





# “Do oil prices and oil production capacity influence decision making and uncertainty in the financial market? Evidence from Saudi Arabia”

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<b>ARTICLE INFO</b>	Ayman Abdalmajeed Alsmadi, Najed Alrawashdeh, Anwar Al-Gasaymeh, Loai Naser Alhwamdeh and Amer Moh'd Al_hazimeh (2022). Do oil prices and oil production capacity influence decision making and uncertainty in the financial market? Evidence from Saudi Arabia. <i>Investment Management and Financial Innovations</i> , 19(3), 335-345. doi: <a href="https://doi.org/10.21511/imfi.19(3).2022.28">10.21511/imfi.19(3).2022.28</a>
<b>DOI</b>	<a href="http://dx.doi.org/10.21511/imfi.19(3).2022.28">http://dx.doi.org/10.21511/imfi.19(3).2022.28</a>
<b>RELEASED ON</b>	Monday, 26 September 2022
<b>RECEIVED ON</b>	Thursday, 28 July 2022
<b>ACCEPTED ON</b>	Thursday, 22 September 2022
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<b>JOURNAL</b>	"Investment Management and Financial Innovations"
<b>ISSN PRINT</b>	1810-4967
<b>ISSN ONLINE</b>	1812-9358
<b>PUBLISHER</b>	LLC “Consulting Publishing Company “Business Perspectives”
<b>FOUNDER</b>	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

57



NUMBER OF FIGURES

2



NUMBER OF TABLES

0

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## BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"  
Hryhorii Skovoroda lane, 10,  
Sumy, 40022, Ukraine  
[www.businessperspectives.org](http://www.businessperspectives.org)

**Received on:** 28<sup>th</sup> of July, 2022

**Accepted on:** 22<sup>nd</sup> of September, 2022

**Published on:** 26<sup>th</sup> of September, 2022

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**Conflict of interest statement:**

Author(s) reported no conflict of interest

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# DO OIL PRICES AND OIL PRODUCTION CAPACITY INFLUENCE DECISION MAKING AND UNCERTAINTY IN THE FINANCIAL MARKET? EVIDENCE FROM SAUDI ARABIA

## Abstract

The aim of this study is to investigate the relationship between oil prices and oil production capacity and financial market performance in the Kingdom of Saudi Arabia and how oil prices and oil production capacity influence the decision making and uncertainty factors in Saudi Arabia's financial markets. The key variables considered are oil prices and oil production capacity in the Kingdom of Saudi Arabia. Other variables such as foreign direct investment decisions and domestic investment decisions are adopted to explore their impact and reaction to the various risks identified. Therefore, data was collected from online sources to analyze qualitative and quantitative information to understand risks, uncertainties and decision-making considerations. The findings of this paper indicate that rising oil prices increase the value of the Saudi Arabian financial market.

The study showed that the diversification of the investor portfolio increases the stability of Saudi Arabia's financial market. Also, the KSA's financial market volatility primarily reflects oil price fluctuations, and the Saudi Arabian oil production capacity directly affects its financial market performance. Saudi Arabia's oil production was also found to pose insignificant risk to long-term economic growth and stability, thereby putting investors' long-term investments at risk. The study also showed that investors in Saudi Arabia's financial market fail to objectively analyze risks by focusing on short-term high-profit margins from oil prices.

## Keywords

oil prices, oil production capacity, decision making, uncertainty, investment, Saudi Arabia

## JEL Classification

B17, F21, G41, D81, E44

## INTRODUCTION

In recent years, the movement of commodity prices and financial investment has fluctuated around the world, and this accordingly refers to uncertainty, price fluctuations caused by many reasons, especially the political environment and global economics. Since crude oil can be considered as a commodity and as a financial feature, it is subject to direct price fluctuations, which poses risks to investors such as geopolitical risks.

Given the fluctuations in global oil prices, the increasing uncertainty among investors, and the instability of the relationship between them, multiple cases of price fluctuations may result, which may affect the financial markets. On the one hand, according to different sources, uncertainty can be divided into economic policy uncertainty, climate

policy uncertainty, geopolitical risk uncertainty, and market uncertainty. Uncertainties that affect prices, including the price of crude oil. It is not known when it could be produced, or the extent of its impact, its size, or the direction of its impact.

Financial market in the Middle East countries is an important issue due to uncertainty and fluctuation risk. Some of the Middle East countries depend on oil production as an essential economic factor. Financial markets help to efficiently direct the flow of savings and investment in the economy in ways that facilitate the accumulation of capital and the production of goods and services. Moreover, the empirical literature strongly suggests that the quality of many of these fundamentals is of great importance for the efficiency of financial systems and their contribution to productivity and growth. The Saudi Arabia significantly depends on oil exploration, given that 50% of its GDP results from oil and gas production (Sadouni et al., 2022). Following the Russia-Ukraine war, oil prices almost doubled, but this trend was not reflected in Saudi Arabian financial markets. Instead, the country experienced a decline, demonstrating its volatility and economic shift from dependence on oil (Yousaf et al., 2022). The shift reflects Saudi Arabia 2030 vision of diversifying its economy to include other ventures besides oil exploration. Thus, decision making in Saudi Arabia is further complicated by a shift in economic factors and risks. The 1.9% decline following the Russia-Ukraine war is partly attributed to Saudi Arabian investment in other industries with profits from the oil industry (Yousaf et al., 2022).

Since oil has the characteristics of commodities, oil prices are subject to global economic crises like other commodities, and the frequency of price changes influencing oil is increasing. Fluctuations in oil prices and production capacity due to various circumstances around the world could cause decision makers to create uncertainty in the financial market. Thus, the relationship is explored between oil prices and decision making as dependent factors by focusing on implied objectivity.

The focus on decision making by external and internal investors demonstrates conflicting interests, thereby exploring the increased risks due to implied long-term profits in a volatile market. In essence, this study contributes to investor concerns about stability and related risks in the Saudi Arabian financial market. While the study does not establish all the risks, it does demonstrate the significance, impact, and risks associated with Saudi Arabia's economic relationship with oil prices.

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## 1. LITERATURE REVIEW

From the start of oil production in 1846, the world economy turned sharply towards using oil in most production, until it became the world's main commodity and the largest of all commodity markets in the world. However, with the transition to new types of energy and production quantity of oil depending on demand and supply, the crude oil price fluctuations play a critical role in the global economy for both producers and consumers. However, oil prices, demand and supply fluctuations and uncertainty strongly affect international financial markets in terms of asset allocation and portfolio risk management, especially in the economy of producers who are heavily dependent on oil production, such as Saudi Arabia.

Saudi Arabia is the second largest oil producer in the world next to the United States of America and largest exporter, and then the KSA is considered an oil dependent economy. With changes in production capacity and OPEC shares for producers and price shocks, Saudi Arabia launched Saudi Vision 2030 to “transform the structure of the Saudi economy into a diversified and sustainable economy focused on enhancing productivity, increasing the contribution of the private sector, and empowering the third sector” (<https://www.vision2030.gov.sa>).

Oil price movements and production capacity are followed by an immediate impact on the Saudi financial market volatility. Moreover, Saudi financial market is considered the largest and the most active and liquid market in both the Gulf Cooperation Council (GCC) and MENA regions

(Mensi et al., 2015). On the other hand, Saudi Arabia's financial market attracts foreign investor's access to the market that can be a way to diversify portfolio investments in financial market. Motivated by those considerations, it is important to understand and analyze the oil sector and the network of relationships with other sectors.

Investment uncertainty is a typical factor, since different elements affect the viability of investment options. These elements comprehensively develop into risks, implying investment risk taking (Awan et al., 2021). Making decisions based on the impact of the risks relative to gains is typical of all investment options and decisions. Analysis of the risks includes multiple factors affecting price and volatility, such as the impact of supply and demand of oil relative to worldwide trends, including lockdowns and sustainability initiatives (Ali et al., 2022). The Covid-19 pandemic reduced the demand for oil, resulting in a considerable price increase, which did not compensate for the reduced demand, thereby exposing investors to losses. Considering the unpredictable nature of pandemics on a global scale, investing in oil markets is a risky investment decision prompting companies and individuals to minimize investments to reduce risk exposure (Ali et al., 2022). Kumar et al. (2021) argue that oil importers' economies do not experience as much volatility as the exporters, thereby implying greater risks by investing in oil-exporting countries.

Financial decisions taken by companies and in financial markets depend on local and international trends, risks, and policies. Cultural factors and trends have a fundamental impact on the impression of risks. The economy of the Kingdom of Saudi Arabia primarily depends on oil and natural gas exploration and prices (Murayr et al., 2021). The primary relationship means that financial market decisions reflect trends in oil prices. For instance, the listing of Saudi Aramco, the primarily state-owned oil exploration company by Saudi Arabia, on the Saudi Arabian Stock Market was a strategic move to invite external investors (Shehata et al., 2021). The invitation of external investors was motivated by a need for the government to stabilize Saudi Arabia's financial markets further. As demonstrated by the Gulf Cooperation Council (GCC) records, its market capitalization

grew five-fold from \$117 billion to \$716 billion between 2000 and 2007, in reaction to high oil revenues and prices (Alqahtani et al., 2019). Following the capitalization growth, the number of external investors grew. However, the investments and public companies listed on the GCC market concentrated on finance and oil exploration industries, thereby creating an unbalanced investment structure (Alqahtani et al., 2019). In essence, investments in Saudi Arabia currently focus on diversified structures, further stabilizing the market's volatility.

The fast growth of the GCC market capitalization in reaction to high oil prices also applies to the opposite market effect. Oil price fluctuations have a pervasive impact globally on multiple financial markets. Thus, their influence cannot be limited to Saudi Arabia. However, Saudi Arabia's economic growth and attractiveness to external investors based on high oil prices point to market volatility (Almansour & Arabyat, 2017). Despite knowledge of the risks involved, investor behavior demonstrates higher risk tolerance.

High returns continue to attract investors and retain their loyalty, as shown by the impact of Russia-Ukraine war on global markets. World financial markets experienced a 10% decline, while oil-rich countries such as the USA and Canada retained positive performances (Yousaf et al., 2022). Despite Saudi Arabia supplying 12% of world crude oil (Ahmad, 2022), it experienced up to -1.9% financial market losses (Yousaf et al., 2022), demonstrating its volatility to extensive dependence on crude oil. The increased demand for Saudi Arabia's oil resulted in higher prices, thereby retaining the commitment of external investors to the financial market. Oil exploration accounts for 50% of Saudi Arabia's GDP and 70% of its export earnings, translating to an extensive impact on the performance of the country's financial market (Sadouni et al., 2022). Thus, a decline in oil prices would hurt the Kingdom's economy, thereby crashing its financial markets. In reaction, the country's administration has been reducing its dependence on oil exploration.

Moreover, Saudi Arabia continued dominance of world oil production, and poor economic diversification limits its impression as a diversified mar-

ket. The administration has continuously reduced government expenditures and distributed wealth to other industries (Syed et al., 2019). Despite the implied risks, external investors are prolific in the Kingdom, further diversifying the economy.

Investments in Saudi Arabia by external parties increasingly diversify the economy. The diversified portfolio, however, implies introducing additional elements affecting the financial markets. Fama defined efficient finance markets as having multiple rational profit-maximizers from which stiff competition enhances predictive market values, thereby reducing speculative values (Alsabban & Alarfaj, 2020). Saudi Arabia's 50% dependence on oil exploration exposes the financial markets to extensive speculations (Sadouni et al., 2022). The result is that investors lack the necessary objectivity in making decisions, with emotions undermining cognitive analysis of high returns from high oil prices, despite its volatility (Shahid et al., 2018). These additional industries and economic elements stabilize financial markets, given the unpredictability of stock market dynamics in reaction to oil price uncertainty (Mensi et al., 2021).

To achieve the main purpose of this study, a number of hypotheses are set to be investigated and analyzed.

- H1: Saudi Arabia's oil production capacity directly affects its financial market performance.*
- H2: Saudi Arabia's financial market volatility primarily reflects oil price fluctuations.*
- H3: Investor portfolio diversification increases the stability of the Saudi Arabian financial market by introducing other industries essential to economic growth, leading to an administrative focus on attracting external investors.*
- H4: Saudi Arabia's oil production is a significant risk to long-term economic growth and stability, thereby putting investors' long-term investments at risk.*
- H5: Investors in the Saudi Arabian financial market fail to objectively analyze risks by focusing on short-term high-profit margins from oil prices.*

Therefore, this study will try to fill the gap in the literature, taking into account a number of factors that may influence decision making and uncertainty in one of the biggest economies in the emerging market, i.e. Saudi Arabia, for the most recent years. Additionally, these dimensions (oil price and production capacity) have not been integrated into a theoretical argumentation in the literature on organizational decision making. Scholars have noted that oil prices and production capacity are the main determinants of Saudi Arabia's attractiveness to external and internal investors.

## 2. METHODOLOGY

This study analyzes the risks and trends following various economic trends in the Kingdom. These include the oil price increase and the recent Russia-Ukraine war impact on Saudi Arabian decision making by the state and companies. In essence, data sources vary and are acquired from multiple online sources. Data was collected from financial reports and government websites. Additional data collected included the analysis of the Saudi Arabian financial market by experts exploring the impact of oil production and price fluctuations on decision making in the Middle East.

The study used a correlation methodology to analyze the impact of oil prices on Saudi Arabia's financial markets and the continuous relationship. Data for oil prices and financial market performance was collected over the past 20 years. The correlation approach was used as it provides an immediate impression of the relationship between two or more variables (Gogtay & Thatte, 2017). Furthermore, correlation analysis is essential to demonstrate the dependence or independence of variables (Senthilnathan, 2019). Determining dependence or independence is essential in this study in exploring various considerations involved in decision making. The study also used a covariance approach to analyze the variable relationship between oil prices and financial market performance. Covariance analysis is essential to establish relationship variation, thereby establishing the significance of the dependent or independent relationships (Wang et al., 2019).

This study's aim of exploring the factors influencing decision-making in Saudi Arabia's financial markets requires exploring the various relationships. The qualitative methodology is essential in defining the relationships and further exploring the interrelationships (Hamilton & Finley, 2019). The study collected multiple research projects' observations and survey theories using a secondary research approach. Insights from the selected articles were collected individually; then, notes were made after analyzing each article to identify trends and relationships. Further, the findings were related to quantitative findings, thereby establishing their contributions to a cohesive analysis.

### 2.1. Hypothesis testing

The hypothesis testing process relied on several data analysis processes, but the typical approach was relating the theory to the findings. This approach was necessitated by the methodology used in analyzing the relationship between decision making and the status of Saudi Arabia's financial market. For instance, following the use of covariance and correlation analysis methods, the study relied on the results to accept or reject hypotheses based on their conformance to the results. The results support a direct and positive relationship between oil prices and financial market performance, thereby supporting Hypotheses 1 and 2. The direct relationship, however, does not positively affect consumer impression of Saudi Arabia's financial market. Secondary research established that investors perceived the Saudi Arabian financial market as marginally riskier than other markets, thereby rejecting Hypothesis 3.

The conflicting priorities between risk and high oil prices support Hypothesis 4, following findings of increased external consumer investment after increasing oil prices. An analysis of the impact of the external investors on the financial market and their decision making supports Hypothesis 5, citing a more stable financial market, despite a more volatile oil price market due to continuously changing investor opinions.

## 3. RESULTS AND DISCUSSION

The purpose of this study is to investigate the relationship between uncertainty factors and decision

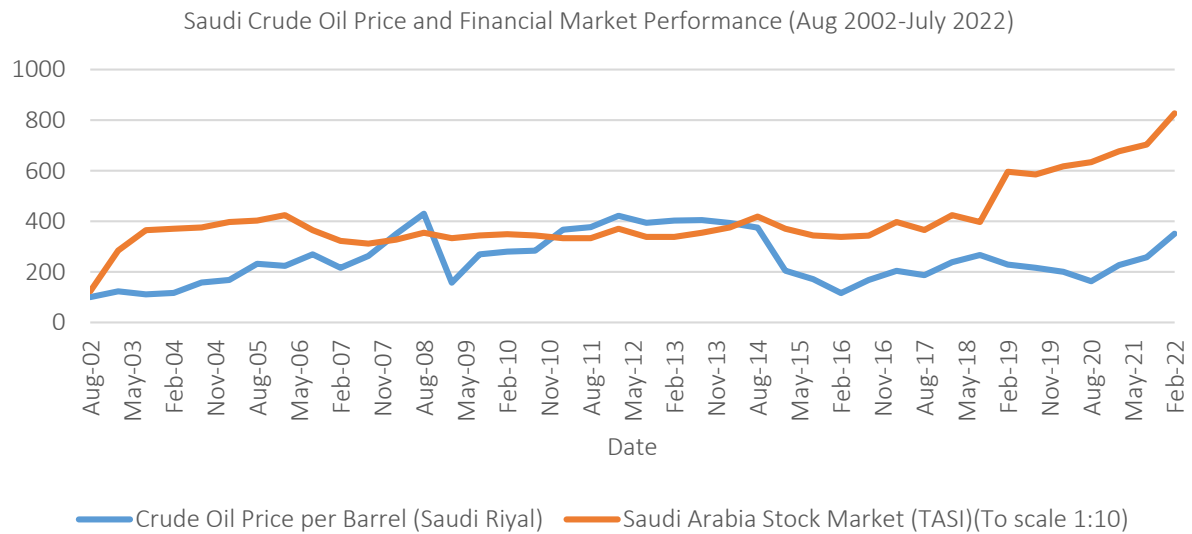
making in Saudi Arabia's financial markets. The primary elements considered in the analysis are oil prices and oil production capacity as primary determining factors of the attractiveness of Saudi Arabia to external and internal investors.

Relationships between product pricing fluctuations and financial markets are not limited to Saudi Arabia. However, the impact of the fluctuations of individual products or industries on the financial markets varies significantly. Several factors affect financial market volatility in response to these fluctuations, including the national significance of the products (Hung, 2021), information flow, trading volume, economical aspects and investor behavior are the causes of volatility in the stock markets (Mamtha & Srinivasan, 2016). Relationship analysis between oil prices and Saudi Arabia's financial market initially establishes a positive relationship.

Figure 1 demonstrates the positive relationship with oil price growth reflected in the stock market. However, the price volatility does not result in similarly volatile markets. This is especially evident after 2006, illustrating that external investments had commenced the goal of further stabilizing Saudi Arabia's economy and its financial market (Le et al., 2021). Thus, the study accepts Hypothesis 3 on the argument that external investments increasingly reduce the impact of oil fluctuations. For instance, while crude oil prices reduced in April 2009, the financial market did not reflect the trend.

Covariance analysis of the relationship between oil prices and financial markets demonstrates a positive and significant direct connection between the variables. First, the positive results establish that an increase in oil prices increases the value of the Saudi Arabian financial market. Given the positive and high value, the correlation values demonstrate the urgency for Saudi Arabia's government to intervene by further diversifying its financial market systems. The correlation results also confirm the opposite relationship, thereby fundamentally exposing the Kingdom to extensive market risks.

Figure 2 demonstrates the limited deviation in oil prices from the market performance, implying that oil price fluctuations will translate to

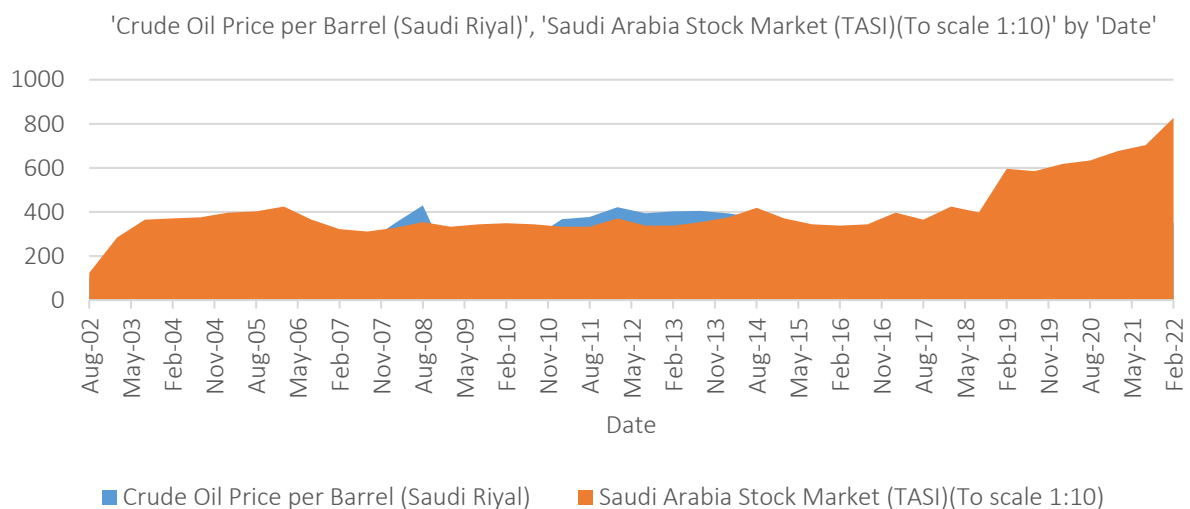


**Figure 1.** Saudi Arabia’s crude oil price and financial market performance correlation

an equally adverse impact or lower, which also translates to increasing prices. Thus, the study accepts Hypothesis two, as demonstrated by Saudi Arabian government’s growing interest in external investments (Noreen et al., 2020), and (Prabheesh et al., 2019) finds evidence of a positive co-movement between oil price returns and stock price returns during the COVID-19 period. This indicates that falling oil prices act as a negative signal for the stock market. The Saudi Arabian government’s intention is motivated by an appeal to protect its economy from the adverse impacts of oil price fluctuations on its economy. However, the covariance results imply that the decision is at the expense of the positive impact on its economy

when prices increase, resulting in a minimum ripple effect on the financial markets.

Investor behavior in the Middle East has received criticism, given that foreign direct investments (FDIs) in the region do not demonstrate the typical objective decision-making evident in other regions such as China. Instead, investors exhibit more bias influencing their decisions, thereby exposing themselves to more risks (Jain et al., 2019). The risks in Saudi Arabia result from oil price volatility and its extensive and unpredictable impact on the Kingdom’s economy (Le et al., 2021). Correlation analysis of oil prices and financial market trends establishes a positive relationship between oil price



**Figure 2.** Comparison of Saudi Arabian crude oil prices and financial market performance to reduce price impact

es and the market. The positive relationship establishes a dependent relationship, implying that Saudi Arabian financial market positively responds to oil prices, influencing investor decisions. On the other hand, Nguyen et al. (2018) mention that a decline in oil prices negatively affects financial markets after 2014. However, investor decisions in the market are not motivated by objective reasoning. Instead, investors primarily rely on the high oil prices as indications of the market's long-term stability (Atassi & Yusuf, 2021). These findings accept Hypothesis 1 and reject Hypothesis 4 on the argument that investor decision-making in Saudi Arabia focuses on oil prices and production volume. However, these decisions' implied long-term viability are limited due to oil price volatility, thereby rejecting the reliability of long-term projections. For example, the recent increase in Saudi Arabia's oil production volume has attracted more external investors in addition to the high oil prices (Haque, 2020). The sustained demand for oil products globally undermines the significance of price volatility risks, thereby undervaluing the government's investment in other industries domestically (Alfalih & Bel Hadj, 2020). Thus, Saudi Arabia's financial market remains primarily dependent on oil production as investors rely on its trends to influence their decisions.

Hypothesis five establishes that investors' decisions to invest in Saudi Arabia fund the Kingdom's investment in other industries but their under-

standing of the market is limited. The pooled resources enhance stability, such as having foreign companies operating directly in Saudi Arabia, thereby diversifying the risk portfolio, given the different industries' reactions to oil price changes (Alfalih & Bel Hadj, 2020). While the increase in oil price seemingly improves the revenue, investors often follow the opposite trend, reducing FDI value significantly. This is particularly significant, since their funds are directed to domestic investments, which are more vulnerable to oil price changes, since they account for less than 50% of Saudi Arabia's GDP (Sadouni et al., 2020; Alfalih & Bel Hadj, 2020).

Thus, the study accepts Hypothesis 5 on the argument that while FDIs enhance the financial market's stability, investors lack extensive insight into the government's intentions with their funds. Instead, external investors are more acquainted with the limited disclosure, misleading investments, and actual impact after investments. For instance, the secrecy of investment use, terms, profit remittance, and diversification undermine Saudi Arabia's attractiveness to domestic and external investors (Mahmood & Alkhateeb, 2018). Given the fear among investors, Hypothesis 5 was accepted. Investor decision-making in the Organization of the Petroleum Exporting Countries (OPEC) is highly risky due to multiple investment uncertainties.

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## CONCLUSION

The aim of this study is to investigate the relationship between oil prices and oil production capacity on financial market performance in the Kingdom of Saudi Arabia, and explore how oil prices and oil production capacity affect the decision making and uncertainty factors in Saudi Arabia's financial markets.

Saudi Arabia's primary dependence on oil production, accounting for more than 50% of its GDP, establishes the pervasive impact of oil prices and oil production capacity on decisions. In essence, Saudi Arabia's government has been shifting priorities to other industries with external investors as their primary investment sources. The government achieves this goal using secretive investment systems trapping investors. Despite knowing the risks, investments in Saudi Arabia are on the rise due to high oil prices. Besides, the implied long-term high oil prices significantly challenge logical reasoning for investing in the region. Using five hypotheses, the study analyzed the factors introducing uncertainty to decision making and their significance to the region and Saudi Arabia's economy.

Therefore, the study reveals that investor portfolio diversification increases stability of the Saudi Arabian financial market; also, the KSA's financial market volatility primarily reflects oil price fluctuations, and Saudi Arabia's oil production capacity directly affects its financial market performance. On the other



hand, the study finds that Saudi Arabia's oil production is a insignificant risk to long-term economic growth and stability, thereby risking investors' long-term investments. Besides, the study finds out that investors in Saudi Arabia's financial market fail to objectively analyze risks by focusing on short-term high-profit margins from oil prices.

It should be noted that while Saudi Arabia remains an attractive investment destination for local and foreign investors, the secretive systems and oil price volatility are significant undermining factors.

The results may indicate a high distrust of OPEC governments' intentions with foreign and domestic investor funds. Secretive investment and diversification further increase the risks of investing in the Middle East. However, high oil prices and continuous demand for oil also attract investors, resulting in biased investment options. The study concludes that while high oil prices attract some investors, the volatility also discourages other investors from fearing the extreme opposite in a market dependent on oil production.

## **IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS**

The results suggest that diversifying Saudi Arabia's financial market by introducing other parties compromises its attractiveness. The covariance results establish that oil prices positively affect financial markets. The high values obtained from the analysis imply a significant positive dependence on price fluctuations, implying that diversification would reduce the impact. Given that the relationship is positive, the primary objective of market diversification is to reduce uncertainties, thereby protecting investors and investments from the risk of oil production and price fluctuations. However, the positive relationship also means a reduced positive impact of increasing prices, given that the country also responds to other markets or industries such as agriculture (Joghee et al., 2020). Therefore, there is a need to explore the compromise of Saudi Arabia's economic attractiveness to external investors following portfolio diversification.

## **THEORETICAL IMPLICATIONS AND TARGET AUDIENCE**

The results' implications for decision making in the Saudi Arabian financial market establish continuing risks. The reluctance of the Saudi Arabian financial market to implement mandatory disclosure compels investors to enquire about risk factors such as financial reports and market risks (Murayr et al., 2021). Considering that these reports are only presented to groups with limited understanding of the markets and with biased impressions of the market, their decision making fails to reflect actual metrics.

The finding that oil prices do not necessarily reflect financial market performance supports the finding of contentious priorities, thereby fundamentally affecting the market. In this regard, this study's primary focus on investors undermines the implied significance of oil prices as an indication of the financial market's performance. Inferring this argument, the results establish that oil prices do not protect investments. Instead, they rely on the hypothetical sustained high prices, thereby shifting the influencing factors from Saudi Arabia to global elements such as the recent pandemic (Ali et al., 2022).

Local investors should understand that while the Saudi Arabian financial market promises high returns, the implied gains fail to reflect other oil production elements, such as reducing Saudi Arabia quota. Suppose local and foreign investors consider Saudi Arabia's reliance on oil prices based on global trends. In that case, implied returns should significantly decline as more countries look for more stable producers and local production. The change in decision making will further stabilize the Saudi market as investors anticipate volatility and reduce risk exposure.

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## ACKNOWLEDGMENT(S)

All authors have contributed equally to this paper.

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