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The impact of oil price fluctuations on the performance of the stock market in Saudi Arabia

Bouziane Wissam * (1)
wissambou1997@gmail.com
University Contre of Maghnia, (Algeria)

Mennad Merwa (2)
Merwamennad98@gmail.com
University Contre of Maghnia, (Algeria)

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Abstract

This study aims to discover the impact of oil price fluctuations on the performance of the financial market in the Kingdom of Saudi Arabia, through an analytical study of the Saudi financial market from 2007 to 2022. The results of the study showed that there is a positive effect between oil prices and the performance of the financial market in Saudi Arabia, as the higher The oil and petrochemical industries sector performance index rose, and thus the general financial market index rose with it.

✓ **Keyword:** oil price, financial market, petrochemical industries sector, TASI index.

* Corresponding author: Bouziane Wissam

1. INTRODUCTION

The global oil market has experienced significant price volatility over the period from 1973 to the present. There have been many reasons for this volatility, including changes in OPEC policy, global economic recessions, global financial crises, supply and demand, and political factors. This volatility has a significant impact on both oil-producing and oil-importing countries. Major and sudden changes in oil prices can have a major impact on the global economy and the global financial markets.

The economies of the Gulf Arab countries are dependent on oil revenues to support their economies. Oil is considered the lifeline of these economies, and therefore fluctuations in oil prices in these countries affect all other economic variables, including the impact on the performance of financial markets. Among the emerging financial markets in the Gulf Arab region is the Saudi Stock Exchange (Tadawul), which has seen significant economic development. This development has been reflected in the performance of the stock market, and it is currently striving to be one of the most important and modern stock markets in the world.

In light of the above, the research problem can be posed as follows:

- How does global oil price volatility affect the performance of the Saudi stock market?

1.1. Objectives of the study:

The study aims to investigate the relationship between oil price volatility and the efficiency of financial markets through:

• Highlighting the literature on the study variables (oil prices and financial markets).

• Understanding the relationship between oil and the Saudi economy.

• Testing the relationship between the petrochemical industries sector index and the general index of the Saudi stock market.

1.2. Methodology of the study:

This study relies on the descriptive method by defining the study variables (oil prices and financial markets) in the first axis of the study, and the analytical method by conducting an analytical study of the impact of oil price volatility on the performance of the Saudi stock market in the second axis of the study.

2. Literature review on oil prices and financial markets

2.1. Oil prices

Oil prices have evolved since their commercial discovery with the development of the petroleum market. Initially, they were determined at oil wells, then at ports, and then they turned into a monopoly price as a result of the monopoly of a few companies in the petroleum market that sought to maximize their profits. Then they turned into a competitive price that is subject to the forces of supply and demand. (Abdullah, N., & Abdelaziz, 2022). Oil price is defined as the value of the oil commodity expressed in monetary units specified in US dollars (Dardouri, R., & Srarhma, A. W., 2021),The amount and level of oil prices are subject and affected in a heterogeneous way to the forces of the political, economic or natural factors of the prevailing market, whether in supply or demand or both (Ben Qana, & Ibrahim Taousi, 2016). Oil prices are subject to continuous fluctuations due to the nature of the international oil market, which is characterized by dynamism and instability (Ibrahim Lakhdari, & Emad Ghazzi, 2022).

2.2. Causes of fluctuations in global oil prices

- Supply shocks: The disruption of the flow of production due to political events in the world is the most worrying external source for the United States. It has appeared in a number of political events such as the 1973 war between the Arabs and Israel, followed by the Arab oil embargo, the so-called Iranian Revolution in 1978-1979, the Iran-Iraq war during the years 1980-1988, the Gulf War in 1990-1991, the Venezuelan crisis in 2002, the second Gulf War in 2003, the Libyan crisis in 2010, and the so-called Arab Spring in 2012, and the Russian-Ukrainian war in 2022 (Abdelrhman Mohammed Al zahrani, 2022).

- Demand shocks: This shock refers to the demand for oil that is consumed immediately when producing petroleum derivatives such as gasoline, diesel, heating oil, kerosene, and jet fuel. As the global economy expands, demand for oil increases as it is an essential element in the modern economy. Therefore, it is expected that the real price of oil will depend on it (Abdelrhman Mohammed Al zahrani, 2022).

- The role of expectations in physical markets for crude oil: This refers to the expectations associated with the scarcity of oil in the future, and the impact of this on the volume of consumption and stimulating additional production. Therefore, the expectations of a shock in strategic underground oil reserves may lead to an increase in speculation in physical markets for crude oil. Therefore, this speculation generates upward pressure on prices in physical markets (Abdelrhman Mohammed Al zahrani, 2022).

- The role of speculation in financial markets for crude oil: Crude oil futures markets allow investors to agree in advance on the price of exchanging a certain quantity of crude oil on a certain date in the future. This market allows

participants to speculate on the future price of oil without having to store it or actually buy it. Therefore, it provides a place to trade based on expectations (Abdelrhman Mohammed Al zahrani, 2022).

- The role of OPEC: The literature sees that the Organization of Petroleum Exporting Countries has effectively controlled oil prices since 1973. Therefore, it controls oil prices directly and indirectly (Abdelrhman Mohammed Al zahrani, 2022).

2.3. Oil exchanges

These are stock exchanges where oil is bought and sold through these papers, which are a commitment to sell or buy a quantity of crude oil or petroleum derivatives. This type first appeared after the first oil crisis in 1973 in New York (Hadab Mohieddin, 2017-2018).

3. The stock market

It is a commercial gathering where the will of the traders meets to conduct transactions for the sale and purchase of traded financial assets, through intermediaries and brokers who facilitate the conduct of transactions (Mona Hussein, 2013-2014). It is considered as the field where the meeting takes place between economic units with surplus financial resources that they want to lend (savers) and economic units with financial deficits (borrowers), and from there the financial assets that trade within its regulatory framework are created. The stock market is made up of several operators who are divided into several categories according to the specialization of each category, and they are: Market makers, Traders, Brokers, Dealers, Regulators, Researchers, Analysts (abess fadil al tamimi, 2011).

There are several classifications of the stock market, as they are distinguished

according to several bases: (Chaimaa Abdelhadi, Hessin Al chirifi, 2022)

- Distinction based on the laws to which the market is subject
- Distinction according to the maturity of the securities
- Distinction based on the nature of financing
- Distinction based on the timing of execution

However, the most famous and used are two types: (Hayder Younes, Ayat Salah Alhalaoui, 2020)

- **Money market:** It is a short-term financing market where short-term financial instruments are traded, with maturities of one year or less, and enjoy high liquidity and low risk, as there is a direct relationship between the maturity period and the degree of ris
- **Capital market:** It is the market where long-term and medium-term funds are invested, which means that the maturity period exceeds one year or the terms exceed twenty-five years.

3.1. Market index

It is a measure of the level of prices in the market at a given moment, and it consists of a weighted average of the prices of a group of companies' shares traded in the market. A sample of companies is selected to allow the index to reflect the state of the market that the index aims to measure. The indices are diverse in the markets, there are indices to measure the shares of companies according to the economic sectors within the market and there are indices that measure the state of the market in general. When the value of the high-value stocks is greater than the value of the low-value

stocks within the index, the index rises. When the value of the low-value stocks is greater than the value of the high-value stocks within the index, the index falls. The comparison is made with a reference level of the index during a previous period to estimate the level of rise and fall of the market (Manshed Mazen Al-Hamd, 2017)

3.2. Efficiency of the financial market

A financial market is considered efficient when the market prices at any time fully reflect all available information. In this market, the market value of a financial instrument is a fair value that fully reflects its true value, and the stock price in the market reflects investors' expectations about future returns and the risks to which these returns are exposed. According to the concept of efficiency, it is expected that stock prices will rise or fall following the information received, whether good or bad, through the media or the financial reports of the listed company (Hafiz Elias, Naija Abdel Rahman, 2022). The efficient financial market model was developed according to the following equation:

$$P_t = \sum_{k=0}^{\infty} \frac{E_t D_{t+k}}{(1+\delta)^{k+1}}$$

where:

- Pt is the price of the asset in period t
- Et represents the investor's expectation in period t
- Dt+1 is the return in period t+1
- μ is the constant

This equation defines the real price as the expected value of future returns. The theory

of financial market efficiency has put forward a number of assumptions, which it called the necessary or sufficient conditions for achieving efficiency. This is one of the pillars of pricing efficiency, and it is based on three arguments. It is assumed that investors are rational and therefore evaluate financial instruments logically (a). If some of them are irrational, their trades will be random and will therefore cancel each other out without affecting prices (b). If there are irrational investors in similar ways, they will be met in the market by rational arbitrageurs who will eliminate their impact on prices (c) (Hafiz Elias, Naija Abdel Rahman, 2022).

4. RESULTS AND DISCUSSION

4.1. Oil and the Saudi economy

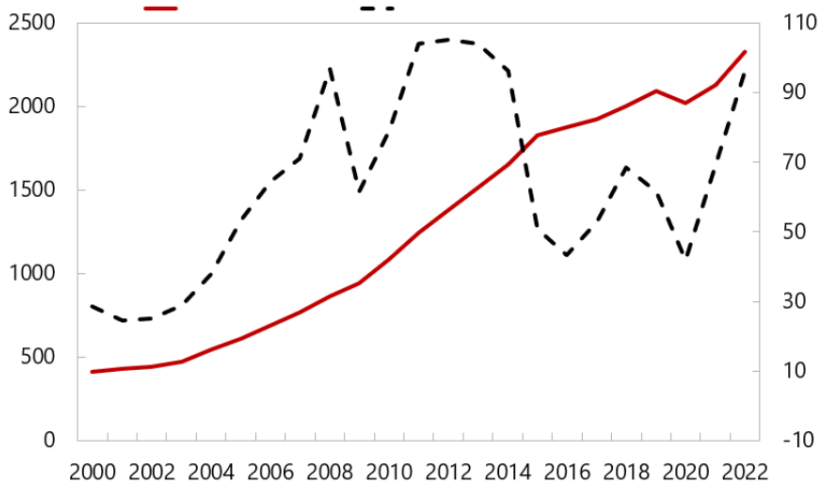
Saudi Arabia has a share of more than 16% of the world's proven reserves, giving it a leading role in the global oil market. It is able to increase its production quickly thanks to its excess production capacity of over 7.2 million barrels per day, which represents more than half of the world's excess production capacity. (Mohammed Faisal Hassan, Mohammed Ahmed, 2019).

Saudi Arabia is the largest oil exporter and at the same time has one of the highest levels of per capita oil consumption (45 barrels per year compared to 22 barrels in the United States and 11 barrels in Germany). The factor that increases this level of consumption is the low prices set for oil and oil products, as it is the main source of electricity generation in Saudi Arabia. In order to reduce consumption, Saudi Arabia raised gasoline and electricity prices for households and factories between 2016 and 2018, in some cases the size of these increases exceeded 200%. (Jorge Plazkoz et al, 2018). The impact of oil on development can be illustrated by tracking the contribution of the energy sector to GDP in Saudi Arabia. During the first oil shock, which led to rising oil prices in 1973, the energy sector contributed more than 50% to GDP. This

ratio continued until 1981, when it began to decline, reaching about 25% of GDP in 1989. With the third oil shock in the early 1990s, the contribution of the energy sector rose to 45% of GDP, but with the collapse of oil prices in 1998, this ratio fell to only 30% of GDP. It continued to decline to 25% of GDP in 2002. Then, the contribution of the energy sector to GDP rose to around 30% in 2007. Despite the slowdown in economic activity associated with the COVID-19 pandemic, Saudi Arabia has made progress on the path of diversifying its economy by reducing the contribution of the oil sector in various dimensions of revenue, exports, and production. Financial and external safety margins have been rebuilt, non-oil revenue mobilization has doubled, unemployment has reached its lowest levels, and the efficiency of the public sector has increased through digital transformation. (International Monetary Fund, 2023)

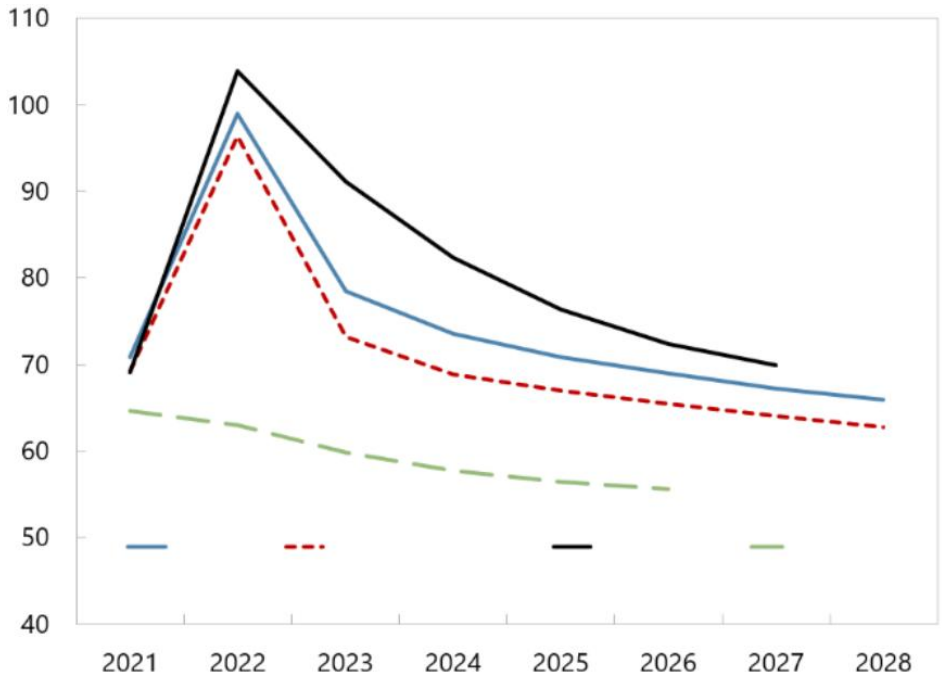
As for oil production in Saudi Arabia, since 1994 until 2022, the average monthly production of Saudi oil has changed, recording levels ranging from 7 million barrels per day to 12 million barrels, according to statistics from the American research firm Macro Trends. It recorded its lowest level in 2000, while it reached its highest level in 2020 when it recorded 12 million barrels per day. (Sputnik Arabic, 2023)

Fig.1: Non-oil GDP and oil price (in billions of Saudi riyals and US dollars per barrel)



Source : (International Monetary Fund, 2023)

Fig. 2: Oil price assumptions in the World Economic Outlook report (in US dollars per barrel)



Source : (International Monetary Fund, 2023)

4.2. Overview of the Saudi stock market

The Saudi stock market was founded in the mid-1930s with the establishment of the Arab Automobile Company as the first joint stock company in Saudi Arabia. By 1975, there were about 14 listed companies. The Saudi stock market remained informal until the early 1980s, when the government began to consider the establishment of a regulated trading market and the necessary regulations. Through a committee of the Ministry of Finance and National Economy, the Ministry of Commerce, and the Saudi Arabian Monetary Agency, the Saudi Stock Market Company was established under the name "Tadawul" on Monday, Safar 29, 1428 AH, corresponding to March 19, 2007. It consisted of 15 sectors and 173 companies (Ismail Ben Qanaa, Ibrahim Taoursi, 2016), as shown in the following table:

Table 1: Number of sectors and companies listed in each sector

Sector	Listed companies
Banking and financial services	12
Petrochemical industry	14
Cement	14
Retail	16
Energy, utilities, and services	02
Agriculture and food industries	16
Telecommunications and information technology	04
Insurance	35
Multi-sector investment companies	07
Industrial investment	15
Construction and engineering	17
Real estate development	09
Transportation	5
Media and publishing	3
Hotels and tourism	4

Source: (Ismail Ben Qanaa, Ibrahim Taoursi, 2016)

Until the end of 2007, only Saudi citizens were allowed to invest in Tadawul. However, in early 2008, Tadawul opened its doors to citizens of the Gulf Cooperation Council (GCC). The authority then allowed foreign investors to participate in trading stocks. In 2015, regulatory authorities opened the Saudi stock market to qualified foreign investment institutions. In 2018, the Saudi Financial Supervisory Authority allowed foreign investors to own up to 49% of Saudi securities. These steps and measures are expected to help Tadawul to be eligible for inclusion in emerging markets indices and to become one of the most vibrant capital markets in the region (Mohammed Ghaith Mohammed Bassam Hannana, 2019-2020).

Tadawul, the Saudi Stock Exchange, announced on December 1, 2016, a decision regarding the application of the Global Industry Classification Standard (GICS) in the Saudi stock market. As part of this restructuring of the market sectors, Tadawul announced that the new sector classification would be adopted starting from Sunday, January 8, 2017. This step is in line with Tadawul's strategy to support the development of the financial market and to enhance the level of transparency within the market and provide more accurate information about sector performance (Saudi Stock Market, 2017). In 2018, MSCI, the global index provider, announced the inclusion of the Saudi stock market, Tadawul, in its Global Emerging Markets Index. As a result, the Saudi stock market will be classified as an emerging market after being an independent market at MSCI (Saudi Stock Market, 2018). By the end of 2022, the total number of companies listed on the market had reached 223 (Saudi Stock Market, 2022).

-Key market figures and facts: (Saudi Stock Market, 2007)

- The largest financial market in the Gulf Cooperation Council (GCC) region and the Middle East and North Africa (MENA) region.
- One of the largest financial markets among the 67 members of the World Federation of Exchanges.

- Third largest financial market among its peers in emerging markets.
- Includes 345 listed securities distributed across the various Tadawul trading platforms (as of November 2022).
- Had a market capitalization of $2.72 trillion (10.21 trillion Saudi riyals) in November 2022.

4.3. Impact of oil price volatility on the efficiency of the Saudi stock market

4.3.1. Some oil companies in the Saudi stock market

On Sunday, January 27, 2008, the company "Rabigh Refining and Petrochemical Company" was listed with a capital of 8.76 billion Saudi riyals (SAR) divided into 876 million shares. Of these, 219 million shares were offered for public subscription at a price of SAR 21 per share. By the end of 2008, this company (Petro Rabigh) became one of the five most active companies in terms of transactions with 2,411,455 transactions, representing 4.63% of the total market.

On September 16, 2008, the company "Methane Chemicals" was listed with a capital of 1.206 billion SAR divided into 120.6 million shares. Of these, 60.3 million shares were offered for public subscription at a price of SAR 12 per share.

On August 8, 2009, the National Petrochemical Company (Petrokem) was listed with a capital of 4.8 billion SAR divided into 480 million shares. Of these, 240 million shares were offered for public subscription at a price of SAR 10 per share.

4.3.2. Activity of the petrochemicals sector in the Saudi stock market

The petrochemicals sector is one of the most important sectors in the Saudi stock market, accounting for about 12% of the total market capitalization. This is due to the importance of the petrochemicals industry in the Saudi economy, as it is a major source of export revenue and employment.

The petrochemicals sector is also highly sensitive to changes in oil prices. When oil prices rise, the profitability of petrochemical companies increases, which leads to higher stock prices. Conversely, when oil prices fall, the profitability of petrochemical

companies decreases, which leads to lower stock prices.

Table 2: Performance of the Petrochemical Industry Sector Index and the General Index

years	Performance of the Petrochemical Industry Sector Index	Change in the performance of the index	Trade executed in the petrochemical industry sector	The TASI General Index	Index percentage
2007	9 470 25	-	-	11 038 66	39.14%
2008	3 170 95	-66.52 %	9 895 147	4 802 99	-56.49%
2009	5 396 80	70.20%	5 934 437	6 121 76	27.46%
2010	6 518 34	20.78%	3 865 678	6 620 75	8.15%
2011	6 232 93	-4.38%	4 073 776	6 417 73	-3.07%
2012	5 856 40	-6.04%	4 484 652	6 801 22	5.98%
2013	7 545 50	28.84%	2 462 284	8 535 60	25.50%
2014	5 857 20	-22.37%	3 459 832	8 333 30	-2.37%
2015	4 274 68	-27.02%	3 346 015	6 911 76	-17.06%
2016	5 343 38	25%	2 822 882	7 210 43	4.32%
2017	5 053 62	-14.01%	4 199 166	7 226 32	0.22%
2018	5 251 47	3.92%	5 864 004	7 826 73	8.31%
2019	5 166 70	-1.61%	6 610 252	8 389 23	7.19%
2020	5 746 02	11.21%	16 071 312	8 689 53	3.58%
2021	7 343 90	27.81%	18 722 049	11 281 71	29.83%
2022	6 289 83	-14.35%	19 916 682	10 478 46	-7.11%

Source: Prepared by researchers based on the annual statistical reports of the Saudi stock market from 2007 to 2022.

The petrochemicals sector, or as it is now known after the new sector classification since 2017 as the "basic materials" sector, which includes petroleum companies, is considered one of the most active sectors in the Saudi stock market in terms of transactions executed during each study period. It has topped the other sectors because Saudi Arabia is a leading oil-producing country and achieves high levels of daily oil production, especially in recent years from 2019 to 2022 due to the recent crises that are taking place in the world. For this reason, Saudi Arabia is always striving to increase its production, which leads to an increase in the number of transactions executed for the sector.

As we can see from the data in the previous table, we notice that whenever the performance of the petrochemicals sector index rises, the general market index (Tasi) also rises. For example, in 2008, the performance of the sector index fell by 66.52%, and in contrast, the general index fell by 56.49%. In 2013, when the performance of the sector index rose by 28.84%, the general index rose by 25.50%.

5. CONCLUSION

In conclusion, the study has proven the relationship between oil price volatility and the performance of the financial market in Saudi Arabia. The continuous volatility of oil prices is affected by various shocks that occur in the world, whether economic (the 2008 crisis), political (the Russian-Ukrainian war of 2022), or even health (the COVID-19 pandemic of 2020). However, since Saudi Arabia is an oil-exporting country and relies on its revenues, it benefits directly from rising oil prices and thus affects the Saudi financial market.

As a general result of the study, it can be said that positive fluctuations in global oil prices have a positive impact on the Saudi financial market. The higher the global

oil price, the higher the performance of the fuel sector index, which in turn leads to an increase in the general market index (Tasi).

Based on the above, some recommendations can be made:

- The need to work to increase the efficiency of the market so that it can respond to all economic changes quickly.
- Subjecting the oil pricing process to clear mechanisms with tangible protective controls, with international institutions that carry out the pricing process enjoying greater independence to ensure that they are not subject to the influence of individuals based on private interests.
- Establishing joint offices for financial intermediaries in all Arab countries and facilitating the granting of joint licenses to contribute constructively to the financial markets sector.
- Algeria should benefit from the Saudi experience in the field of building a nascent and strong financial market, as it is an oil-producing country like Saudi Arabia.

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