.150	63.47500
Maximum	52876.46	2089.400	113.9300
Minimum	6872.690	1070.600	-37.63000
Std. Dev.	13100.56	204.1636	22.82514
Skewness	-0.180333	0.776583	0.111624
Kurtosis	1.616118	2.711184	1.934794
Jarque-Bera	252.0721	307.5996	145.9899
Probability	0.000000	0.000000	0.000000
Sum	83409083	4277378	203542.4
Observations	2958	2958	2958

Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price

Unit Root Test

Augmented Dickey-Fuller test ADF proposed by fuller (1975), stated that it is Unit root tests that performed to check whether the data is stationary or not. Unit root test results shows in table 2.

Table 4.2 Unit Root Test (Augment Dickey-Fuller Test)

	Prob. At Level	Prob. at First Difference
Stock Price	0.7440	0.0001
Oil Price	0.4326	0.0001
Gold Price	0.4354	0.0000

Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price; Significance level $P < 0.05$

The results indicate that variables include OP, SP, and GP, were non-stationary the data of OP, GP and SP became stationary at first difference. The result of unit roots indicates appropriateness to apply the further analysis (regression test).

Co-integration

Co-integration test Results are summarizes in table 3. The F-statistics value was 13.07. The F-statistics value was higher than critical value or lower and upper bound (Pesaran et al., 2001) indicates that long run relationship is present between the variables, indicated to continue the analysis and determine the impact of commodities price on stock market price.

Table 4.3 Cointegration Test

Dependent	Independent Variables	F-Statistics	cointegration. status
SP	OP, GP	13.07	cointegrated
Signi.	I0 Bound	1(1) Bound	
10%	2.26	3.35	
5%	2.62	3.79	
2.50%	2.96	4.18	
1%	3.41	4.68	

Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price

Correlation

Correlation Results are summarizes in table 4. The result shows that the association between SP and GP is negative. The association among SP and OP is also negative. While, relationship between oil price and gold price is positive.

Table 4.4 Correlation

	Stock Price	Gold Price	Oil Price
Stock Price	1.000000	-0.034024	-0.749118
Gold Price	-0.034024	1.000000	0.001483

Oil Price	-0.749118	0.001483	1.000000
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Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price

Regression Analysis

Ordinary Least Square Regression OLS test results show in table 5, the results shows that the impact of OP and GP on SP (KSE100). The results represent that the impact of oil price and gold price are negative on stock market price (KSE 100) (Degiannakis et al., 2014).

Table 4.5 Regression Analysis

<i>Dependent Variable: SP</i>					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
					1.0
OP	-429.9308	6.985630	-61.54502	0.0000	2
					1.0
GP	-2.111916	0.780981	-2.704181	0.0069	1
C	60835.60	1237.032	49.17869	0.0000	
R-squared	0.562261				
Adjusted R-squared	0.561965				
Durbin-Watson stat	1.731656				
F-statistic	1897.802				
Prob(F-statistic)	0.000000				

Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price; Significance level $P < 0.05$

The results suggest that decreases (increases) the price of oil and gold leads to increases (decreases) the price of stock in Pakistan. Moreover, R-Squared value is 56%, indicates that 56% of variations in the stock price explained by independent variables changes in oil price and gold price.

The autocorrelation can be explained through the value of Durbin Watson. In case of the value of Durbin Watson is close to two (2) than there is no presence of auto in the model. The range of Durbin Watson lies from between 0 to 4. If the DW value lies in between 0 to 1.5 than there is negative auto in the model and if the value lies between 2 to 4 than the auto is positive.

The auto correlation in the model than it could be removed through the AR test and Cochrane orcut. These tests are used to increase or decrease the value of Durbin Watson to bring it near to two (2). The cochrane orcut is used by generating the log of independent variables and then run the LM test to check the auto in the model. If the p value of LM test is less than 5% than the null hypothesis is rejected and there is an auto correlation and if the value is greater than 5% the null hypothesis will be accepted and there is not auto in the model.

Table 4.5 shows that the Durbin-Watson value was 1.7, indicated that there was no autocorrelation issue. VIF explains the multicollinearity that shows the amount of correlation between independent variables. The result shows that there was no sign of multi between the variables as the VIF is less than ten (10). From the above results, the value of VIF is less than 10. VIF of OP was 1.02 and GP was 1.03, indicated that there were multicollinearity issue in data.

F-Statistics value shows the impact of aggregate effect of all the independent variables on the dependent variables. The of F–statistics probability was 0.000, less than 0.05, indicated that there was effect of all independent variable on dependent variable that is stock price (KSE 100).

Overall results provide the evidence that there is significant and negative impact of gold price and oil price on stocks market price, which support the previous studies (Akbar et al., 2019; Ali et al., 2020; Alqattan & Alhayky, 2016; Najaf et al., 2016; Nordin et al., 2014).

Granger Causality Test Results

The granger causality test explains the cause of variables on the other variables. The cause can be uni-directional or bi-directional causality. If the cause is bi – directional then the both the variable causes each other and if the cause is unidirectional then both the variables causes each other. If the prob. value of variables is greater than 5%, then null hypothesis accepted as variable does not Granger cause on the other variable.

Table 4.6 Granger Casualty Test

Direction of Casualty	P-Value	Lags	Decision	Outcomes
GP --> SP	0.5460	4	Do not reject null	GP does not cause SP
SP --> GP	0.7448	4	Do not reject null	SP does not cause GP
OP --> SP	0.0073	4	Reject null	OP causes SP
SP --> OP	0.3765	4	Do not reject null	SP does not cause OP
OP --> GP	0.4576	4	Do not reject null	OP does not cause GP
GP --> OP	0.2335	4	Do not reject null	GP does not cause OP

Note: GP = Gold Price; SP = Stock Price SP; OP = Oil Price; Significance level $P < 0.05$

In table 7, the results show that GP and SP does not granger cause OP. Further, OP and SP does not granger cause GP. However, GP does not granger cause SP. While, OP does granger cause SP as the probability value was 0.0037, which is less than 0.05 The results suggested that OP causes SP was unidirectional because SP does not granger cause OP. The results concluded as the changes in oil price predicted the stock price changes.

DISCUSSION

In descriptive statistics table, the standard deviation of SP is highly volatile during the sample period. However, the standard deviation of OP is less volatile during the sample period. After that unit, root test has applied, at level and at first difference, results suggesting each variables properties of time series are stationary at first difference. The results of unit roots indicate appropriateness of data to apply the OLS test. . Granger Casualty test is applied to check the unidirectional and bidirectional causes on the variables.

However, OLS test results of shows that there is negative or inverse impact of oil price and gold price on stock price SP (KSE 100) of Pakistan (Degiannakis et al., 2014). The results suggest that decreases (increases) the OP and GP leads to increases (decreases) the SP. Results are supported previous studies' results and developed hypotheses, Atiq and Farhan, (2019) investigate the impact of oil prices on stock return in Pakistan, found that there is negative impact of oil price movement on stock price return.

Furthermore, Based on previous studies, researchers predicted that oil-importing countries' has negative impact of oil on stock price (Basher et al., 2016). Due to more cost of transportation, oil prices rise which effect stock prices more than oil exporting countries. As Pakistan is an oil importing country, and results supported past researchers prediction, high oil prices have negative impact on stock price in Pakistan. The Oil price have negative impact on stock price, as oil prices increases then stock market index decrease and vice versa (Degiannakis et al., 2014). In addition, High oil prices and gold prices have negative impact on stock price, suggested that high gold prices decreases stock market price, investor invest in stock market when find the gold prices are high and investprs invest more on gold when found gold prices are low and stock price are high. (nurmakhanova and ketnova, 2019). Oil importing countries have negative impact of oil price volatility on SP, as oil prices volatility increases then stock market index decrease (Basher et al., 2016).

According to Siddiqui and Muhammad (2013), the development level is depend on the investment rate in the economy. Stock market recognized as best platform for the funds for productive investment and diversion from the unit of surplus to deficient. The pessimistic and optimistic in the market of stock determines the stock index fall and rise. Moreover, stock market prices influences by global or local macroeconomics variables that significantly effects the performance of the stock market. Moreover, the oil price negatively influences the stock price and exchange rates in Pakistan. The result suggested that increases in the demand of oil increases the oil prices, inversely effects the stock market price of Pakistan. However, it is favorable to investors to buy stock when oil price and gold price grow up in Pakistan. On other hand, it is favorable for investors to sell the stock, when oil price or gold price decreases or falls (Ansar and Asghar, 2013). The results of granger casualty test indicated that OP causes SP was unidirectional because SP does not granger cause OP. The results concluded as the changes in oil price predicted the stock price changes.

The findings supported previous studies, GP and OP fluctuation have negative influence on SP (Akbar et al., 2019; Najaf et al., 2016; Nordin et al., 2014; Rastogi, 2016; Sheikh et al., 2020; Singhal et al., 2019). Moreover, the reason behind high OP is that more cost of transportation increases the OP, which negatively effects on SP in oil importing countries such as Pakistan. Furthermore, if the GP increase due to higher inflation rate, interest rates, investor behavior such as demand and supply factor its effect negatively on SP of Pakistan.

CONCLUSION

This study investigates the influence of oil price OP and gold price GP on stock price SP of Pakistan. For this research, 9 years daily, time series data were collected from the period of 1st

Jan 2012 to 25th May 2025. The study applied OLS ordinary least square test to examine the impact of OP and GP on SP. The data was analyzed by the following tests include unit root test, descriptive statistics, OLS ordinary least square regression, variance inflation factor, and granger casualty test. In unit root test (augmented-dickey fuller (ADF)) will apply to check the stationary of the data.

Ordinary least square test has conducted to check the positive or negative influence between dependent (SP) and independent variables (OP and GP). Pakistan is oil-and gold importing country so these hypotheses have developed by considering the oil and gold importing countries' previous results and predictions. High oil and gold price have negative impact on stock price and exchange rate. Increases in oil and gold price lead to decreases stock market price (KSE 100) (nurmakhanova and ketnova, 2019; Basher et al., 2016). The results indicated that OP causes SP was unidirectional because SP does not granger cause OP. The results concluded as the changes in oil price predicted the stock price changes.

The findings supported previous studies, GP and OP fluctuation have negative influence on SP (Akbar et al., 2019; Najaf et al., 2016; Nordin et al., 2014; Rastogi, 2016; Sheikh et al., 2020; Singhal et al., 2019). Moreover, the reason behind high OP is that more cost of transportation increases the OP, which negatively effects on SP in oil importing countries such as Pakistan. Furthermore, if the GP increase due to higher inflation rate, interest rates, investor behavior such as demand and supply factor its effect negatively on SP of Pakistan.

Practical Implications

This study helps investors to know about the impact of oil prices and gold prices on stock prices. This study is helpful when investor decide to invest in the stock market or in currency of the country. Before making decision, investor could enable to understand the impact of inflation, oil and gold price high volatility and stock market bullish and bearish condition. The researchers and marketers must follow the important steps for the improvement and growth of the economy this research would help in identifying what are the key variables that will help to earn benefits. This study will also helpful for the government to check the reason of decline of economy and oil price impact on Pakistan economy. This research is useful for the business analyst, investors, economist, and other researches who are interested in the investment.

Moreover, the results suggest that policy makers should consider the financial market implication before making policies. . This study results will helpful for policy makers and monetary authorities. However, policy makers and exchange authorities to improve condition of financial and economic market. This study will help to determine and improving important factors of economy of Pakistan. By the help of research economic activity will also be improve by making certain strategies for Pakistan. This study will also helpful for the firm. They can use certain strategies to maintain firm performance. It is also helpful at downward trend follows by financial market in which investor can gain more return. This study would be helpful for international as well as domestic investors.

The results of this research will add the body of existing knowledge for academics and industries researchers for control purpose. This research will be very helpful for company's owner, businessperson, managers, policy makers, academic and industry researchers and individual investors to reduce uncertainty and volatility in financial market. The finding suggested that the study would help in managing and measuring divestment risk present at market, selecting stock or portfolio, financial derivatives pricing. The managers may able understand the model of supply and demand and its impact on market. Investors will able to understand that how to face challenges and problems or meet to opportunities about ups and down of stock market.

Future Recommendation

This literature examines the impact of oil price and gold price on stock price (KSE 100) of Pakistan. Due to the short period, this research is limited to Pakistan only. Therefore, for the future researcher this study recommends that researcher should include number of countries like Asian countries because poverty may be high in Asian countries. This research could be done on other countries as well. The future researchers will do comparative analysis in different countries. The study do not have enough resources to conduct this research on a huge scale. The availability of data is limited as it ranges from daily data from the period of 1st Jan 2012 to 25th May 2021 this year range will be increased and more years will be taken into considerations. This study examines impact of commodities price (namely gold and oil) on stock price. Further, the future research may add more commodities such as silver, cotton etc. to determine the impact of commodities price on stock market price

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Appendix

Descriptive Statistic

	STOCK_PR...	GOLD_PRICE	OIL_PRICE
Mean	28197.80	1446.037	68.81082
Median	31721.80	1376.150	63.47500
Maximum	52876.46	2089.400	113.9300
Minimum	6872.960	1070.800	-37.63000
Std. Dev.	13100.56	204.1636	22.82514
Skewness	-0.180333	0.776583	0.111624
Kurtosis	1.616118	2.711184	1.934794
Jarque-Bera	252.0721	307.5996	145.9899
Probability	0.000000	0.000000	0.000000
Sum	83409083	4277378.	203542.4
Sum Sq. Dev.	5.07E+11	1.23E+08	1540558.
Observations	2958	2958	2958

Unit Root Test

Stock price at level

Null Hypothesis: STOCK_PRICE has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.031520	0.7440
Test critical values:		
1% level	-3.432372	
5% level	-2.862319	
10% level	-2.567229	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(STOCK_PRICE)
 Method: Least Squares
 Date: 05/26/21 Time: 19:36
 Sample (adjusted): 1/09/2012 5/25/2021
 Included observations: 2956 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
STOCK_PRICE(-1)	-0.000470	0.000455	-1.031520	0.3024
D(STOCK_PRICE(-1))	0.153201	0.018181	8.426427	0.0000
C	24.26708	14.16072	1.713690	0.0867
R-squared	0.023782	Mean dependent var		12.98417
Adjusted R-squared	0.023121	S.D. dependent var		328.0368
S.E. of regression	324.2224	Akaike info criterion		14.40175
Sum squared resid	3.10E+08	Schwarz criterion		14.40783
Log likelihood	-21282.79	Hannan-Quinn criter.		14.40394
F-statistic	35.96942	Durbin-Watson stat		1.993231
Prob(F-statistic)	0.000000			

Stock price at first difference

Null Hypothesis: D(STOCK_PRICE) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-46.58496	0.0001
Test critical values:		
1% level	-3.432372	
5% level	-2.862319	
10% level	-2.567229	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(STOCK_PRICE,2)
 Method: Least Squares
 Date: 05/26/21 Time: 19:38
 Sample (adjusted): 1/09/2012 5/25/2021
 Included observations: 2956 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(STOCK_PRICE(-1))	-0.846944	0.018181	-46.58496	0.0000
C	11.02058	5.967982	1.846617	0.0649
R-squared	0.423515	Mean dependent var		0.154905
Adjusted R-squared	0.423320	S.D. dependent var		426.9533
S.E. of regression	324.2260	Akaike info criterion		14.40143
Sum squared resid	3.11E+08	Schwarz criterion		14.40549
Log likelihood	-21283.32	Hannan-Quinn criter.		14.40289
F-statistic	2170.159	Durbin-Watson stat		1.993169
Prob(F-statistic)	0.000000			

Oil price at level

Null Hypothesis: OIL_PRICE has a unit root
 Exogenous: Constant
 Lag Length: 2 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.697217	0.4326
Test critical values:		
1% level	-3.432373	
5% level	-2.862319	
10% level	-2.567229	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(OIL_PRICE)
 Method: Least Squares
 Date: 05/26/21 Time: 19:40
 Sample (adjusted): 1/10/2012 5/25/2021
 Included observations: 2955 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_PRICE(-1)	-0.002520	0.001485	-1.697217	0.0898
D(OIL_PRICE(-1))	-0.255907	0.018363	-13.93619	0.0000
D(OIL_PRICE(-2))	-0.076765	0.018357	-4.181845	0.0000
C	0.165739	0.107609	1.540192	0.1236
R-squared	0.063658	Mean dependent var		-0.005787
Adjusted R-squared	0.062706	S.D. dependent var		1.900435
S.E. of regression	1.839886	Akaike info criterion		4.058637
Sum squared resid	9989.668	Schwarz criterion		4.066747
Log likelihood	-5992.636	Hannan-Quinn criter.		4.061556
F-statistic	66.87505	Durbin-Watson stat		2.005315
Prob(F-statistic)	0.000000			

Oil price at first defference

Null Hypothesis: D(OIL_PRICE) has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-46.22261	0.0001
Test critical values:		
1% level	-3.432373	
5% level	-2.862319	
10% level	-2.567229	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(OIL_PRICE,2)
 Method: Least Squares
 Date: 05/26/21 Time: 19:41
 Sample (adjusted): 1/10/2012 5/25/2021
 Included observations: 2955 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OIL_PRICE(-1))	-1.335145	0.028885	-46.22261	0.0000
D(OIL_PRICE(-1),2)	0.077760	0.018353	4.236874	0.0000
C	-0.007628	0.033858	-0.225293	0.8218
R-squared	0.621755	Mean dependent var		-0.000467
Adjusted R-squared	0.621499	S.D. dependent var		2.991547
S.E. of regression	1.840472	Akaike info criterion		4.058936
Sum squared resid	9999.420	Schwarz criterion		4.065018
Log likelihood	-5994.078	Hannan-Quinn criter.		4.061125
F-statistic	2426.238	Durbin-Watson stat		2.005511
Prob(F-statistic)	0.000000			

Gold price at level

Null Hypothesis: GOLD_PRICE has a unit root
 Exogenous: Constant
 Lag Length: 4 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.691711	0.4354
Test critical values:		
1% level	-3.432374	
5% level	-2.862320	
10% level	-2.567230	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GOLD_PRICE)
 Method: Least Squares
 Date: 05/26/21 Time: 19:43
 Sample (adjusted): 1/12/2012 5/25/2021
 Included observations: 2953 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GOLD_PRICE(-1)	-0.003201	0.001892	-1.691711	0.0908
D(GOLD_PRICE(-1))	-0.171818	0.018379	-9.348419	0.0000
D(GOLD_PRICE(-2))	-0.149865	0.018627	-8.045629	0.0000
D(GOLD_PRICE(-3))	-0.045278	0.018616	-2.432148	0.0151
D(GOLD_PRICE(-4))	-0.089059	0.018352	-4.852933	0.0000
C	5.019256	2.762531	1.816905	0.0693
R-squared	0.048926	Mean dependent var		0.268710
Adjusted R-squared	0.047312	S.D. dependent var		21.36724
S.E. of regression	20.85565	Akaike info criterion		8.915157
Sum squared resid	1281822.	Schwarz criterion		8.927329
Log likelihood	-13157.23	Hannan-Quinn criter.		8.919539
F-statistic	30.32035	Durbin-Watson stat		1.996136
Prob(F-statistic)	0.000000			

Gold price at first difference

Null Hypothesis: D(GOLD_PRICE) has a unit root
 Exogenous: Constant
 Lag Length: 3 (Automatic - based on SIC, maxlag=27)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-33.28618	0.0000
Test critical values:		
1% level	-3.432374	
5% level	-2.862320	
10% level	-2.567230	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GOLD_PRICE,2)
 Method: Least Squares
 Date: 05/26/21 Time: 19:44
 Sample (adjusted): 1/12/2012 5/25/2021
 Included observations: 2953 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GOLD_PRICE(-1))	-1.462909	0.043949	-33.28618	0.0000
D(GOLD_PRICE(-1),2)	0.288980	0.036948	7.821261	0.0000
D(GOLD_PRICE(-2),2)	0.137212	0.028239	4.858906	0.0000
D(GOLD_PRICE(-3),2)	0.090368	0.018341	4.927101	0.0000
C	0.391213	0.384085	1.018557	0.3085

R-squared	0.585058	Mean dependent var	0.001371
Adjusted R-squared	0.584495	S.D. dependent var	32.36480
S.E. of regression	20.86224	Akaike info criterion	8.915450
Sum squared resid	1283067.	Schwarz criterion	8.925594
Log likelihood	-13158.66	Hannan-Quinn criter.	8.919102
F-statistic	1039.153	Durbin-Watson stat	1.996324
Prob(F-statistic)	0.000000		

Correlation

	STOCK_PR...	GOLD_PRICE	OIL_PRICE
STOC...	1	-0.0340237...	-0.7491182...
GOLD...	-0.0340237...	1	0.00148304...
OIL_PR...	-0.7491182...	0.00148304...	1

Cointegration

Date: 05/26/21 Time: 19:46
 Sample (adjusted): 1/12/2012 5/25/2021
 Included observations: 2953 after adjustments
 Trend assumption: Linear deterministic trend
 Series: STOCK_PRICE GOLD_PRICE OIL_PRICE
 Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.002604	13.07567	29.79707	0.8881
At most 1	0.001448	5.375428	15.49471	0.7677
At most 2	0.000371	1.097003	3.841465	0.2949

Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.002604	7.700246	21.13162	0.9211
At most 1	0.001448	4.278425	14.26460	0.8289
At most 2	0.000371	1.097003	3.841465	0.2949

Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Variance Inflation Factors

Variance Inflation Factors
 Date: 05/26/21 Time: 19:52
 Sample: 1/01/2012 5/25/2021
 Included observations: 2958

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
OIL_PRICE	48.79903	10.09148	1.000002
GOLD_PRICE	0.609932	51.18226	1.000002
C	1530247.	60.21039	NA

Regression Analysis

Dependent Variable: STOCK_PRICE
 Method: Least Squares
 Date: 05/26/21 Time: 19:02
 Sample: 1/01/2012 5/25/2021
 Included observations: 2958

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_PRICE	-429.9308	6.985630	-61.54502	0.0000
GOLD_PRICE	-2.111916	0.780981	-2.704181	0.0069
C	60835.60	1237.032	49.17869	0.0000

R-squared	0.562261	Mean dependent var	28197.80
Adjusted R-squared	0.561965	S.D. dependent var	13100.56
S.E. of regression	8670.501	Akaike info criterion	20.97425
Sum squared resid	2.22E+11	Schwarz criterion	20.98033
Log likelihood	-31017.92	Hannan-Quinn criter.	20.97644
F-statistic	1897.802	Durbin-Watson stat	1.731656
Prob(F-statistic)	0.000000		

Granger Casualty Test

Pairwise Granger Causality Tests
 Date: 05/26/21 Time: 19:54
 Sample: 1/01/2012 5/25/2021
 Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
GOLD_PRICE does not Granger Cause STOCK_PRICE	2954	0.76727	0.5464
STOCK_PRICE does not Granger Cause GOLD_PRICE		0.48776	0.7448
OIL_PRICE does not Granger Cause STOCK_PRICE	2954	3.50331	0.0073
STOCK_PRICE does not Granger Cause OIL_PRICE		1.05647	0.3765
OIL_PRICE does not Granger Cause GOLD_PRICE	2954	0.90901	0.4576
GOLD_PRICE does not Granger Cause OIL_PRICE		1.39390	0.2335