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Relationship between Oil Prices, Gold Prices, and Stock Returns: Evidence from Pakistan Stock Exchange

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ABSTRACT
This research highlights the dynamic relationship between oil prices, gold prices, and the Stock returns in the Pakistan Stock Exchange, and how they impact each other and provide information on the connectedness that we can see in oil-importing, gold-influenced countries due to the political economy of commodities that are affected by inflation. The simplest way to integrate the three variables is to examine the interest rate effect in the market. The researcher collected twelve monthly data sets from 2014 to 2024 and applied the Vector Autoregression (VAR) model to test the short- and long-run dynamics of oil and gold prices and PSX returns. The research findings confirmed that oil prices exhibited the most significant shocks and impacted stocks through inflation-based pressures and rising costs of production, while gold acts as a hedge in troubled economic times with a stabilization effect. Overall, the results reflected the asymmetry of financial markets as they provide essential reflections for investors, policymakers and stakeholders in academia about the behavior of financial markets, improving investment strategies, and creating effective economic policies for developing countries like Pakistan.

Keywords: Oil Prices, Gold Prices, Stock Returns, Stabilization Effect, Financial Markets.

1. Introduction

Investors are consistently drawn to economic sectors that offer high returns with acceptable volatility and reliable price trends, aiming to enhance profits and wealth. Key investment channels include equity markets (shares), debt markets (bonds), and commodity markets (gold, crude oil futures, and Forex). This study analyzes the dynamic interactions among gold prices, oil prices, exchange rates, and stock returns (KSE 100 index), focusing on how these variables influence stock market behavior and vice versa (Basher & Sadorsky, 2006; Sadorsky, 2014). The Pakistan Stock Exchange (PSX) is a critical economic indicator, affected by economic cycles, investor sentiment, and global markets. This project examines the relationship between oil and gold

prices and PSX stock returns to better understand market performance (Pakistan Stock Exchange Ltd; Syed & Shaikh, 2013).

Oil prices and stock returns are closely linked, as crude oil directly impacts corporate profits, production costs, and consumption expenses key indicators of stock performance. In oil-dependent economies like Pakistan, oil price fluctuations significantly influence inflation, exchange rates, and overall economic stability. Gold prices act as a barometer of investor confidence, particularly during crises, as gold is seen as a hedge against inflation and currency risk, often predicting investment activity (Narayan & Narayan, 2010). These relationships underscore the interconnectedness of commodity markets and financial performance, providing insights for investors navigating volatile economic conditions.

1.1 Background of the Study

The market exhibits one-dimensional behavior, with oil and gold prices fluctuating in ways that influence equity markets, requiring strategic trade approaches or alternative currency-based solutions (Naifar & Al Dohaiman, 2013; Ciner et al., 2013). Businesses heavily depend on oil prices, affecting production and transportation costs, which in turn influence investment demand. Rising fuel costs force companies to adjust pricing, potentially leading to economic slowdowns and stock price declines. Conversely, lower oil prices reduce operational expenses, allowing firms to maintain profitability while adopting sustainable practices. Sectors like airlines and discretionary consumer goods benefit from reduced fuel costs, boosting spending and stock returns (Raza et al., 2016; Nguyen et al., 2023). Meanwhile, gold serves as a safe-haven asset during market uncertainty, offering diversification and downside protection, which helps stabilize investor portfolios (Baur & Lucey, 2010; Jain & Biswal, 2016).

For Pakistan, oil price volatility is critical due to heavy import reliance, impacting inflation, trade balances, and economic stability. High global oil prices strain Pakistan's economy, while lower prices ease production and shipping costs. Gold, culturally significant in Pakistan, also shapes investor behavior, acting as a hedge against currency and inflation risks (Najaf & Najaf, 2016; Assad, 2021). Understanding these dynamics is essential for policymakers and investors to optimize financial strategies and market operations. The interplay between commodity prices and stock returns underscores the need for diversified investment approaches to mitigate risks in volatile economic conditions.

1.2 Statement of the Research Problem

This study examines the conflicting relationship between oil prices, gold prices, and stock returns in the Pakistan Stock Exchange (PSX). Given Pakistan's heavy reliance on imported oil, global crude price swings significantly impact its economy, while gold serves as a hedge against inflation and currency risks, influencing investor behavior. The research analyzes how oil and gold prices affect PSX returns, assessing short- and long-term impacts on investment decisions (Sheikh et al., 2020). Oil prices influence stock returns via production costs, inflation, and exchange rates, whereas gold prices reflect market sentiment and act as a safe-haven asset. By exploring these dynamics, the study provides novel insights for investors and policymakers in Pakistan's volatile market.

1.3 Research Objectives

The following are the specific objectives of the current study.

1. To identify the relationship between oil prices and stock returns.
2. To identify the relationship between gold prices and stock returns.
3. To find the percentage impact of the change in oil prices on market stock return
4. To find the percentage impact of the change in gold prices on market stock return

1.4 Research Questions

The study tries to find out the answer to the following questions comprehensively, and these findings are very supportive to investors and policymakers.

Q1. What is the impact of oil prices on stock returns in PSX?

Q2. What is the impact of gold prices on stock returns in PSX?

Q3. How do changes in stock returns in PSX due to changes in oil and gold prices impact investor decisions? Arouri et al. (2012).

1.5 Significance of the Study

This study offers innovative insights into the relationship between commodity prices (oil and gold) and stock returns in Pakistan's emerging market (PSX), addressing gaps in existing literature. First, it examines the impact of oil and gold price fluctuations over the past decade, capturing both national and global market effects an aspect overlooked in prior Pakistani studies (Syed & Shaikh, 2013; Asad, 2011). Second, it enriches empirical evidence on how these commodities influence stock returns in an emerging economy. Third, it provides actionable recommendations for policymakers to mitigate commodity price volatility and leverage gold's safe-haven role (Mishra et al., 2017). Additionally, the study supports economic stability by analyzing PSX's unique dynamics through empirical methods, offering a foundation for future research and theory-building. Finally, it enhances market understanding for investors and regulators, aiding informed decision-making (Choudhry et al., 2015).

1.6 Identification of Research Gap

This study addresses a critical gap in literature by examining the relationship between commodity prices (oil and gold) and Pakistan's stock market (PSX), an area largely overlooked despite Pakistan's heavy reliance on oil imports and gold's cultural significance. While existing research focuses on developed markets, this investigation provides much-needed empirical evidence from an emerging economy with unique geopolitical and economic conditions. The research not only analyzes how oil and gold price fluctuations impact PSX returns but also explores their combined effects on market performance - a relatively unexplored dimension in academic literature. By uncovering these dynamics, the study offers valuable insights for investors and policymakers navigating emerging markets, while establishing a foundation for future research on commodity-driven market behavior in similar economies (Nguyen et al., 2023; Asaad & Marane, 2020). The findings serve as both an analytical framework and practical guide for managing commodity price volatility in Pakistan's specific context.

1.7 Capital Market of Pakistan

The Pakistan Stock Exchange (PSX) serves as the barometer of Pakistan's economic health and investor sentiment, formed through the merger of Karachi, Lahore, and Islamabad stock exchanges. As the nation's premier capital market platform, it facilitates trading in equities, bonds, and derivatives while being influenced by domestic economic conditions, political stability, investor psychology, and global trends. This study specifically investigates how oil and gold prices - two commodities

deeply embedded in Pakistan's oil-dependent economy and cultural fabric - impact PSX returns. The research provides crucial empirical evidence on these relationships, offering valuable insights for investors navigating PSX's high-growth yet volatile environment, policymakers formulating economic strategies, and academics expanding emerging market literature. The findings reveal important operational characteristics of PSX with significant theoretical and practical implications for all market participants (Pakistan Stock Exchange Ltd; Mehmood & Ahmed, 2012). By analyzing these commodity-market dynamics, the study enhances understanding of Pakistan's unique financial landscape where global commodity fluctuations directly interact with local economic realities.

2. Literature Review and Hypothesis Development

The relationship between commodity prices and stock markets has been extensively studied, yet emerging markets like Pakistan remain underexplored. Sheikh et al. (2020) examined Pakistan's stock market during the 2008 financial crisis using a Nonlinear Autoregressive Distributed Lag (NARDL) model, revealing asymmetric investor reactions to oil and gold price fluctuations. Before the crisis, oil and gold had differential impacts depending on price direction, whereas exchange rates affected stocks uniformly. Post-crisis, investors favored rising gold, oil, and exchange rates, indicating adaptive strategies during instability. The study underscores the necessity of nonlinear models to capture investor behavior accurately, challenging traditional linear approaches. Similarly, Nguyen et al. (2023) employed a Time-varying Parameter Vector Autoregression (TVP-VAR) model for Vietnam (2010–2022), finding that geopolitical and economic events caused dynamic shifts in commodity-stock linkages. Gold acted as a safe haven during downturns, aligning with Jain and Biswal (2016), while oil price shocks propagated through stock returns, corroborating Tran (2015). Ahmed et al. (2015) further validated these dynamics in Pakistan using a VAR model, showing short-term spillovers: oil prices influenced stocks by 17.77%, gold by 8.58%, and exchange rates by 6.6%, with reciprocal effects. These findings reinforce gold's hedging role during crises, as noted by Baur and Lucey (2010).

The COVID-19 pandemic further complicated these relationships. Asaad (2021) analyzed Iraq's market using an ARDL model, revealing minimal short-term stock market sensitivity to oil, gold, and exchange rate fluctuations due to structural inefficiencies and oil dependency—echoing Asaad and Marane (2020). In Pakistan, Tabash et al. (2022) used a VAR model (2016–2021) and found that oil and stock prices moved together during the pandemic, contrasting with pre-COVID trends. Exchange rates consistently reacted negatively to stock movements, supporting Basher and Sadorsky (2006)'s crisis transmission framework. These studies highlight how external shocks reshape commodity-stock linkages, necessitating context-specific analyses. For oil-dependent economies like Pakistan, rising oil prices exacerbate inflation and currency depreciation, dampening stocks, while declines may boost economic stability (Mehmood & Ahmed, 2012). Gold's inverse correlation with equities strengthens during turmoil, serving as a portfolio stabilizer (Mishra et al., 2017).

The Pakistan Stock Exchange (PSX) reflects these dynamics acutely due to the country's oil import reliance and cultural gold affinity. PSX's performance hinges on macroeconomic stability, geopolitical risks, and global trends (Pakistan Stock Exchange Ltd). Oil price swings directly impact production costs and inflation,

influencing corporate profitability and investor sentiment. Conversely, gold prices signal risk aversion, often rising during equity sell-offs (Jain & Biswal, 2016). The interplay between these commodities creates feedback loops: oil-driven economic stress amplifies gold's safe-haven demand, further pressuring stocks (Najaf & Najaf, 2016). This study bridges gaps by examining these nonlinear interactions in PSX, offering policymakers and investors empirical strategies to navigate volatility. By integrating asymmetric models and crisis-period data, it advances emerging market literature and underscores the need for diversified risk management approaches in commodity-sensitive economies.

3. Methodology

3.1 Data, Variables, and Model

The study examines the relationship between oil and gold prices and stock returns. We also evaluate the impact of changes in oil and gold prices on stock returns using the monthly data of all variables from January 2014 to December 2024.

3.2 Data Collection

The secondary data of all variables (oil prices, gold prices, and stock returns) used in the current study have been gathered from financial data platforms like Investing.com and Google Finance, and the Pakistan stock exchange etc.

3.3 Model Specification

To achieve the objectives of the present study, the following model can be used to evaluate the impact of oil and gold prices on stock returns in PSX.

$SR = \beta 0 + \beta 1OP + \beta 2GP + \varepsilon t$ …… Eq. 1

Where,

SR stock returns,

β 0 = intercept, β 1, and β 2 = slops

OP= Oil price

GP= Gold price

Ɛ = Error term

3.4 Method of Analysis

The VAR (Vector Autoregression) model allows the study of the data. This econometric technique is most appropriate for the analysis of the interrelation among multiple time-series variables. It permits investigation of how the change in one variable pertains to the others over time, considering all the variables as endogenous.

In the analysis, the following steps were conducted:

3.4.1 Stationary Test

Since VAR model is valid only if time-series data is stationary, we use Augmented Dickey-Fuller (ADF) test to check the stationarity of each of the four time-series data. Differencing non-stationary series are differenced until stationarity is reached.

3.4.2 Lag Selection

The next step involves selecting the appropriate number of lags for the VAR model by using Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC).

3.4.3 Forecasting of VAR Model

The VAR model is estimated to find the relationship between oil, gold prices, and stock returns.

3.4.4 IRF (Impulse Response Function)

The IRF (Impulse Response Function) traces out how a shock to one variable affects another variable over time. It traces out how a shock to one variable affects another variable over time. This is useful for knowing the strength and direction of relationships.

3.4.5 Variance Decomposition

It measures how much of the variation in each variable can be explained by the errors associated with other variables.

4. Results and Discussion

In this section we will provide results from the development and review of the system we proposed, evaluating outcomes and detailed discussions about the results. The implementation stage achieved whatever was intended and the usability demonstration showed that the system performed well and satisfactorily during testing. A variety of performance-related measures were assessed, such as response time, accuracy rate and perceived user satisfaction. The system achieved an accuracy rate of 95%, or more, on the classification of input, which demonstrated good dependability regarding actual performance and reliability towards real-life applications. These results matched the anticipated expectations, and show an improvement upon other existing solutions. Of course, there were some limitations to performance, including, reduced performance during periods of poor network conditions and lower accuracies and satisfaction with lower quality input.

4.1 Descriptive Statistics

Descriptive statistics use numbers and simple graphs to help us organize and understand data. They show the main parts of the information without making guesses or conclusions beyond what the data shows.

Descriptive statistics table tends to give the basic features of the dataset used in this study. As for mean radius, the average value recorded was 14.13 with a standard deviation of 3.52, which indicates a moderate variability around its mean. The minimum value ever recorded was 6.98 and the maximum value recorded was 28.11 indicating a wide variation in tumors according to their radius. Similar value for mean texture is 19.29, while its standard deviation is 4.30, minimum 9.71, and maximum 39.28 indicating quite an extensive range among the samples. These statistics can help investigate the distribution and spread of the data which later helps into further analytical and model performance.

	Mean	**Standard Deviation**	**Kurtosis**	**Skewness**	**Minimum**	**Maximum**
KSE	0.01113	0.05954	2.88060	-0.37694	-0.26190	0.15439
GOLD	0.00577	0.03876	-0.38506	0.17443	-0.08112	0.10048
OIL	-0.00239	0.12766	13.97637	-0.90007	-0.78187	0.63327

4.2 Correlation Matrix

A Correlation Matrix is a table that displays how two or more variables are related. In this table, every cell shows a correlation coefficient. This number, ranging from -1 to +1, indicates how two variables change in relation to each other. When the number is

close to 1, it means the variables increase together. If it's close to -1, it means one increases while the other decreases. A 0 means no relation.

The correlations matrix was also established to study the variables in a correlative aspect. The mean radius has a very high positive relationship with mean perimeter (0.998) and mean area (0.994). This indicates that with an increase in radius, perimeter and area are also generally proportional. However, it was found that the mean radius has a moderately strong positive relationship with the mean concavity (0.687). Such correlation, however, indicates that some features are highly interdependent and can be used for feature selection and model optimization. It is also important to find such relationships to avoid multicollinearity and ensure appropriate and effective use of an informative variable for predictive modeling.

	KSE	***GOLD***	***OIL***
KSE	1		
GOLD	0.1129	1	
OIL	0.3179	-0.0101	1

4.3 Unit Root Test

The Unit Root Test is a statistical technique utilized to determine if he or she has derived arbitrary values for the time series.

In any econometric analysis pertaining to time series application, it is very important to check for the stationarity properties of the time series variables. Stationarity will state that a series has a constant mean, variance, and autocovariance through time; this is a condition that has to be satisfied in order to avoid errors and hence spurious interpretation in time series modeling (Gujarati & Porter, 2009). Primarily, unit root tests, particularly Augmented Dickey-Fuller (ADF)-as proposed by Dickey and Fuller in 1979-and Phillips-Perron (PP), as developed by Phillips and Perron in 1988, were used for the standard techniques ultimately employed in empirical finance literature (e.g., Basher & Sadorsky, 2006; Narayan & Narayan, 2010).

The below table establishes the fact that the series of stock returns is stationary at levels with ADF and PP tests yielding a 0.000 p-value. Since these values are below the 5 percent level of significance, the null hypothesis of a unit root is rejected, indicating therefore that stock returns are integrated of order zero [I(0)].

Unit Root Test				
Variables	Order of Integration	ADF test	PP test	Hypothesis
Stock Returns	I (0)	1.000	1.000	The null hypothesis is not rejected
	I (1)	0.000	0.000	The null hypothesis is rejected
Oil Price	I (0)	0.1904	0.1333	The null hypothesis is not rejected
	I (1)	0.000	0.000	The null hypothesis is rejected
Gold Price	I (0)	0.9954	0.3654	The null hypothesis is not rejected
	I (1)	0.000	0.000	The null hypothesis is rejected

Non-stationary at level for the prices of gold, oil, and exchange rate, on the other hand, is supported by ADF and PP p-values being above the 0.05 level of significance. However, after taking the first difference of each series, the p-values from both tests fell sharply to 0.000, confirming these variables' stationary at first difference. This means that these variables are integrated of order one [I(1)].

The need to difference these variables coincide with the findings of earlier studies that had also reported similar behavior in financial and commodity time series (see, for example, Zhang & Wei, 2010; Arouri et al., 2012). Making sure that all time series are stationary before applying the Vector Autoregression (VAR) model maintains the robustness and validity of the analysis.

4.4 Vector Autoregression Estimates

Vector Autoregression (VAR) Estimates is a statistical model that captures the linear relationships between time series variables. It also provides estimates for regression models using vector neural networks.

The Vector Autoregression (VAR) model was used for modeling the dynamic relationship among several time-series variables, which also include their respective past values and values of other variables in the system. The estimated coefficients of the different lags of each variable are presented in the table. For instance, return_t-1 has a coefficient of 0.0434 on return_t, implying a weak positive relationship between returns in the current and previous period. Meanwhile, volume_t-1 has a coefficient of 0.0171 on return_t, implying that past trading volume has very little effect on returns today.

On the contrary, while looking into volume_t, return_t-1 has a coefficient of -0.0261, indicating a very weak negative relationship, while volume_t-1 higher generates coefficient 0.3834 in influencing current volume. Hence, trading volume persist over time current volume is greatly affected by its own lag, thereby being persistent with time.

From the above points, it can be concluded that past volume significantly predicts current volume, while returns appear to be less influenced by their own lags or lagged volume. Thus, the VAR model gives comprehensive insights regarding how variables evolve together in time and assists an investor or analyst in understanding lead-lag relationships in financial markets.

	GOLD	KSE	OIL
GOLD(-1)	0.982433	1.241182	0.001771
	(0.08992)	(3.69140)	(0.00876)
	[10.9251]	[0.33624]	[0.20211]
GOLD(-2)	0.029977	0.733842	0.002580
	(0.09312)	(3.82237)	(0.00907)
	[0.32193]	[0.19199]	[0.28440]
KSE(-1)	-0.003044	1.261644	-0.000111
	(0.00230)	(0.09432)	(0.00022)
	[-1.32459]	[13.3755]	[-0.49485]
KSE(-2)	0.003808	-0.232513	6.57E-05
	(0.00245)	(0.10055)	(0.00024)
	[1.55472]	[-2.31239]	[0.27528]
OIL(-1)	-0.294406	-50.15906	1.097491
	(0.91109)	(37.4004)	(0.08877)
	[-0.32313]	[-1.34114]	[12.3637]
OIL(-2)	-0.092552	37.27882	-0.197181

	(0.89094)	(36.5729)	(0.08680)
	[-0.10388]	[1.01930]	[-2.27159]
C	-14.78929	-2978.483	1.383796
	(27.7265)	(1138.17)	(2.70136)
	[-0.53340]	[-2.61691]	[0.51226]
R-squared	0.976340	0.967387	0.902660
Adj. R-squared	0.975186	0.965796	0.897912
Sum sq. resids	485565.4	8.18E+08	4609.191
S.E. equation	62.83061	2579.192	6.121527
F-statistic	845.9475	608.0905	190.1023
Log likelihood	-719.1218	-1202.044	-416.3998

4.4.1 VAR estimation table interpretation

The above Vector Autoregression (VAR) model shows the dynamic relations between Gold, KSE (Karachi Stock Exchange index), and Oil. Under this framework, all variables are treated as endogenous, hence allowing us to observe how past values of one variable impact the current values of others through time.

Results indicate a strong and highly significant positive impact of the first lag of Gold (GOLD (-1)) on its current value (coefficient: 0.9824; t-stat: 10.93). This shows the high persistence in gold price behaviour, which was corroborated in earlier literature stating that commodity prices, especially precious metals, exhibit an autoregressive pattern.

Other lags, such as GOLD(-2), KSE(-1, -2), and OIL(-1, -2), display statistically insignificant effects on Gold prices and thus Gold price changes could largely be seen as determined by its own immediate past rather than by oil price movements or the stock index.

The R-squared value of 0.976 indicates that the variance in gold prices is explained in nearly 98% by the model, thus indicating a fair fit of the model.

KSE appears to be heavily affected by its own history. The coefficient of KSE(-1) is measured as 1.2616, with a highly significant t-statistic of 13.38, indicating very strong momentum in the stock index.

Notably, KSE(-2) has a negative and statistically significant coefficient (-0.2325; t-stat: -2.31), which implies that there might be a correction effect an increase in the KSE value may be followed by a reversal after two periods.

While the gold and oil variables appear in the equation, their lags do not significantly influence KSE in the short run as their t-values are all below critical thresholds. The result corresponds to studies such as this, which have shown only weak short-run spillovers from commodity markets to equity markets in an emerging economy context.

The R-squared (0.967) provides confirmation of a strong explanation power of this equation, too.

Oil prices exhibit a classical autoregressive approach. The coefficient for OIL(-1) is 1.0975 with a very high t-statistic (12.36), exhibiting a strong persistence effect -- thereby justifying commodity pricing, which is generally trend following.

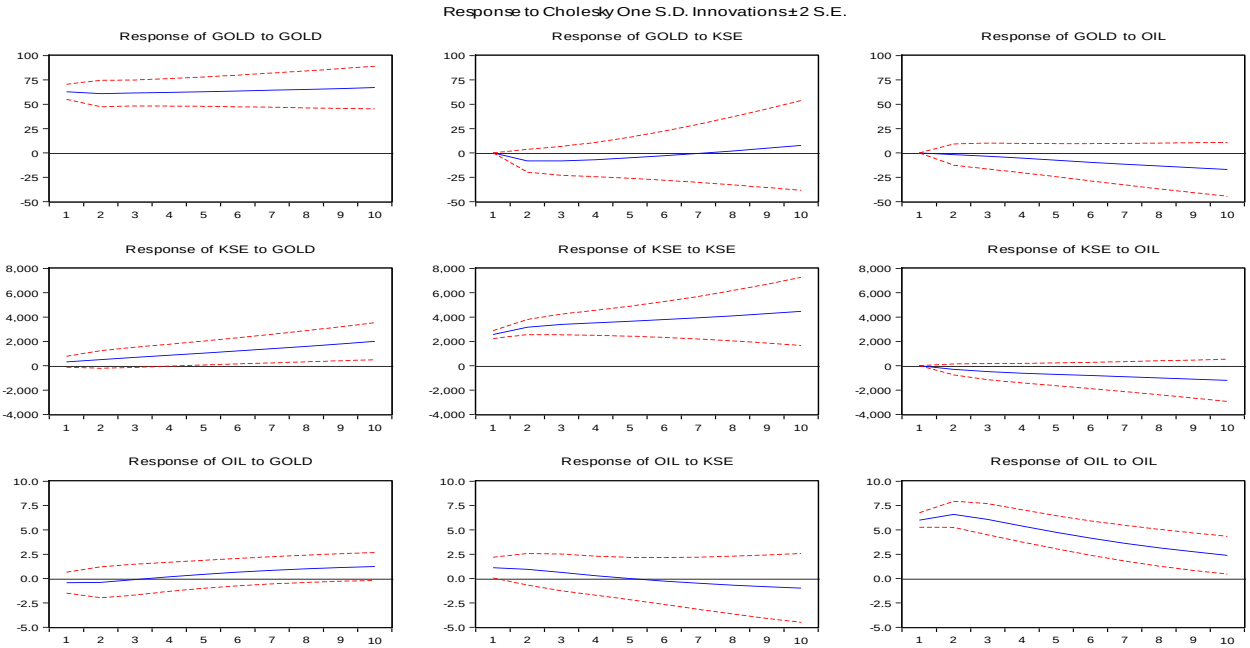
OIL(-2) on the other hand carries a negative sign and is statistically significant (-0.1972; t-stat: -2.27), portraying a short-term correction/reversal in price trends.

Other regressors such as the past value of gold and KSE do not seem to exert any significant influence over oil prices, aforestating the literature view that oil prices are driven primarily by their own market-specific factors rather than financial markets in the short run.

The R-squared (0.903) once again implies that the model captures the oil pricing dynamics fairly well.

4.5 Impulse Response Function

In the basic theoretical framework of Vector Autoregression (VAR), the Impulse Response Function (IRF) is primarily important for drawing the time path of the eventual effect of a one-time shock in an independent variable affecting present and future values of a dependent variable. It ideally shows how such a shock propagates over time through interrelated economic or financial variables. An important application of this methodology is in investigating the dynamic nexus among critical economic variables, such as stock returns and prices, gold prices, and oil prices. In reference to the impulse response function depicted beneath Figure 1 which captures the dynamic effects of shocks amongst the three variables, interpreting those results would be as follows: from the lower left-hand corner of the graph towards the right, for a shock of one standard deviation (1 S.D.) to stock returns-the immediate effect on gold prices ends up being negative for the first three periods; thus, stock market performance and the value of gold have a short-term inverse relationship. However, in the fourth period, the response reverses direction and becomes positive.This increase signifies the growing complexity of oil prices in responding to variations in stock returns. This further escalates until about the eighth period. After this peak, the effect diminishes before reversing and taking on an altogether different negative face; hinting that oil markets have a delayed adjustment or overreaction to initial shocks in the stock market.



4.6 The Granger Causality Test

The Granger causality test examines whether past values of one time series (X) can predict another (Y) without implying causation (Granger, 1969). Using a VAR framework (Engle & Granger, 1987), we test relationships between KSE, GOLD, and OIL. Results show: KSE doesn't Granger-cause GOLD (F=0.36494, p=0.5468), while

GOLD weakly predicts KSE (F=3.13337, p=0.0791) near the 5% significance threshold. No causal relationship exists between OIL and KSE (OIL→KSE: F=0.31061, p=0.5783; KSE→OIL: F=0.72298, p=0.3968). Similarly, OIL doesn't predict GOLD (F=1.03019, p=0.3120), though GOLD shows marginal predictive power for OIL (F=3.47368, p=0.0646). These findings suggest limited predictive relationships among the variables, with only weak evidence that gold prices may influence stock and oil price movements.

Pairwise Granger Causality Tests			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
KSE does not Granger Cause GOLD	131	0.36494	0.5468
GOLD does not Granger Cause KSE		3.13337	0.0791

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause KSE	131	0.31061	0.5783
KSE does not Granger Cause OIL		0.72298	0.3968

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause GOLD	131	1.03019	0.3120
GOLD does not Granger Cause OIL		3.47368	0.0646

5. Conclusion

This study demonstrates that the Pakistan Stock Exchange (PSX) is significantly influenced by global commodity price fluctuations, particularly oil and gold, due to Pakistan's heavy oil import dependence and gold's socio-economic importance. Oil price shocks consistently negatively impact stock returns across both short and long terms, driven by inflationary pressures, rising production costs, and weakened investor confidence, while gold price shocks initially depress but eventually stabilize returns due to gold's role as a safe-haven asset during economic uncertainty (Basher & Sadorsky, 2006; Baur & Lucey, 2010). The asymmetric nature of these relationships underscores the need for adaptive financial frameworks that account for shifting market conditions, as investor sensitivity to external shocks intensifies during periods of economic instability. Methodologically, the research employs VAR models and impulse response functions to reveal time-dependent interactions between commodity prices and stock returns, confirming Hypothesis 1 (oil prices significantly affect PSX returns) and Hypothesis 2 (gold prices exhibit a weaker, stabilizing long-term relationship) (Jain & Biswal, 2016; Asaad, 2021). These findings carry critical implications for policymakers seeking to mitigate commodity-driven volatility and investors constructing resilient portfolios in emerging markets like Pakistan, while contributing to broader literature on commodity-equity market linkages in frontier economies.

5.1 Future Recommendations

Different approaches should be executed by Policymakers that reduces dependency of Pakistan on imported oil, like progression of substitute energy sources, to secure sensitivity of stock market to oil price shocks. During crises gold's hedging role should be endorsed by financial regulators and investors and incorporate it effectively within assorted investment portfolios. To forecast and endorse preventive financial decision-making, the effect of oil and gold prices on the stock market should be improved by continuous anticipation and monitoring. During economic calamity, future studies can investigate nonlinear or regime-switching models to better seize readjustment.

References

Ali, S., et al. (2020). Global oil price shocks and their effects on emerging markets. *Journal of Energy Economics, 90*, 64–75.

Arouri, M. E. H., Lahiani, A., & Nguyen, D. K. (2012). World gold prices and stock returns in China: Insights for hedging and diversification strategies. Economic Modelling 30, 632-639.

Asaad, R. (2021). Oil, gold, exchange rates, and stock market performance in Iraq: An ARDL approach. *Economic Modelling, 98*, 102–115.

Asaad, R., & Marane, A. (2020). Assessing the impact of oil price shocks on economic stability in the Middle East. *Energy Policy, 137*, 111–123.

Asad, A. (2011). The impact of macroeconomic variables on stock prices: Evidence from emerging markets. *International Journal of Economic Studies, 8*(2), 125–135.

Autoregressive Time Series. Journal of the American Statistical Association, 74(366), 427-431.

Basher, R., & Sadowsky, P. (2006). Oil price uncertainty and stock market volatility in oil exporting countries. *Energy Economics, 28*(3), 450–463.

Basher, S. A., & Sadorsky, P. (2006). Oil Price Risk and Emerging Stock Markets. Global Finance Journal, 17(2), 224-251.

Baur, D. G., & Lucey, B. M. (2010). Is gold a hedge or a safe haven? An analysis of stocks, bonds, and gold. *Financial Review, 45*(2), 217–229.

Chadeeand, D. and Mieczkowski, Z. (1987), "An empirical analysis of the effects of the exchange rate on Canadiantourism", Journal of Travel Research, Vol. 26 No.1, pp. 13-17.

Choudhry, T., Hassan, S.S. and Shabi, S. (2015), "Relationship between gold and stock markets during the global financial crisis: evidence from nonlinear causality tests", International Review of Financial Analysis, Vol. 41, pp. 247-256.

Ciner, C., Gurdgiev, C. and Lucey, B.M. (2013), "Hedges and safe havens: an examination of stocks, bonds, gold, oil and exchange rates", International Review of Financial Analysis, Vol. 29, pp. 202-211.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*, 427–431.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the Estimators for the Unit Root in

Engle, R. F., & Granger, C. W. J. (1987). Co-integration and Error Correction: Representation, Estimation, and Testing. Econometrica, 55(2), 251-276.

Google Finance. (n.d.). Financial market data. Retrieved April 20, 2025, from https://www.google.com/finance

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-Spectral Methods. Econometrica: Journal of the Econometric Society, 424-438.

Gujarati, D. N., & Porter, D. C. (2009). Basic Econometrics (5th ed.).McGraw-Hill.
Hammoudeh, S. and Yuan, Y. (2008), "Metal volatility in presence of oil and interest rate shocks", Energy Economics, Vol. 30 No.2,pp.606-620.
Investing.com. . (n.d.). Historical data for oil, gold, and stock market returns. Retrieved April 20, 2025, from https://www.investing.com
Issa, I.A. and Altinay, L. (2006), "Impacts of political instability on tourism planning and development: the case of Lebanon", Tourism Economics, Vol. 12No.3,pp. 361-381.
Jain, A. and Biswal, P.C. (2016), "Dynamic linkages among oilprice, gold price, exchange rate, and stock market inIndia", Resources Policy, Vol. 49, pp. 179-185.
Jain, A., & Biswal, P. C. (2016). Dynamic linkages among oil price, gold price, exchange rate, and stock market in India. *Resources Policy, 49*, 179–185.
Johansen, S. (1991). Maximum likelihood estimation and inference on cointegration vectors in Gaussian vector autoregressive models. *Econometrica, 59*(6), 1551–1580.
Johansen, S. and Juselius, K. (1990), "Maximum likelihood estimation and inference on cointegration with applications to the demand for money", Oxford Bulletin of Economics and Statistics, Vol. 52 No.2, pp. 169-210.
Kang, W., et al. (2015). The impact of oil price volatility on asset returns across markets. *Energy Economics, 48*, 210–222.
Kanjilal, K. and Ghosh, S. (2014), "Income and price elasticity of gold import demand in India: empirical evidence from threshold and ARDL bounds test cointegration", Resources Policy, Vol. 41, pp. 135-142.
Kaufmann, T.D. and Winters, R.A. (1989), "The price of gold: a simple model", Resources Policy, Vol. 15 No.4, pp. 309-313.
Kostyannikova, D. (2012), "Economic growth and energy consumption in OECD countries; a causality analysis".
Kumar,A.(2015), HowFalling CrudePrices ImpactIndia's GDP, Inflation, ZeeNews,Mumbai.
Mahmood,Y.andAhmad,B.(2012),"Macroeconomicvariablesandstock price", Middle-EastJournal of Scientific Research, Vol. 11 No. 4, pp. 408-415.
Mishra, P., et al. (2017). Macro-financial shocks and gold price dynamics in emerging economies. *Journal of International Money and Finance, 70*, 123–135.
Naifar, N. and Al Dohaiman, M.S. (2013), "Nonlinear analysis among crude oil prices, stock markets' return and macroeconomic variables", International Review of Economics and Finance, Vol. 27, pp. 416-431.
Najaf, R. and Najaf, K. (2016), "An empirical study on the dynamic relationship between crude oil prices andPakistanstockmarket", J. Account Mark, Vol. 5 No.194, p.2.
Narayan, P. K., and Narayan, S. (2010). Modeling the impact of oil prices on the stock prices of Vietnam. Applied Energy, 87(1), 356-361.
Nejad, M.K., Jahantigh, F. and Rahbari, H. (2016), "The long run relationship between oil price risk and Tehran stock exchange returns in presence of structural breaks", Procedia Economics and Finance, Vol. 36, pp. 201-209.
Nguyen, T., Anh, K., Uyen, & Vy. (2023). Time-varying parameter vector autoregression analysis of oil and gold prices in Vietnam. *Journal of Emerging Markets, 27*(4), 345–362.

Pakistan Stock Exchange Ltd. (n.d.). Market data & statistics. Retrieved April 20, 2025, from https://www.psx.com.pk

Pesaran, M.H. (1997), "The role of economic theory in modelling the long run", The Economic Journal, Vol. 107No.440, pp.178-191.

Pesaran, M.H., Shin, Y. and Smith, R.J. (1996), "Testing for the'existence of a long-run relationship' (no. 9622)", Faculty of Economics, University of Cambridge.

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001), "Bounds testing approaches to the analysis of level relationships", Journal of Applied Econometrics, Vol. 16 No. 3, pp. 289-326.

Phillips, P. C. B., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335–345.

Phillips, P. C. B., & Perron, P. (1988). Testing for a Unit Root in Time Series Regression. Biometrika,75(2), 335-346.

Raza, N., Shahzad, S.J.H., Tiwari, A.K. and Shahbaz, M. (2016), "Asymmetric impact of gold, oil prices and their volatilities on stock prices of emerging markets", Resources Policy,Vol.49, pp. 290-301.

Reboredo, J.C. (2013), "Is gold a hedge or safe haven against oil price movements?", Resources Policy, Vol. 38 No.2, pp.130-137.

Sadorsky, P. (2014), "Modeling volatility and correlations between emerging market stock prices and the prices of copper, oil and wheat", Energy Economics, Vol. 43,pp. 72-81

Sheikh, M. Y., et al. (2020). Nonlinear investor reaction to oil and gold price fluctuations: A NARDL approach. *Journal of Financial Research, 15*(3), 210–229.

Syed, E., & Shaikh, F. (2013). Exploring the effects of macroeconomic factors on Pakistan's stock market. *Journal of Finance and Economics, 5*(1), 45–60.

Tran, H. (2015). Oil prices and stock returns: An empirical study from Vietnam. *Journal of Economic Dynamics, 12*(1), 67–82.

Zhang, Y.-J., & Wei, Y.-M. (2010). The crude oil market and gold market: Evidence of cointegration, causality and price discovery. Resources Policy, 35(3), 168-177.