The Impact of Brent Crude Oil Price Fluctuations on the Value of Global Market Indices: An Applied Study

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The oil market has a major impact on the global economy as it is the main material of energy. The prices are of great importance to exporting and importing countries because they are a source of revenue for the exporting country and a cost for the importing countries. The value of financial market indices usually reflect the direction of stock prices. Therefore, the main focus of this research is to study the relationship between these factors and how the financial market indicators respond to the movements of oil prices. To reach the objectives of this research project, the prices of Brent crude oil were selected and observed weekly for the period (1/1/2017) until (23/6/2019). In addition, the value of four of the most important indicators of financial markets were: (N225), GDAXI 30, DJI, (EGX 30). at the same time as the sample of research was taken. The researchers reached several conclusions and recommendations, the most important of which is that international oil prices can be used as an indicator to identify trends in the financial market so that investment strategies in stocks can be based on future oil prices.

Key words: *Oil, Oil Market, Financial Markets Indicators.*

Introduction

The impact of oil prices on stock price movements is one of the most prominent topics in financial thought. It is derived from an attempt to form a model that explains the relationship between them. The study focuses on addressing the relationship between and the impact of the prices of Brent crude oil and four of the global stock indices, which are: (N225), GDAXI 30, DJI, (EGX 30).

Research Methodology

Research Problem

The fluctuations in oil prices during the recent period has become a problem to be studied, especially if linked to changes in the value of indicators of global financial markets. This in turn represents the image of the direction of the global economy. Therefore, the problem can be represented in the following questions:
- Is there a relationship between the prices of Brent crude oil and the indicators of global financial markets?
- How does oil prices affect the movements of stock indices?
- Do financial markets indicators respond to the same degree of change in oil prices?

The Importance of Research

 The fluctuations in the prices of Brent crude oil is an important topic because it is reflected in many aspects of the world economy. It is also important to know the relationship between the world oil prices and the value of four of the most important global indicators. This contributes to giving investors a perception of how to respond to the stock price changes in oil prices which allows them to make the right investment decision.

Research Objectives

The research aims to identify trends in Brent crude oil prices during the research period and identify the value of four financial indicators during the research period. This will allow the researchers to determine the relationship between Brent crude oil prices and the value of financial markets indicators.

Study Hypotheses

The research is based on two main hypotheses:

Hypothesis 1: There is a statistically significant correlation between changes in Brent crude oil prices and the value of financial market indices (N225), GDAXI 30, DJI, (EGX 30)

Hypothesis 2: There is a significant significance of the prices of crude oil Burt in the value of financial markets indicators : (N225), GDAXI 30, DJI, (EGX 30)

The Field of Study and Duration

In order to conduct statistical tests and select research hypotheses, a deliberate sample was selected to represent the research variables represented by the weekly closing prices of Brent crude oil for the period (1/1/2017) until (23/6/2019) i.e. (130) views.   In addition, four financial indicators were selected as approved variables, namely: (EGX 30), formerly known as the (EGX 30) Index which was launched at the beginning of (1998) with a value of (1000) points , (DJI) Index: was created to measure the performance of the United States and global stock market. This was created by Charles Dow in (1884). (GDAXI 30) Index: the main index of the Frankfurt Stock Exchange which includes (30) of the largest German companies. D-Index (N 225): or (Nikkei) is main index of the Japanese stock market on the Tokyo Stock Exchange. It is similar to the Dow Jones in the United States.

The Research Data and Statistical Methods Used

Theoretical information was obtained via books, studies and theses specializing in the field. Regarding the practical framework, the Internet was used to obtain data on share prices from http://www.advfn.com/nyse/newyorkstockexchange.asp?companies=A
 and oil prices from : https://sa.investing.com/commodities/crude-oil-historical-data. For the purpose of achieving the research objectives, the following statistical methods were used: Correlation coefficient (c) that shows the relationship between two, and coefficient of determination (R^2) that reflects the success of a simple linear regression model in explaining changes in a dependent variable. Finally, Test (F): to test the significance of the effect of the coefficient of the linear regression model at a significant degree (0.05).

Theoretical Framework

International Oil Markets

Oil is a natural substance extracted from the ground and is an important source of primary energy (Falima & Bashir, 1958: 20). In addition to being the most important raw material in the economics of industry, the importance of oil increased at the end of the nineteenth century in conjunction with the outbreak of the industrialisation and the invention of internal combustion engines. It has played a major role in reshaping the global economy and political developments in many countries (Huang etal, 1996: 1). Despite efforts to find different alternatives energy sources, oil remains the most widely used and influential source of economy (Alquttany & Alhayky, 2016: 1). The Babylonians were the first to use oil in Mesopotamia since 400 BC. They used bitumen, which is defined as tar ore, as a material to fill openings of ships as well as used to fix arms handles. Oil was also used to embalm the

Egyptians. In modern history, the first successful well was drilled across the rocks to produce crude oil by Colonel Odin Drake in 1856. (Hamwi, 2016: 91).

Parties Dealing in Oil Markets

Oil markets are one of the most important commodity markets in the world, which started trading at the end of the nineteenth century. It consists of several clients and the parties as follows (OPEC: June 2119):

1. Oil Producing and Exporting Countries: Represents the producers and exporters of crude oil, which includes OPEC and non-OPEC countries. According to the latest report of the US Energy Management Organization (EIA) for 2018, the United States has jumped leaps in oil production as the largest oil producing countries with a capacity of 17.885 million barrels per day. This is followed by Saudi Arabia with the production 12.419 million barrels per day, then Russia who produced 11.401 million barrels per day. As for the more than 100 oil-exporting countries, Saudi Arabia is ranked first as it contributes 20.1% coverage of the global market. It is worth mentioning that only five of the exporting countries cover 50% of the world market. Russia comes in second place as it contributes 10.9% from the world market and then Iraq (6.8%), The United States ranks 20th.

2. Oil Importing Countries: These are the countries that import crude oil and / or its derivatives for the purpose of domestic consumption and include most countries of the world except oil exporting countries. According to the report of the Organization of Petroleum Exporting Countries (OPEC) (2018), global oil consumption in 2018 has reached 99 million barrels per day and is expected to rise to 100 million barrels per day by the end of 2019. China tops with imports of crude oil 9.61 million barrels per day, and The United States comes next with 5.4 million barrels per day.

3. The Major Oil Companies: there are seven sisters of companies that prevailed in the mid-twentieth century in the areas of oil production, refining, and competition. These companies were formed after the dismantling of the US government company (Stander Oil) because of the Sherman antitrust law to form three companies along with four others (Saadallah, 2012: 32). They controlled most of the oil production in the Third World countries. The table shows the first companies that formed the seven sisters:

Table 1: Companies that formed the beginnings of the seven sisters

Seq.	Company	Notes
1	Stander Oil of New Jersey (Esso)	Merged with Mobil to form Exxon Mobil Exxon Mobil
2	Royal Dutch Shell	British Holland Company
3	Anglo-Persian Oil Company APOC Anglo-Iranian Oil Company AIOC	British Iranian company later known as (Standard Oil of Indiana)
4	Standard Oil Co. of New York	Merged with ISU to form Exxon Mobil Exxon Mobil
5	Standard Oil of California Chevron	It merged with Texaco to form ChevronTexaco and then came back to Chevron Texaco
6	Gulf Oil	In 1985 most (Gulf Oil) merged with Chevron (Chevron), and a smaller part became BP and Cumberland Farms (BP and Cumberland Farms), the largest mergers in world history.
7	Texaco	It merged with Chevron in 2001 and was known for some time as Chevron Texaco, but in 2005 it returned to the name of Chevron and Chevron Texaco remains the trade name.

Source: Report of the (OPEC) 2018.

In 2005, ExxonMobil, Chevron, Royal Dutch Shell, and British Petroleum (BP) became members of the group "Great Pioneers" or (supermajors). The seven new sisters have been identified since 2007 from the following companies:

1. Saudi Aramco Company (Saudi Arabia).
2. The joint stock company Gazprom (Russia).
3. China National Petroleum Corporation (China National Petroleum Corporation), (China).
4. Iranian Company (National Iranian Oil Company), (Iran).
5. Venezuelan Oil Company (Venezuela).
6. Petrobras (Brazil).
7. Petronas (Malaysia).

In addition to the seven sisters, there are several national companies operating in some oil producing towns, as is the case in most of the Gulf states.

Global Oil Prices

The price of crude oil depends heavily on its different classifications, and these classifications depend on several factors. The most important of which are origin (Brent, West Texas) and its density (light, medium density, heavy) as well as its sulphur content (Faraj, 2015: 40). Brent crude derives its name from a Shell oil exploration title on an oil field it has verified in the North Sea region on behalf of Exxon Mobile and Royal Dots Shell. Shell has named all the oil fields by the names of birds. In this case, the area was named after "goose Brent". The Brent blend is an oil ore used as a benchmark to price two-thirds of global oil production, especially in European and African markets. Brent consists of an oil mix of 15 different fields in the Brent and Tienen regions (some in the United Kingdom and others in Norway) which produce about 500,000 barrels per day. This oil is a sweet light oil because of its 38-degree specific weight and a low sulphur content of 0.37 per cent. Based on the differences between it and other materials, it is generally sold at a price higher than the basket of oil "OPEC" by about a dollar a barrel at a price less than West Texas crude. Its value is used to price two-thirds of the world's traded crude oil imports. Overseeing its depletion fields is a big problem for traders who are looking for an alternative to pricing.

The West Texas oil is a sweet and light oil and has a specific weight of 396 degrees and contains 0.24% of the sulphur only, which makes it superior to OPEC oil and Brent crude. Therefore on average it is sold for about $2 more than the OPEC basket, and is about $1 higher than Brent because of its quality and is the main source of gasoline in the United States. As his name implies, most of it is produced in West Texas. It is one of the global measurement materials used in pricing other materials, especially in North America. The city of Cushing, Oklahoma, is the world's largest oil market and the pricing point as the centre of intersection of a wide range of oil pipelines that enable the transfer of oil to various parts of the United States including US ports and then anywhere in the world. Oil prices have fluctuated in recent years. After relative stability before 1973, prices rose dramatically to unprecedented levels after the October 1973 war (Olumide etal, 2017: 308). The 1990s witnessed a decline in prices as oil was trading at a price ranging between 23-18 dollars to rise to the limits of 40 dollars in 2004 and 60 dollars in 2005 to reach 128 dollars in 2008 (Fatima& Bashar. 2004: 1459). Between 2014 and 2015, oil prices (75%) lost value in a few months (Starros etal, 2017: 3). In general, dealing in the global oil market is through a set of prices, each of which measures the specific value of oil, most notably (Abdel Moneim, 2016: 22):

A. Advertised price: the price of a barrel of oil specified by the seven sisters calculated in currency (dollar). It has been in operation since 1880 when the company (Stander Oil) announced the price of its oil barrel at the wellhead. This type of price has continued to work

inside and outside the United States until the present time, as the name moved to refer to the official prices announced by the oil-exporting countries. (Wartan Arz, 2016: 71).

B. The actual price: the price of a barrel of oil expressed in the US currency after discounting the various discounts and allowances offered by the sellers to buyers. The most prominent types of these discounts are the geographical discount, the degree of density, sulphur content and Suez Canal discount.

Financial Markets Indicators

International financial markets are defined as "the group of markets in which the sale and purchase of various water papers all over the world, which can be accessed quickly and easily using modern communication technologies" (Porty, 2004: 22). Gitman defines it as "organizations in which suppliers and money seekers meet directly", (Gitman & Zutter, 2015: 80). This means that international financial markets do not represent a fixed location or a specific building for a particular market in which securities are traded, but rather a group of financial markets in which all securities are traded and all over the world (Madura, 2015: 63). Therefore, it is not possible to find certain limits for the global or international market or to give specifications because this market consists of dozens, perhaps hundreds, of financial markets spread in most countries of the world that have certain characteristics.

Specifications and Special Trading Conditions

Financial market indices are usually used (Financial market Index) to identify the nature and direction of stock price movements in financial markets and the stock index. Yara and Fareejee state that "it is a record that is formed based on the market value of the securities portfolio and contributes to tracking developments in the capital market and measuring them permanently and continuously, reflecting the movements of the market." (2011: 565) Financial market indices are defined by Hindi as "a variety of shares of a number of companies believed to be a representative sample of stocks in the current market, and then take the price movement as a reflection of the future trends of prices in that market" (Hindi, 566: 2002). This is also known as "a way to help investors follow the trends and developments of the broad market" (Clare & Thomas, 2015: 14). One of the most important functions of the index is to assist investors in identifying the conditions of their performance and investments, assessing the wealth and financial assets as well as evaluating the performance and risks of the portfolio. In this regard, there are two types of indicators, an index that measures the overall state of the market, such as the Dow Jones Industrial Average (DJIA), (Dow Jones Industrial Average). Secondly, indices measure the market condition of a particular industry such as the Dow Jones Transportation Industry, (Dow Jones Transportation index) and 500 for the Public Services Industry (Indian; 2008: 7). In another

classification, they are divided according to the possibility of trading into tradable- index). These are indices that can be traded in international financial markets and usually these indicators are composed of a limited number of market shares. Normally, the index is not delivered or received i.e. there is no real trading of the index but only the settlement and closing of the financial positions of the indicators through intermediaries or speculation and compensation operations (Edward, 2000). Indicators of non-negotiable (Untradable-Index) integrate or reduce the overall performance of the capital market in a single number, and these indicators are usually issued by the official bodies based on the management and regulation of the financial market.

Calculating the Value of the Financial Markets Indices

Despite the differences in the calculation of the value of the index, they are all based on three foundations, the most important of which are:

Sample suitability: The sample is defined as the set of securities used in the calculation of that indicator. It should be appropriate in three respects: size, breadth and source. Regarding size, the general rule is that the larger the number of securities covered by the index, the more representative the market. Broadening means that the selected sample covers the different sectors involved in the market. An indicator aimed at measuring the state of the market should include stocks of enterprises in each sector of the national economy without distinction. If the index is specific to an industry, then the sample is limited to the shares of a number of establishments constituting that industry. The issuer means the source of obtaining the prices of the shares on which the index is based, since the issuer should be the primary market in which securities are traded.

Relative weights: Relative weights in the construction of indicators are defined as the relative value per share within the sample. There are three common approaches to determining the relative weight of a stock within the stock group on which the index is based. These entries are:

- Entrance weight based on price: The ratio of the price per share of an entity to the total price of other individual shares on which the index is based. It is taken from this entry that the relative weight is based on the share price alone, while the share price may not be an indicator of the importance of the enterprise or its size.
- Equal weights input: Giving an equal relative value to each share within the index.
- Weights input by value: Giving weight to the stock based on the total market value of the number of ordinary shares for each entity represented in the index. This means avoiding the basic drawback of the price entry as the stock price is no longer the only determinant of relative weight. Establishments that are equal to the market value of their ordinary

shares are equal to their relative weight within the index regardless of the share price or number of shares issued. This in turn means that derivation of the shares will not cause any disruption in the index.

Method of calculating the index: The method of calculating the index varies from one to another and according to the samples used in the index as well as the relative weight method used in it.

The Impact of Oil Prices on Stock Indices

The study of the patterns of impact of the change in oil prices has attracted the interest of many researchers. Some discussed the impact of oil prices on macroeconomic factors and economic activities in general (Goumder & Barleet, 2003), (Hamrton, 1983), (Lescarox & Mignon, 2008), (Jbir & Zouair, 2009). Other studies focused on the impact of volatility in crude oil prices on the indices of water markets (Huang, 1996), (Ciner, 2013). Another approach was to study the nature of the impact of oil prices on individual companies' shares as they are within certain economic sectors (Sadysky, 2001). Despite the differing attitudes of researchers, there is a thematic focus on understanding how the impact of the change in oil prices to other variables in the economy, especially stock prices. The shape of the effect of volatility in oil prices in the stock prices of oil can be understood as one of the basic inputs for most companies and therefore higher prices reflected in increased costs, leading to a decline in earnings and stock prices. On the other hand, its impact will be positive in the shares of companies specialized in the production and processing of oil (Stavros etal, 2017: 10), (Sahu et al., 2015), (Huang, 1996: 2), (Filis etal, 2011: 11). The increase in costs is linked to the increase in the price of products and this reduces the consumption and demand for corporate products and profits and therefore lower share prices (Stavros etal, 2017: 12). From another point of view, the rise in oil prices will lead to inflationary pressures, which pushes the monetary authorities to raise interest rates. This makes stocks less attractive and this pushes investors away from stocks, which means lower prices as well as the high cost of borrowing companies, thus, reduce the income from investment projects and lower share prices (Savros, 2017).

Applied Framework

Analysis of Oil Prices during the Period

Table 2: Brent crude oil prices during the period (1/1/2017) until (23/6/2019).

price	Date in 2017	price	Date in 2017	price	Date in 2018	price	Date in 2018	price	Date in 2019
47.92	25Jun	66.87	24Dec	79.44	24Jun	52.2	23Dec	64.22	23Jun
45.54	18Jun	65.25	17Dec	75.55	17Jun	53.82	16Dec	65.2	16Jun
47.37	11Jun	63.23	10Dec	73.44	10Jun	60.28	09Dec	62.01	09Jun
48.15	04Jun	63.4	03Dec	76.46	03Jun	61.67	02Dec	63.29	02Jun
49.95	28May	63.73	26Nov	76.79	27May	58.71	25Nov	64.49	26May
52.15	21May	63.86	19Nov	76.44	20May	58.8	18Nov	68.69	19May
53.61	14May	62.72	12Nov	78.51	13May	66.76	11Nov	72.21	12May
50.84	07May	63.52	05Nov	77.12	06May	70.18	04Nov	70.62	05May
49.1	30Apr	62.07	29Oct	74.87	29Apr	72.83	28Oct	70.85	28Apr
51.73	23Apr	60.44	22Oct	74.64	22Apr	77.62	21Oct	72.15	21Apr
51.96	16Apr	57.75	15Oct	74.06	15Apr	79.78	14Oct	71.97	14Apr
55.89	09Apr	57.17	08Oct	72.58	08Apr	80.43	07Oct	71.55	07Apr
55.24	02Apr	55.62	01Oct	67.11	01Apr	84.16	30Sep	70.34	31Mar
52.83	26Mar	57.54	24Sep	70.27	25Mar	82.72	23Sep	68.39	24Mar
50.8	19Mar	56.86	17Sep	70.45	18Mar	78.8	16Sep	67.03	17Mar
51.76	12Mar	55.62	10Sep	66.21	11Mar	78.09	09Sep	67.16	10Mar
51.37	05Mar	53.78	03Sep	65.49	04Mar	76.83	02Sep	65.74	03Mar
55.9	26Feb	52.75	27Aug	64.37	25Feb	77.42	26Aug	65.07	24Feb
55.99	19Feb	52.41	20Aug	67.31	18Feb	75.82	19Aug	67.12	17Feb
55.81	12Feb	52.72	13Aug	64.84	11Feb	71.83	12Aug	66.25	10Feb
56.7	05Feb	52.1	06Aug	62.79	04Feb	72.81	05Aug	62.1	03Feb
56.81	29Jan	52.42	30Jul	68.58	28Jan	73.21	29Jul	62.75	27Jan
55.52	22Jan	52.52	23Jul	70.52	21Jan	74.29	22Jul	61.64	20Jan
55.49	15Jan	48.06	16Jul	68.61	14Jan	73.07	15Jul	62.7	13Jan
55.45	08Jan	48.91	09Jul	69.87	07Jan	75.33	08Jul	60.48	06Jan
57.1	01Jan	46.71	02Jul	67.62	31Dec	77.11	01Jul	57.06	30Dec

We can see from Table 2 that the price has exceeded the $80 barrier in three periods of only one hundred and thirty views as this price exceeded in the other two weeks of September and the first week of October. The price per barrel ranged between 40-49 dollars in nine periods, during which most were in the months of June and July of 2017 after the price in the previous period ranges in the level of the fifties. The highest price per barrel in the last week of

September 2018 was 84.16 dollars per barrel while the lowest price during the period 42.54 dollars, which means that the difference between the two prices has reached 28.62 dollars. Therefore, the percentage of change has reached 85%. This shows how volatile world oil prices are, and these prices are usually once for global political and economic events. The highest price recorded in September 2018 may reflect the US President's decision to impose taxes on Chinese products worth $200 billion, which he approved in the same month. The average price of a barrel of Brent crude oil during the period was 63.84 dollars per barrel.

Analysing the Value of Financial Markets Indicators

Table 3 shows the up and down of values the four financial markets indices (EGX 30), DJI, GDXI 30, (N225) during the search term.

Table 3: The four financial markets indices evaluated the sample during the period

N225		GDAXI 30		DJI		EGX 30		Date.	
up	down	up	down	up	down	up	down	from	to
24,120.04	18,335.63	13,478.86	10,558.96	26,743.50	19,827.25	18,363.29	12,387.58	01 Jan 2017	23 Jun 2019

Prepared: by researchers based on data in **Investing.com**

Index Analysis (EGX 30) The state of relative stability of the index values (EGX 30). The index recorded at the beginning of the period 12824.32 points, while reaching (14100.74) points at the end of the period, that the value has increased by 10% over 130 weeks. This may indicate the weakness of the Egyptian economy as the index is the index of the Egyptian stock market, which was characterized by a sharp rise in inflation and high indebtedness as well as the high balance of public debt. We also note that the highest value was recorded in the penultimate week of April 2018 (18363.29) points. While the lowest value of 12,387.58 points was recorded in the first week of December 2018. It is worth mentioning that the highest return on the index (EGX 30) was (6.66%) and was achieved in the first week of March 2018. We also note that the highest loss for the index during the period was in the third week of September 2018 as well as the value of the loss of the index 8%, which means that Tam 2018 was the most volatile year in the value of the index.

Index Analysis (DJI). The index (DJI) has opened the period with 19963.80 points and ended the period with 26598,40 points and the value of the index has increased by 33% with an increase of (6634.6) points. The highest value of the index which is 26,743.50 points was recorded in the third week of September 2018, which is the same period that the index (EGX 30) the highest loss. The lowest value was 19827.25 points and recorded at the beginning of the period as it was recorded in the third week of January (2017). The Dow has risen from the

beginning to the end, with a steady butter that may signal the stability of the US economy. The index also achieved its highest return during the period in the last week of November 2018. The return of the index was 5.16%, while the highest loss was achieved in the third week of January of the same year.

Index Analysis (GDAXI 30) The index (GDAXI 30) started with a value of 11599.01 points and ended the period with 12,398.80 points, i.e. the difference between the two values 799.79 points, i.e., an increase of 7% only. We also note that there were no qualitative leaps in the value of the index during the period and this may indicate the stability of the German economy. The highest value of the index in the last week of November 2017 was 13,478.86 points while the lowest value in the penultimate week of December 2018 was 10,558.96 points. The index also achieved GDAXI30, the highest return during the period in the last week of March of 2019 and a return of 4.20%. The value of the index rose from 11,526.04 points to reach in the said period to 12,009.75 points. The highest value of the index 5.% 30 in the first week of February 2018, as the value of the index fell from the point 12,785.16 to the point 12,017.48.

Analysis of Index (N225) The value of the Nikkei Stock Exchange index Nikkei (N225) was 19455.33 points at the beginning of the period, while the point 21,275.92 at the end of the period, an increase of 1820.59 points, and an increase of 9%. The highest value of the index was recorded in the last week of September 2018 with a value of 24,120.04 points and the lowest value in the third week of April 2017 with a value of 18,335.63 points. The index achieved its highest return during the period in the first week of October 2018 as the value of return which was 5%, and the value of the highest loss of the index was 8.13% in the second week of February 2018.

Through the analysis we note that all indicators of the sample purely have achieved an increase in different ratios from the beginning of the period to the end. This indicates that the value of financial market indices usually achieved an increase in the medium and long term. We note that the index DJI has achieved the highest rate of increase from the beginning of the period to the end of the rise rate 33%, while the index GDAXI30 the lowest rate of increase, reaching 7% during the period that lasted 130 weeks. The indicators EGX30 and influential N225 recorded 10% and 9% respectively, and the values of indicators were characterized by a kind of relative stability and did not see any index any significant decline in their values. This is a reflection of the global economy, which in turn did not witness any imbalances during the period. On the other hand, the index EGX30 achieved the highest return during the period amounted to 6.66% and index N225 the largest loss as the value of loss 8.13%.

Statistical Analysis of Research Variables

Correlation and the impact of changes in the price of Brent crude oil in the index (EGX 30).Table (4) shows the correlation values and the effect of oil price changes in the index (EGXI 30) during the research period.

Table 4: The correlation and the effect of oil price changes in the index (EGXI 30) during the period

Sig	F	R^2	C
0.000	112.628	.4680	0.684

It appears through the table that there is a positive correlation between oil prices and values of the relationship index (EGXI 30). The value of this relationship was recorded at 0.684 and this value shows the existence of a moderate strength relationship between Brent oil prices and the value of the index. This proves the validity of the first sub-hypothesis emanating from the main hypothesis that "there is a statistically significant correlation between Brent oil prices and the index EGXI 30." The value of the coefficient of determination (R^2) between the two variables was (0.468), that is (47%) of the changes in the value of the index caused by changes in oil prices and 53% for other reasons and factors. Also note that the value of (F) has reached 112.628 and the value of F Sig has reached 0.000, which is lower than the value of F Sig tabular value of 0.05. This gives an indication of the significant effect of oil prices on the value of the index EGXI 30 and this proves the validity of the first sub-hypothesis of the second main hypothesis.

The correlation and the impact of changes in the price of Brent oil in the index (DJI). Table 5 shows the correlation and the effect of oil price changes on the value of the DJI during the research period.

Table 5: The correlation and the effect of oil prices on the value of the index (DJI) during the period

Sig	F	R^2	C
0.000	232.552	0.645	0.803

The table shows that there is a strong correlation between oil prices and the value of the index (DJI) as the value of 0.803. This means that the rise in oil prices will increase in return the value of the index, the strength of the relationship also validates the second sub-hypothesis emanating from the first major hypothesis. The table shows that the strength of the relationship between oil prices and index (DJI) was higher than the strength of the relationship of oil prices with the value of (EGXI30) index. The value of the coefficient of determination of 0.645 was recorded. This means that the changes in the value of the index

(DJI) (65%) are due to changes in the price of Brent crude oil and the rest due to other factors, i.e., oil prices have had the most impact of other factors. The value of (Sig) reached 0.000, which is yellow from the tabular value of 0.05. This proves the significance of the impact and this supports the validity of the second sub-hypothesis emanating from the second main hypothesis. The theory that says, "There is a significant effect of Brent Crude Oil prices on the value of the index (DJI)". This reflects the index's response to oil price movements, although the shape of the effect seems incompatible with some previous studies. Despite the impact of oil prices on the value of the index (EGXI30) and the value of the index (DJI) have recorded 0.000. This meaning that the two relationships significant. However, we note that the impact of oil prices in the second index is greater and higher moral and this is what we note from the value (F), which was recorded for the first (112.628), while recorded for the second (232.552).

Correlation and the impact of changes in oil prices in the value of the index (GDXI 30). Table (6) shows the correlation and the effect of Brent crude oil price changes on the value of (EGXI30) index during the research period.

Table 6: Correlation and Impact of Brent Crude Oil Price Index (EGXI30)

Sig	F	R^2	C
0.288	1.138	0.009	0.094

It shows a very weak correlation between oil prices and the movements of the GDXI 30 index, it is worth 0.094, and this proves the validity of the hypothesis of non-validity does not prove the validity of the third sub-hypothesis emanating from the first main hypothesis. The value of the determination coefficient reflects that changes in the value of the index depend on other factors, Where the value of R^2 is 0.009 only, the significance of the relationship was not supported as the value of F Sig, 0.288 is higher than its tabular value. Thus, we do not prove the validity of the third sub-hypothesis emanating from the second main hypothesis.

4.2.1. The correlation relationship and the effect of changes in Brent crude oil prices in the value of an effective N225. Table 7 shows the correlation and the effect of changes in Brent crude oil prices on the value of the index N225 during the research period.

Table 7: The correlation relationship and the effect of Brent crude oil prices on an effective value N225 during the period

Sig	F	R^2	C
0.000	247.717	0.659	0.812

The strong correlation between oil price changes and the value of the index N225 was recorded as 0.812. The relationship between the two variables has a strong bond and this

supports the validity of the fourth hypothesis emanating from the fourth main hypothesis. The value of the coefficient of determination R^2 amounted to 0.659, which is almost 66% of the changes in the value of the index due to changes that occur in world oil prices and the rest as a result of other factors. This proves the significance of the effect as Sig 0.000, which is lower than the F tabular value of 0.05. This supports the validity of the fourth sub-hypothesis emanating from the second main hypothesis. From the above analysis, it can be pointed out that the movements of oil prices had the highest impact in the value of the index N225 Nikkei, followed in the index DJI and then in the index EGXI 30 and in a direct direction. While the relationship with the index GDXI30 did not record any impact, although the index is one of the most important indicators of the German financial markets as the Frankfurt Stock Exchange index.

Conclusions and Recommendations

The Brent crude oil prices recorded an upward trend during the research period, which means increasing demand. Therefore, the value of financial market indices recorded an upward trend with stability in all indices of the research sample. The index EGX30 achieved the highest return while the index N225 achieved the highest loss during the period and all financial indicators achieved a positive correlation with Brent crude oil prices in varying proportions. The highest correlation with the index N225 and the lowest relationship with the index GDXI 30. The response of three of the indicators are similar to the change in oil prices, where the direction of the impact was positive, although its intensity varied so that the highest impact of oil prices was recorded in the influential (N225). The effect of oil prices did not appear in the index (GDXI30). Based on the this results, the researchers believe that the world oil prices can be used as an indicator to identify the trends of the financial market so that investment strategies in stocks can be based on future oil prices, and education for investment in the financial assets of the owners of savings money, because usually the trend of price values upward in the medium and long term if there is no financial crisis. Conducting a scientific study to look at the relationship between international oil prices in more depth with increasing variables and financial markets and for longer periods of time to reach more capable models in providing a better understanding of this relationship. It is difficult to generalize a specific framework for the relationship between oil prices and stock indices. Directing investors with interest in studying oil prices before discussing the movements of stock indices, especially during periods of high volatility.

REFERENCES

Abdel Moneim, J. (2016). The effects of oil price shocks on macroeconomic variables - the case of Algeria (analytical study). Master Thesis submitted to the University of Abu Bakr Belkayed, Tlemcen.

Alattan, A., & Alhayky, A. (2016). Imfact of Oil price on stock market. evidence from (GCC) financial market, 1(1).

Clare, A., & Steven, T. (2015). Financial Market indices:Facilitating innovation monitoring market. Centre for Asset Management Research, London.

Ding, H., Fan, H., Wangy, H., & Xie, W. (2017). Revisiting Crude Oil Price and China's Stock Market. Annals of Economics and Finance, 18(2), 377-391.

Faraj, S. J. (2015). Factors affecting the world oil prices and their impact on the economies of the Gulf Cooperation Council for the period (2003-2003). Gulf Economy Journal, 26.

Fatima, T., & Bashir, A. (2014). Oil price and stock market Fluctuation. Emerging market Asin international review of management and Business Reserch, 4.

Fillis, G., Degiannakis, S., & Floros, C. (2011). Dynamic corretation between stock market and oil price. International review of financial Analysis, 20(3).

Gitman, L. J., & Zutter, C. J. (2015). Principles of Managerial Finance. 14th ed – Pearson Education Limited.

Hamilton, J. D. (1983). Oil and the macroeconomy since World War II. Journal of political economy, 91(2), 228-248.

Hammoudeh, S., & Li, H. (2005). Oil sensitivity and systematic risk in oil-sensitive stock indices. Journal of Economics and Business, 57(1), 1-21.

Hamwi, S. K. (2012). Basics of energy production (oil - electricity - gas). Academics for prose and distribution - Amman - Jordan - First Edition.

Hindi, M. I. (2008). Financial markets. The establishment of knowledge - the fourth edition - Dar Al-Maaref Publishing, Cairo.

Hindi, M. I. (2008). Fundamentals of investment in securities. the establishment of knowledge - the third edition.

Huang, R., Masulis, R., & Stoll, H. (1996). Energy stock and financial market. Journal of Futures market, 16(1).

Jones, C., & Kaul, G. (1996). Oil and stock markets. Journal of finance, 51.

Lescaroux, F., & Mignon, V. (2008). On the influence of oil prices on economic activity and other macroeconomic and financial variables. OPEC Energy Review, 32(4), 343-380.

Madura, J. (2015). International Financial Management. 12th ed - All Rights Reserved.

Olamide, Q., Rita, O., & Sundey, I. (2017). Crude Oil Price volatility and its imfaction Nigerian stock market ferformance. International Journal of Energy Economic and policy, 7. OPEC Monthly Report. (2019).

Papapetrou, E. (2001). Oil price shocks, stock market, economic activity and employment in Greece. Energy economics, 23(5), 511-532.

Rice, S., & Artan, N. (2016). The impact of oil price fluctuations on the economic growth in Iraq for the period (1995-2013). Journal of the Faculty of Management and Economics for Economic, Administrative and Financial Studies - University of Babylon, 4.

Saadallah, D. (2012). The impact of oil price fluctuations on fiscal policy in Algeria (2000 - 2010). Master Thesis submitted to the Faculty of Economic Sciences and Management Sciences, University of Algeria.

Sadorsky, P. (2001). Risk factors in stock returns of Canadian oil and gas companies. Energy economics, 23(1), 17-28.

Sahu, T. N., Bandopadhyay, K., & Mondal, D. (2015). Crude oil price, exchange rate and emerging stock market: Evidence from India. Jurnal Pengurusan, 42, 75-87.

Slavros, D., George, F., & Vifin, A. (2017). Oil Prices and stock market. Us Energy information administration, Working paper.

Taheri, N. (2014). The impact of oil price on stock markets: Evidence from developed markets (Doctoral dissertation, Eastern Mediterranean University (EMU)-Doğu Akdeniz Üniversitesi (DAÜ)).

Yara, S. A-S., & Al-Fraiji, H. N. (2011). Analysis, Iraq Stock Market Index with a Proposed Index. Eleventh Scientific Conference, Faculty of Administration and Economics, University of Al-Mustansiriya.