# STUDY ON THE IMPACT OF CRUDE OIL PRICE AND MACROECONOMIC FACTORS ON THE STOCK PRICES OF FIRMS: THE CASE OF MALAYSIA FOR THE PERIOD 1999-2019

**ABDUL ADZIM BIN ABDUL HAMID**

**ASIA e UNIVERSITY**

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ABDUL ADZIM BIN ABDUL HAMID

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## ABSTRACT

This Research covers a study on the impact of crude oil price and macroeconomic factors on the prices of stocks of companies traded on Malaysia's stock market. Because oil price in recent times have frequently fluctuated over a wide range, it is in the interest of stock market investors and observers to comprehend if and how oil price changes affect firm stock values, particularly when oil price rises. The New Theory of the Firm postulates that profit maximization is the key objective of a firm, and that the present value of a firm is derived from the future profits expected from the firm's business operation. Thus, notable changes in oil price (as an element in business operation) are expected to result in counteractive decisions by the firm to maximize profit and stock value. Concurrently, because the firm operates in the context of economic conditions of a nation, value of the firm is also expected to be influenced by macroeconomic factors. The study investigates the relationship between the stock prices of twenty firms with crude oil price and macroeconomic factors over the 1999-2019 period. Findings from the research show that oil price had significant negative link with the stock prices of 15 percent the firms and significant positive relation with 25 percent of the firms, and no significant effect on 60 percent of the cases. Such varied effects are explainable in the context of profit-maximization behaviour by firms as the increased cost of the oil can be shifted to the oil users in various degrees. As such, the firm–level demand conditions for their products are important. Similarly, the national GDP (as the main macroeconomic factor) had mixed results due to its varied impact on economic growth and business outlook.

## APPROVAL

I certify that I have supervised/read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, as a thesis for the partial fulfilment of the requirements for the degree of Doctorate in Business Administration (DBA).

Professor Dato' Dr. Sayed Mushtaq Hussain
**Supervisor**

**Examination Committee:**

Professor Dr. Juhary Ali
Examiner

Professor Dr. Roslan bin Abdul Hakim
Examiner

Assoc. Prof Dr. Oo Yu Hock
Chairman, Examination Committee

This thesis was submitted to Asia e University and is accepted as partial fulfilment of the requirements for the degree of Doctor of Business Administration.

Professor Dr. Juhary Ali
Dean, School of Management
Asia e University

## DECLARATION

I hereby declare that the thesis submitted in fulfilment of the DBA degree is my own work and that all contributions from any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other university. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the programme and/or exclusion from the award of the degree.

**Name: Abdul Adzim bin Abdul Hamid**

**Signature of Candidate**: **Date**: 2022

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| | |
|---|---|
| APT | Arbitrage Pricing Theory |
| CAPM | Capital Asset Pricing Model |
| CF | Cash Flow |
| CPI | Consumer Price Index |
| CV | Control Variable |
| DCF | Discounted Cash Flow |
| DDM | Discounted Dividend Model |
| DE | Debt-to-Equity Ratio |
| DJIA | Dow Jones Industrial Average |
| DPS | Dividend per Share |
| DV | Dependent Variable |
| EMH | Efficient Market Hypothesis |
| FED | Federal Reserve |
| GDP | Gross Domestic Product |
| GNP | Gross National Product |
| IEA | International Energy Agency |
| IMF | International Monetary Fund |
| IPI | Industrial Production Index |

| | |
|---|---|
| IV | Independent Variable |
| JCI | Jakarta Composite Index |
| KLCI | Kuala Lumpur Composite Index |
| LNG | Liquefied Natural Gas |
| MS | Money Supply |
| NPV | Net Present Value |
| OECD | Organization for Economic Cooperation and Development |
| OPEC | Organization of the Petroleum Exporting Countries |
| PB | Price-to-Book Value Ratio |
| PE | Price-to-Earnings Ratio |
| PETRONAS | Petroliam Nasional Berhad |
| PV | Present Value |
| QR | Quick Ratio |
| ROA | Return on Asset |
| RON95 | Research Octane Number 95 (Petroleum) |
| RON97 | Research Octane Number 97 (Petroleum) |
| RP | Risk Premium |
| RWT | Random Walk Theory |
| S&P500 | Standard & Poor Index |
| TC | Total Cost |

| | |
|---|---|
| TOE | Tonnes of Oil Equivalent |
| TR | Total Revenue |
| US | United States of America |
| USD | United States Dollars |
| WTI | West Texas Intermediate |

# CHAPTER 1.0 INTRODUCTION

This Chapter provides the overall background and scope of the research, which includes information leading towards the rationale for studying the impact of crude oil price and macroeconomic factors on stock prices of companies listed on Malaysia's stock exchange. The research background is followed by a description of the research gap, the problem statement, the research objectives, the research questions, the research framework and the research significance. A brief summary of the underpinning theory and relevant literatures is also provided in the Background section of this chapter.

## 1.1 Background of the Research

This Research is a study to investigate the impact of crude oil price fluctuations and macroeconomic factors on the prices of traded stocks of companies in Malaysia for the period of 1999-2019. The main impetus to the research subject is the importance of oil as a key energy source for companies and the economy of a nation, particularly in periods when oil price fluctuates in wide ranges. For the period of 1999-2019 covered by this study, oil price started as low as USD 20 per barrel in 1998, after which it jumped to USD 35 per barrel in 2001 and then to USD 100 per barrel in 2005, followed by a drop to USD 60 in 2008, and then it rose to USD 120 per barrel in 2011 and then down to USD 40 per barrel in 2018.

Because oil is an element in business operation of a firm, stock market investors and observers would be interested to understand whether such oil price fluctuations impact profitability of companies and thus their stock prices. Concurrently, because firms operate in the economic environment of a nation, the prices of company stocks are also expected to be influenced by macroeconomic

factors. This study is thus conducted to offer empirical evidence and a comprehension on whether fluctuations of crude oil price affect the prices of firm stocks, and whether in the wider context, macroeconomic factors concurrently have influence on firm stock prices.

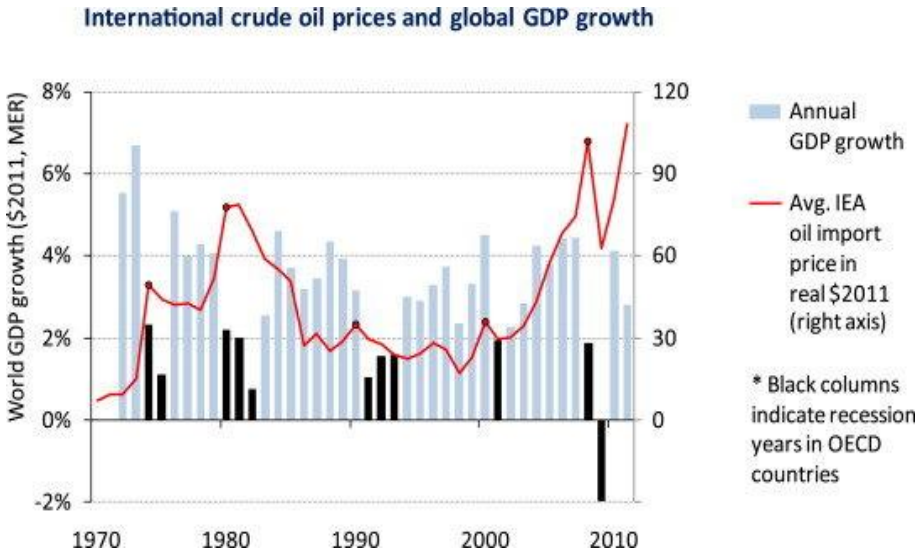
A summary of background information for the Research is as follows:

### 1.1.1 The impact of oil price to global and regional economies

Past literatures show that the trends of oil prices have been significantly associated with economic performances of global, regional and national economies. The upturns and downturns of oil prices, often called 'shocks', have been linked to booms and busts of global, regional and national economies, often measured by the Growth Domestic Product (GDP) indicators. Such studies and reports include those covering nations or groups of nations such as the United States, the Organization for Economic Cooperation and Development (OECD) and the Organization for Petroleum Exporting Countries (OPEC).

The International Energy Agency (IEA), through a review by Carmine Difiglio (2014) of the United States Department of Energy, provided a conclusive summary indicating that through 40 years of data revealing that oil price shocks were invariably followed by 2 to 3 years of weak economic growth, and that weak economic growth period was almost always preceded by an oil price shock. This can be generally shown graphically as follows, using assumptions by the IEA on nominal GDP rates and oil prices calculated at market exchange rates.

**Figure 1.1 Oil Price versus GDP Growth**




The International Monetary Fund (IMF) organization, through Arezki et. al. (2017) presented an integrated model to explain movements of oil price which attempted to make broad predictions of future oil price ranges. World GDP scenarios were used as part of the main modelling and prediction, thus emphasizing the significance of the relationship between oil price and economic performance.

A study by Yoshino et. al. (2014) concluded that for selected biggest oil consuming nations in the OECD countries, namely the US, Japan and China, the impacts of oil price fluctuations on GDP and inflation are definitive, and such impact is stronger on emerging economies. The impact is significant for the more developed countries albeit to a lesser degree.

In 2012, Hoffman summarized prior studies on oil price effect on GDPs of various nations, and came to a broad conclusion that over time, the response of GDP to oil price increases was very significant up until the 1970s (to the tune of -0.29 elasticity) compared to -0.05 elasticity over the recent last decade. Over the latter period, although oil price had clear impact on economic activity, it was less symmetrical, where increases would bring economic activity down but decreases

would not equally produce economic booms. The decreased sensitivity over the decades is observed to be coming from interferences in the form of policies by national governments whenever there are oil price shocks.

### 1.1.2 Oil price impact on national economies

The effects of oil price on national economies have also been the subject of many studies and reports. Ftiti et. al. (2016) tested the degree of coherence between economic growth of selected OPEC nations, namely United Arab Emirates, Kuwait, Saudi Arabia and Venezuela with oil price trends. It was found that the coherence between oil price and economic growth was as high as 80 percent for long term data and tend to be lower at 50 percent for short term data. It was also found that the booms in oil price and economic growth coincided with economic events such as increased local housing and construction activities, and sudden increased demand from China.

Earlier studies by Hooker (1996) and Bernanke (1997) postulated that oil price effects were much less significant than monetary policies especially for post-1973 period in the United States. The different effects may lie in whether a country is net importer of oil (such as the US prior to 2018) or net exporter (such as OPEC countries).

For comparison purpose, a study by Trang et. al. (2017) observed a contrasting result of prior studies covering the US, the OECD and OPEC as exporting nations whereby Vietnam is taken as a distinct example of a net importer of oil. It was shown that in both short and long term for Vietnam, oil prices had significant positive correlation with inflation and budget deficit. For economic growth rate and unemployment, there were correlations with oil prices in the short term but the impact was not significant for the longer term.

### 1.1.3 Oil price significance and impact on Malaysia's economy

Malaysia is reported to be a net exporter of oil. As the 29th largest producer of oil in the world with about 670 thousand barrels per day, oil export accounts for 16 million tons of oil equivalent (TOE) while the country also imports 8.4 TOE as at 2015. The oil reserve which stands at about 5 billion barrels is ranked 23rd largest in the world. In terms of national energy supply balance, the proportion of oil is at 30 percent, natural gas at 40 percent while coal and renewable energy account for the rest.

In recent decades, as much as 30 percent of the USD 60 billion annual national revenue consists of dividends from Petroliam Nasional Berhad (PETRONAS), the custodian of oil and gas affairs in the country.

With regard to the relation between energy consumption and GDP, according to Shafie et. al. (2011), Malaysia's GDP correlates almost exactly with energy consumption in the country. As for oil price relationship to the GDP, a study by Abdul Razak et. al. (2014) showed high positive correlation between them, registering a correlation coefficient between the oil price and GDP was at 0.72 for data from years 1980 to 2011.

The study distinguished Malaysia's case from earlier studies for the case of United States such as Hamilton (1983), Mork (1989) and Lee et. al. (1995), and a study for Nigeria by Iwayemi (2010), all of which concluded that oil price had insignificant effects on economic growth performance.

### 1.1.4 Oil prices impact on industries

For Thailand as a net oil importer, Wattanatorn and Kanchanapoom (2012) measured the effects of crude oil price on sectoral Return on Assets (ROA), and found significant positive relationship between oil price and returns for energy sector, the food and beverage sector, as well as transport and petrochemical sectors.

The study makes reference and comparison to previous related researches for other countries, such as by Narayan and Sharma (2011), Esmaeili and Shokoohi (2011) and Arouhi (2011), which concluded on the presence of varying degrees of significance of the links between oil price and industrial sectoral performances.

### 1.1.5 Impact of oil price on Malaysia's economic sectors

For the case of Malaysia, a study by Shaari et. al. (2013) measured data for years 2000 to 2011 to find the links between oil price with agriculture, construction, manufacturing, transportation sectors. The study referred to several other previous studies covering different parts of the world, such as those by Rodriguez and Sanchez (2004), Alper and Torul (2009) and Syed (2011). Shaari's study found significant positive links for the long run, where there were causal consequences of oil price onto the agriculture and construction sectors.

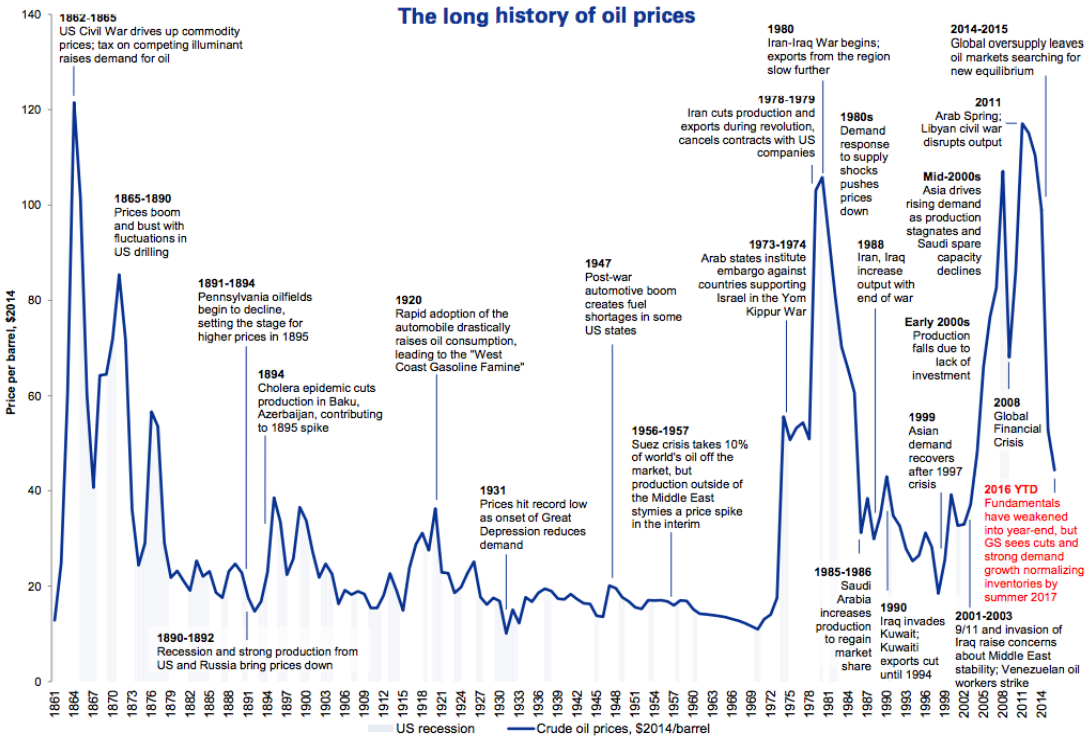
A study by Chia et. al. (2015) combined the quantitative performance of Malaysia's agriculture, manufacturing and services sectors for 1980 to 2014 to find if there were co-integration relationship of oil price with the combined outputs of the three sectors. Positive links were found on the variables. Causal link using Granger test was found for the short term, but not for the long term.

Nur Surraya & Wong (2017) conducted a study on the impact of oil and liquefied natural gas (LNG) prices onto Malaysia's selected economic sectors. Using data for 1985 to 2015, the research tested links of energy price to selected sectors of manufacturing, agriculture, services (including transportation, retail, education and so on) and a sector called 'industry' (which includes mining, construction, electricity and utility). It was found that oil and LNG prices relate positively and with statistical significance to all sectors in the long run, but not for the short run.

### 1.1.6 The long-term trend of oil price fluctuations and price shocks

The long-term historical trend charting of oil prices in constant monetary value shows a range of between around USD20 per barrel (in 1860, 1890, 1931 and in 1970) to well above USD100 in years 1864, 1981, 2007 and 2011. The sharpest jumps and drops were associated with economic shock events, as summarized in Figure 1.2, below.

**Figure 1.2 Oil Price Historical Trend**

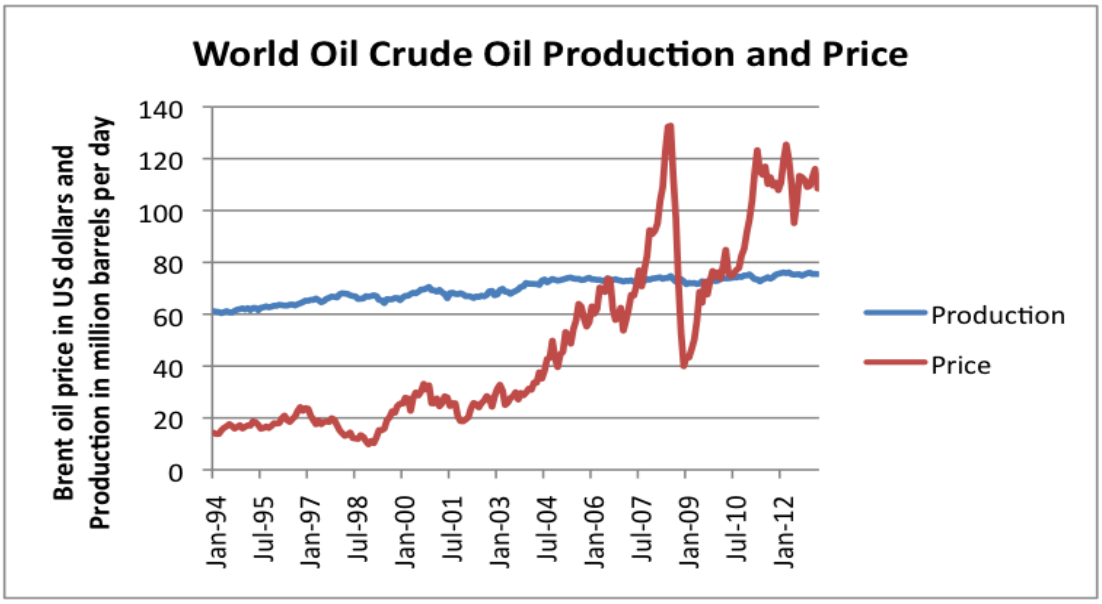



*An earlier version of this chart appeared on pg. 16 of Top of Mind Issue #52: OPEC and Oil Opportunities.*
*Note: 2016 price shown is YTD average as of Dec. 19, 2016.*
*Source for data: BP, NBER/Federal Reserve Bank of St. Louis, Haver Analytics.*
*Source for annotations: ©James Hamilton, "Historical Oil Shocks," University of California, San Diego, February 2011; various news sources; Goldman Sachs Global Investment Research.*

### 1.1.7 Oil production levels versus oil price

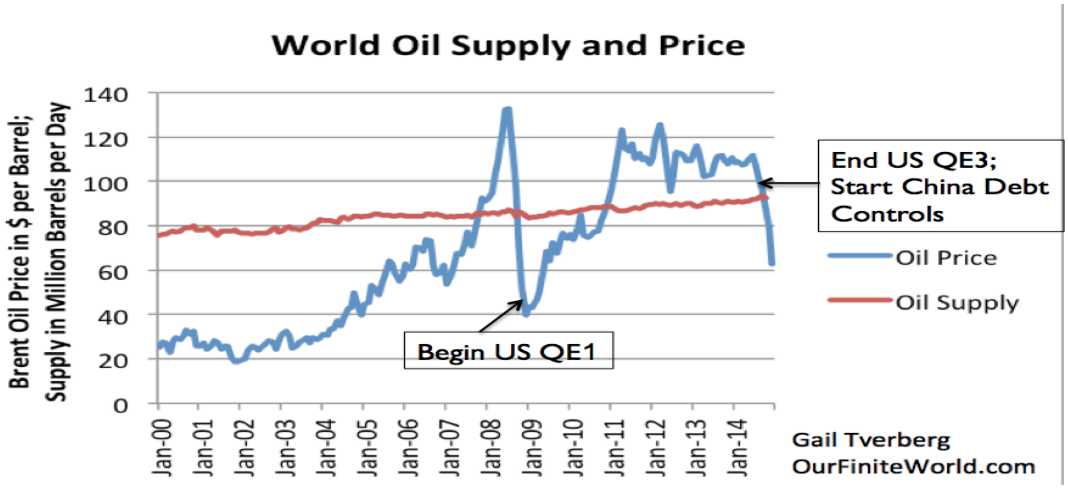
Historical data charting shows on oil price fluctuations do not relate to oil production levels. The following graphic in Figure 1.3 (based on data from 1994 to 2013) indicates that production does not visually relate to price levels.

**Figure 1.3 Oil Price Production and Price – Half Yearly**



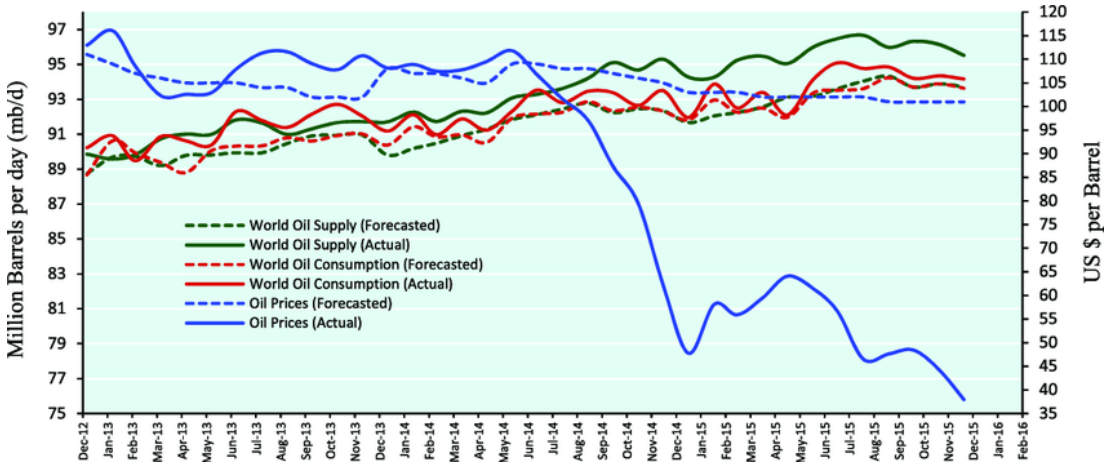

A graphical plot in Figure 1.4 for a more recent period of years 2000 to 2014 also shows that oil production level does not relate to price. Tverberg (2017), for example, attributes the up and down spikes instead to the Quantitative Easing (QE) of the US Federal Reserve in its monetary policies, instead of oil production level.

**Figure 1.4 Oil Supply and Price – Monthly**



For post-2014 period, another graphical representation in Figure 1.5 shows neither oil supply nor demand, whether forecasted or actual, related to the price dips and spikes.

**Figure 1.5 Oil Supply, Consumption and Prices - Monthly**




### 1.1.8 Oil price fluctuations and volatility

The factors behind the movements of oil prices, as analyzed by Arezki (2017), point to four major perspectives, which are the supply constraint view, the elastic supply view, the global economic cycle view and the substitution and conservation view.

The supply constraint view emphasizes factors of supply shortages and disruptions, including political crisis, embargoes and major policy changes of the past cause price fluctuations. This view appears logical based on a plotted graph of events and shocks of the past. The graphic comparison of oil prices to oil production volume trend do not provide strong evidence for the supply constraint view. To cite some of the events that appear to relate to oil price, there were the Iranian crisis in the 1970s, the Kuwaiti invasion in 1990, the Iraq war in 2001, the rise of China and Asian