### How Oil Price Shocks Influence on Inflation Rate? Evidence from Malaysian Economy

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#### **Abstract**

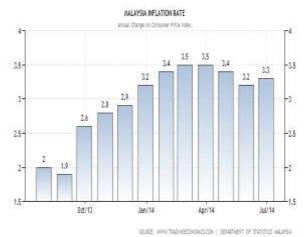
The primary object of this research is to inspect the effect of oil price (OP) on expansion and inflation rate (Inf) in Malaysia, this data collected on specific macroeconomic indicators such as inflation (Inf) and country's oil price (OP) by utilizing year to year information from 2008 to 2018. This research study are based on secondary data. By using E- views regression model, correlation model, descriptive analysis, and graphical Causality model were used to break down the information about oil price (OP) and inflation rate (Inf). The relationship between two factors is presence more correlation effect at 5% large dimension over the long term. These show that the significant correlated with each other. In this study, data used as a form of secondary just oil cost price influenced the expansion of Malaysia economy. The conversion standard does not specify the main reason for both of the factors (Inflation rate (Inf) and Oil Price OP). Along these lines, the oil unrefined cost, which an effect on expansion economy. On the other hand that the rate of oil cost and expansion additionally make esteem changes, the advancement similarly changes. There is a progressively critical connection between oil price (OP) and inflation rate (Inf) in Malaysia economy. Research founded that there is a significant relationship between oil price and inflation rate. This finding helps the Malaysian government in essential leadership a way to deal with the oil price to manage inflation rates.

Keywords: Oil price (OP), Inflation rate (IR), economic factors (EF), Government, Malaysia

#### 1. Introduction

### 1.1. Background of the study

Today the cost of oil and its income play a vital role in everywhere throughout the world. For example, Malaysia, Iran, Pakistan, etc. Here in this research study, we are examining, and investigation as an enlarged effect on oil costs in the Malaysia economy state. (Bhutto et al. 2019; Bass 2019; Rehman & Ali, 2024). The previous study is to investigate the influence of oil cost and conversion scale on expansion in Malaysia from January 2005 to December 2011. There are different authors and researcher conduct the study on macroeconomic indicators included as GDP, inflation, per capita income etc. because these factors represent all the national economy. Below diagram shows that the flow of Malaysia inflation rate 2013 to 2014. in October 2013 the inflation rate of Malaysia is 2, 1.9 and 2.6. Over time inflation rate increase 2.8,2.9, 3.2. Similarly, in April 2014 inflation rate of Malaysia 3.5. in this stage inflation rate are higher and so on.



This research paper shows the impact of oil price (OP) on inflation rates Evidence from Malaysia country. We found a positive critical relationship between oil price on inflation. (Gil-Alana and Gupta 2014, Bernal, Molero et al. 2019; Tawari, 2024) Previously research study has been mainly intense on the more developed states, and there is less studied in other countries like Malaysia to measuring oil price effect on Malaysia economy. Now today, people having less knowledge about Macroeconomic factors and also fluctuations the inflation rates scenario. So, it's essential to make discussion and see the effect of oil price on the inflation rate. (Lahiani 2019; Farhadi & Zhao, 2024)

In 2008, the Chinese Government broadened the oil cost around 18% on June 19, 2008. Expansion caused by this change. Along these lines, different individuals experienced lower buying rate and pushed them to express their test and achieve the introduction. A part of the inflation rate was closed down because of the high increase in oil cost. China has gone up against additions in oil cost in 2010. In 2011, China expected to experience the fewer effects of 4.9% inflation and activated the outrage among the native. In this way, China made a move to control the increasing expenses of nourishment and different things. (Baek, Ikponmwosa et al. 2019; Ullah & Ali, 2024). The rising petroleum cost in China was a delicate issue.

This study is the most famous and very first-time conduct in Malaysia to enhance the literature review's history. That may help us in formulation and decision making in corporate finance sectors financial decision-making related economy. In this research study, we are creating and elaborate on the gaps between two variables oil price and economic indicators such as inflations.

# 1.2. Problem Statement

The extension is undoubtedly affected by the financial methodology of a country. Particular elements related to related money system has been analysed to choose the impact of inflation rates, on oil value extension of the Malaysia state.

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This research study adds to all present writing analysis by estimating the directing effect of oil cost and inflation rate in Malaysia. This research study also enhances one or a new aspect of oil industries, i.e., oil price influences through more significant related to each other.

### 1.3. Research Objective

The essential goals of this study are as follow:

- To examine the oil price effect on the inflation rate.
- To measure and elaborate the all significant, non-significant impact between two variables.

The fundamental point of this exploration is to improve the learning oil value export level in Malaysia advertise economy. This exploration establishes as follows: Section 1 examines the general presentation of our macroeconomic variable's factors. In segment 2 portray past examinations about the expansions and oil cost. Division - 3 clarify the system with all the clarification and in area four expand the examination results, and its understandings in the last segment finished up research and proposed further suggestions.

### 1.4. Research Questions

In this research, we will discuss some questions like:

How do oil price effect on inflation of Malaysia?

How Increase inflation rate or decrease the oil price rate influence the Malaysia economy?

#### 2. Literature Review

In this research paper, we are examining studies about oil price and its effect on the inflation rate. And also discuss all the decisions regarding oil price and inflation fluctuations because we know that inflation rate change day by day and its effect on the economy even that is essential indicators for encouraging the profitability for every economy. Today the world facing the problems for dealing about oil price and also that inflations rates influencing levels. (Nusair 2019) (Shaari, Hussain et al. 2012) So in this way, many authors conducted and investigated studies on oil price effect and inflations rates all over the world. The primary aim of literature is what roleplay in the economy and all decision-making processes. The underlying documentary focused on a specific financial panel of countries studies about banks financial performance. In this paper, we review different research papers from Pakistan, Malaysia, Yemeni, UK, Bangladesh, India, Nigeria, and Jordan. Regardless, there was a report which shows that development in oil cost did less impact inflation.

Overall oil cost has expected a principal occupation to choose development in one country. Chou and Tseng (2011) reviewed the present minute and also whole deal experience impact of oil costs on the extension in Taiwan. The conclusion describes that overall oil costs altogether influenced development in the whole deal, yet in the transient, the result exhibited that the effect isn't noteworthy.

Cologni and Manera (2008) studied that on oil price and inflation rate its concluded that Other than the credit cost additionally affected the real inflation rate improvement and expansion. Author studies on inflation rate because inflation rate considers the essential factor in the economy in every country. Result founded that oil price impact on inflation rate fluctuation. When oil price increase then the inflation rate also increases and when oil price decrease, then the inflation rate of countries also decreases. So, concluded that there is a significant and correlated relationship with each other.

Lacheheb and Sirag (2019) investigate the work on oil price and inflation in Algeria (A nonlinear ARDL approach. This study determined the relationship between the inflation rate and oil price changes. Author data have been collected from the country Algeria 1970 to 2014. By using the autoregressive model result founded that there is an essential relationship between increment in oil price and inflation rate. Also, that must be a meaningful relationship between them when oil price reduces the inflation rate even absent.

Shaari, Hussain et al. (2012) look at that the effects of oil value stun on the conversion scale instability expansion in this exploration creator utilized the information from one nation, for example, Malaysia nation test information has been used as a month to month bases from 2005 to 2011. In this examination, the study used various models, for example, VAR-VECM and furthermore that Granger causality model and so forth and afterwards breaking down. Specialist established that the oil cost could give impact on expansion rates if the rate of oil costs changes. We can say that this examination closed the most critical connection between oil cost and inflation rates.

Shiu- shengehen (2008) studied that oil price passed into inflation. In this research, the author explains the fluctuation rating of increase. In this study, data used from different 19 industrialized countries and found that high degree or less degree of oil price pass-through effect in national and international industrial markets.

In the observational investigation, Cunado and De Gracia (2005) studies inevitability association among oil cost, financial improvement, and work in all Countries by using a different quarterly course of action of two periods for relationship. An employable effect was detected from oil-expenses to pay and work in the first time frame, yet the irrelevant result was set up on the secondary data. (Gil-Alana and Gupta 2014) associated co-incorporation approach to managing look at an association in oil-costs and joblessness in Malaysia and found oil cost as an essential careful factor for unoccupied in the countries.

Ghalayini (2011) analyzed the effect cost of oil price on the compensation of oil price-conveying and oil-getting countries. He fused into his examination countries. He didn't portray any tremendous association beside an association from oil-expenses to pay in all GCC countries.

Kilian and Park (2009) studied on inflation target and the systematics in the oil price. In this study researcher focused on inflation specific targeting different IT countries and control groups. Data collected from large countries and sample size selected from 1970 to 2017. This research is based on quantitively. (Nusair 2019) In this examination, the study used various models, and furthermore that Granger causality model and so forth and afterwards breaking down. The result shows that the base due to IT (information technology) must be having a more significant effect other than non-IT countries. When the oil price increase then also increase the inflation rate. In this research run different robustness models and concluded that when falling the oil price, then the inflation rate is above the target place.

Cunado and De Gracia (2005) investigate the study on oil prices (OP) all economic activity and inflation (Inf). In this research, the author used the whole Asian countries as evidence. Data have been collected from six Asian countries from 1975 to 2002. The outcomes recommended that oil costs (OP) have a positive or noteworthy impact on the swelling rate (Inf) and all over the economic activities. It is correlated with each other and also creates a significant effect.

### 3. Research Methodology

In this research study, we are checking the oil price (OP) effect on inflation rate evidence from Malaysia country. Based on secondary data, information is collected from world development indicators (WDI) and the nature of this study is quantitative research. All the findings of this study are based on the data collected from the global economy site (WDI) and various sources. The fundamental motivation behind our paper is to survey the impacts of oil value changes on inflation level in Malaysia from 2008 to 2018. This investigation utilized an enlarged. Thus, discoveries and arrangement proposals may lead to a beguiling end. (Ahmed, Bhutto et al. 2019) These tests rely upon the total entire of recursive residuals subject to the primary arrangement of n recognitions. (Nasir, Al-Emadi et al. 2019) It was fortified recursively and plotted against the break trots. On the off chance that the plot of the bits of learning remains inside the 5% hugeness measurement, by then the evaluations are relentless. (Tang, Wu et al. 2010) The proportional applies to the squared thoughts, which rely upon the squared recursive residuals.

# 3.1. Research Design

# 3.1.1. Hypothesis

The study design was measured through independent and also dependent variables. One independent variable such as oil price is our independent variable is chosen, and then that variable is depending on the inflation rate (Inf) of Malaysia countries. In this research paper used the regression analysis to measure the impact of one variable to another variable. Another one correlation test is used in this research to measure the long run and short run relations between variables (oil price (OP), and inflation rate Inf). In this correlation test, two approaches and techniques will be used.

### 3.2. Type of data and its source

The central hypothesis for this research study is

H0=, there is no relation between oil price and inflation rate.

H1=, there is a positive or negative relation between oil price and inflation rate.

#### 3.3. data and its source

In this study, secondary data is used, and information is collect from the WDI of the selected country in Malaysia from period 2008-2018.

Above table represents the short form of our research variables. Inflation rated our dependent variable and denoted by Inf other one oil price rate is also our research study variable and its indicated by op. These are variables used in empirical results and our study models. Such as the regression model, correlation model and descriptive analysis model.

#### 3.4. The Equational Model

The determinants of economy and oil price used in this research. In this purpose used frequent data for analysis. The data of variables defined through the regression model and equations as

$$Y = \propto +\beta x + \varepsilon_1 \beta x + \varepsilon_1$$
 (A)

In the economic model:

Inflation rate (Inf) represents a dependent variable, and oil price (OP) is the independent variable. So, regression models have been developed, which are as follows:

$$\Delta OP = \propto + \sum \beta^1 Inf + \mathcal{E}_1 \tag{1}$$

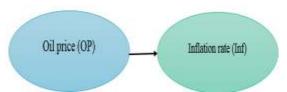
Where:

OP= Oil price

Inf= inflation rate

For measuring the impact, only 11 years' data ranging from 2008 to 2018 were considered

#### 3.5. Theoretical Model



The theoretical model shows a real picture of the research study. Oil price and inflation rate both are research variables used in research studies for measuring the oil price effect on inflation rates.

### 3.6. Variables

## 3.6.1. Oil price rate (OP)

Crude oil is a pure liquid fuel source found underground. It is disengaged through drilling. Oil is utilized for transportation, oil-based goods, and plastics. The response of money related trades in numerous countries to add up to premium paralyzes is positive. Moreover, the reaction of monetary trades in oil-conveying countries is more consistent and more grounded than in oil-getting countries (Nusair 2019; Roussel & Audi, 2024).

Table 2: Descriptive analysis						
	Mean	Min	Max	S.D		
OP	2.436286	0.583308	5.440782	1.386541		
Inf	2.718968	1.000000	7.309998	1.948015		

### 3.6.2. Inflation Rate (Inf)

The inflation rate (Inf) is a quantitative extent of the cost at which the standard cost measurement of a product and ventures in an economy increases over some time. (Nusair 2019). It is the steady rising in the full part of costs where a unit of money buys

short of what it did in before periods. As often as possible conveyed as a rate, extension exhibits a reducing in the purchasing force of a nation's money.

### 4. Results and discussions

# 4.1. Descriptive Analysis

Table 1 shows the results of the descriptive analysis. The sample of oil price rate (OP) and also that the inflation rate (Inf) of Malaysia country used for analysis overtime period of 2008-2018. The mean of oil price (OP) 2.436286 disclosure for 11 years in the sample. The table is shown to the mean and standard deviation (SD) esteem for factors. Mean shows to reasonable respect and the standard deviation indicate the deviation of significant worth from the mean. The oil price (OP) minimum value is 0.583308, and also that the maximum value of oil price is 5.440782, and the standard deviation is 1.386541. The inflation is our dependent variable in this analysis examine the mean of inflation is 2.718968 the minimum value of inflation is 1.000000 also that maximum value of inflation is 7.309998 and the standard deviation is 1.948015, respectively. The results indicate that mean and standard deviation represented and describe the relationship between the Inf and OP.

# 4.2. Correlation Analysis between inflation and oil price

Table-III represents the connection between oil value (OP) and expansion rate (Inf) our autonomous and ward factors (what is the quality of one variable influencing the other variable). So, the oil price and inflation rate are too much correlate with each other. On the other hand, OP, Inf are significantly associated with the coefficient of and 0.04129, respectively. And 1 show the correlation with each other.

Table: 2						
Relationship betwee	n variables	OP (Oil price)	Inf (Inflation)			
Op Inf	1 -0.04129		1			

#### 4.3. Regression model of analysis

Overall the outcomes of the backslide model are close with the impact of related concentrated the estimation of  $R^2 = 0.001705$ , which shows that variable explains 0.001705 scales. The F-estimation coming about as a result of a standard verifiable test used E-viewpoints and backslide examination to choose whether the contrast between strategies for two peoples is exceptional. The estimation of F-quantifiable is 0.01537 and p-regard is 0.904059 exhibiting that the general model is fit for the examination. In this examination, table 4 illustrates the negative, however progressively noteworthy connection between oil cost and expansion in Malaysia nation at 9% critical dimension. Also, complete and meaningful contact in the middle of the show the core relation between oil price (OP) and even that inflation rate (Inf). C represents the values of inflation our dependent variable in this research. In this research study, we are used 11 observation and sample 2008 to 2018 in Malaysia country. The coefficient of inflation is 2.516194 standard error of inflation 0.780575 and t- statistic value of inflation is 3.223513, and the probability is 0.0104. It means 10% and more significant with each other. Adjusted R-Squared is -0.10922. S.E of regression is 1.460296, respectively.

Table :	3
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**Dependent Variable: inf**Method: Least Squares
Sample: 2008 2018
Included observations: 11

OP

Variable Coefficient Std. Error t-Statistic Prob.

C 2.516194 0.780575 3.223513

-0.02939

 R-squared
 0.001705
 Mean dependent var
 2.436286

 Adjusted R-squared
 -0.10922
 S.D. dependent var
 1.386541

 S.E. of regression
 1.460296

0.237055

-0.123976

0.0104

0.9041

 S.E. of regression
 1.460296

 Sum squared
 19.19218

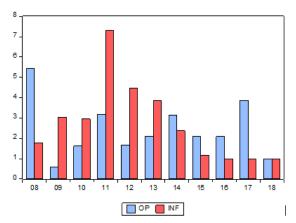
 F-statistic
 0.01537

 Prob(F-statistic)
 0.904059

Even though a higher oil cost in Malaysia would build sends out incomes, which may raise inflation level, and expansion the oil price in the economy. Since oil items are a first contribution to some things and merchandise in the creation procedure, generation is profoundly associated with oil and refined oil costs too. It would be helpful for Malaysia to deliver its first required items

and merchandise since oil items and financed in the nation. Fills appropriations are successful in lessening the impacts of oil value changes in residential expansion.

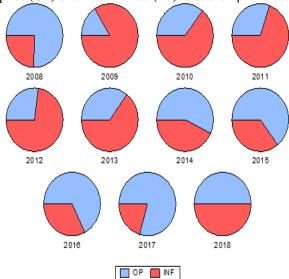
# 4.4. Graphical Analysis



Used Graphical analysis for measuring the relationship between oil price (OP) and also that inflation rate. Here in the above table, shows the maximum change when one frequency changing. In point 18, oil price (OP) and inflation (Inf) remain the same. And ups and downs as a regular flow. In 11point the inflation rate was too much high as compare to the oil price. In point 15,16,17, and 18, the inflation rate increases as the same flow.

#### 4.5. Analysis with pie

The second graphic analysis is analysis with pie and circle form. In this technique shows all the effects of inflation rates and oil price being a form as a circle wise and also that represent by yearly. This graph also measures the relationship between dependent or independent variables, i.e., oil price (OP) and inflation rate (Inf) relationship with respectively.



### 5. Conclusions and recommendations

All augmentations in oil price since 2004 have been thought from policymakers and every single full-scale financial expert alike and dynamic much research concerning the inflationary impacts of oil cost price and cost. After research and all above discussion concluded that there is a most critical connection between oil cost and expansion rate but little bit negative or positive relation between them. So, this research neglects the null hypothesis and accept the second hypothesis and create a relationship with each other. Finding out about the inflationary effects of oil cost increments will, by then assistance money related specialists to embrace fitting strategy to oblige these stuns. Ongoing investigations have archived a decrease in the inflationary impact of oil cost increments. Oil value changes have lower passthrough into total inflation rate expansion during the 2000s than they did in the 1970s. Further, the research explored some potential clarifications for refusing to go through and infer that valuation for the private money, an increasingly dynamic fiscal approach because of inflation, and a higher level of exchange transparency are real reasons for the ongoing decrease in oil value go through. On the other hand, vitality power may have assumed a minor job in the development of all over time.

This paper takes a great at the effect of oil regard changes on OP, and to do therefore we got a handle on a nonlinear relapse model for the review to get both long-run and short-run Hilter kilter relations among inflation rate and oil price. The evaluated outcomes admit the proximity of both long-run and short-run asymmetry direct of the inflation rate. Indeed, as time goes on, oil cost addition keeps an eye on augmentation inflation levels in Malaysia. In any case, oil esteem diminishing is unessential to the development level. Likeness, in the short-run, simply oil cost addition seems to assemble a development in Malaysia.

From a strategy point of view, this paper diagrams two or three terminations: the confirmation seeming, by all accounts, to be essential oil cost are ordinarily related to the enlargement is likely going to show the closeness of market control in the Malaysian

markets. The proximity of market power has routinely been acknowledged to address afloat respect direct, with the acclimation to be speedier the upward way by then, the immovable nonappearance of the short-run effects of negative oil respect changes on the extension rate further braces the end that market key moves a gigantic activity business part control and, to be powerfully astounding, should cover all suppliers (shippers, wholesalers, and retailers). Moreover, getting the productive progression in the zone market is embraced to profit by straightforwardness oil things, and in this research accomplish higher surplus in a night out of segments through import.

#### 5.1. Recommendations

These are mixed findings have kept on interesting serious discussion and cleared ways for further to inquire about inflation and oil price. Acknowledgement of these components may control approach procedures.

#### 5.2. Future research

This study is based on the main two specific variables of oil price (OP) and inflation rate (Inf). In future researcher can use other different variables like GDP, per capita income, and all other macroeconomic indicators. Also, that here sample size is 2008 to 2018 new researcher can enhance the sample size and make research more effective or valuables in research history and contribution in academic writing.

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