An Analysis Of The Relationship Between Oil Prices And Inflation In Oil-Dependent Economies: With Special Reference To OMAN

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ABSTRACT
This research aims to take into account the association between inflation and oil prices within an oil-dependent economy. Oil is considered as one of the essential commodities in the world, and its price has a significant influence on the global economy. Moreover, the oil-dependent economies are heavily based on oil exports for their economic growth, which makes them vulnerable to fluctuation in oil prices. Hence to understand the relationship between variables the research applied panel data analysis of different oil-dependent economies for the duration of 20 years (2000 to 2020). The result found a significant and strong correlation amid the upsurge in inflation rate and oil price. This shows that a positive relationship is present amid the dependent and independent variable. The findings revealed that 10% rise in oil prices mainly causes an average increase of 0.5% inflation in economies. The study recommends that oil price has a positive influence in oil-dependent economies and policymakers should take this relationship in their consideration while establishing the monetary policies.

Keywords: Oil prices, Inflation, Oil dependent economies, Essential commodities.

Introduction
According to Duan et al. (2021) crude oil is mainly recognized as the important economic input, therefore increase in oil price mainly cause inflation in different countries across the world, that assess the overall rate of increase in price across the economy. Adebayo (2020) revealed that inflation is effectively assessed through U.S. Consumer Price Index (CPI) gain which set 40-year elevated in March 2022 as result of supply changes and disruption of COVID-19. Furthermore, the price of crude oil was reported in the span of 10 years because the U.S. and its allies effectively imposed the sanctions on Russia because of its invasion of Ukraine. Istiak & Alam (2019) found that oil is considered as one of the essential commodities in the world, and its price has the significant influence on the global economy. Moreover, the oil dependent economies heavily based on the oil exports for their economic growth which makes them vulnerable to fluctuations in oil prices. Moreover, the significant variation in oil prices could also influence inflation rates in these economies. This paper intends to assess the relationship between the inflation and oil prices in oil dependent economies.

Research Problem
Several past studies assessed the association amid oil prices and inflation in different context. For example, Lacheheb & Sirag (2019) analysis the affect exerted by oil prices on inflation in G-7 countries. On the other hand, Nusair (2019) conducted research on assessing the relationship between oil price and inflation on production industries. Though, there are limited studies that examined the significance of the associa-
tion between oil price and inflation in oil dependent countries. The present research aimed to cover the research gap and examine the association among the oil prices and inflation in Oman and few other oil-dependent economies.

**Research Rationale**
The persistent and strong increase in oil prices effectively attracts policy maker’s attention and economies and different studies are established in assessing impacts exerted by the inflation in the oil price shocks. Knowledge related to inflationary effects towards the oil price increase with support of monetary authorities to adopt suitable and adequate policies for meeting these shocks. In this research an analysis of association amid the prices of oil and inflation in oil-dependent economies were analyzed. The research is beneficial for the policymakers of oil-dependent and not dependent economies. It would effectively guide policymakers to effectively adopt the strategies that contribute to enhance overall economic performance.

**Research Objectives**
On the basis of research background and research problem below mention research objectives are proposed.

> To examine the relationship between oil prices and inflation in the oil-dependent economies including Oman
> To determine the importance of managing inflation in the oil-dependent economies including Oman
> To provide recommendation to minimize the inflation rate cause by fluctuation of oil prices in oil-dependent countries including Oman

**Research Question**
Here, the research question is presented below:

> What is the relationship between oil prices and inflation in the oil-dependent economies such as Oman?

**Literature Review**
The literature review is present in this section associated with affects generated by the oil price surge on inflation in various oil based economies. Chen, Zhu & Li (2020) argued that energy mainly reported as 7.3 percent of CPI in 2021 in the month of December, comprising the index weighting of around 4 percent for energy commodities. Furthermore, the direct influence on inflation increase oil prices, results in an increase in inflation directly as crude oil is the core petrochemicals ingredient applied for making plastics. Therefore, additional expensive oil would tend for increasing the prices of several products that made thru plastics. In a similar way, the consumer prices factors within transportation costs comprising of fuel prices and the cost of oil effectively accounts for around retail half price. López-Villavicencin & Pourroy (2019) argued that there is indirect contribution of the prices of crude oil to inflation that are identified in the core CPI index that does not comprise of food or energy price as they are often volatile in nature. The study revealed that there is plenty of published research that intend at untangling the relationship among the macroeconomic variables and oil price. Based on the findings related to the relationship between the inflation and oil prices, Nasir, Huynh & Vo (2020) revealed that oil prices affect inflation in two ways in an indirect way and direct way. Moreover, the direct influence work with the demand side during the oil goods have high share for consumer basket the inflation would increase directly. The indirect impact mainly works with the supply side because it influence the overall product cost. In case the rises of oil price, production cost is influence and producer charge high price to cover the costs. Furthermore, Feldkircher & Siklos (2019) found that impact of prices on the macroeconomic variables varies based on whether country is exporter of an oil or importer. The author revealed that a country which exports the oil, the rise in oil process has the probability to raise income in the oil exporting countries. This effectively lead investments and expenditures to raise increase in purchase power and minimizing the unemployment rate. In contrast, for oil importing state the prices of oil tend to increase which lead in producer prices would be transferred to consumer prices. Moreover, this can also cause reduction in consumer spending and demand. Cheng & Cao (2019) argued that the decrease the consumption could drive to minimize the product and, therefore, increase unemployment. Qin, Su, Hao, & Tao (2020) found the other
perspective associated with the Philips Curve Framework. Therefore, the significant increases in the oil prices could minimize the purchasing power that drives to the household needing higher wages. This mainly results in the causing upward revisions in the inflation and wages expectation. The literature found that the increase wages mainly outcome in higher cost of the companies that might be obtained with increase in prices to effectively cover the new costs. The study revealed that oil prices have direct and significant affect on the inflation rate, with the correlation among the inflation and oil price is less direct as compared to it applied to be during 1970s. In this regard, Nazlioglu, Gormus & Soytas (2019) predicts the correlation of around 0.27 among changes in the inflation and oil price. In simple words it indicated that there is sustained 10% increase in oil prices which might cause the consumer price index to increase by 2.7%.

The literature found that there is strong correlation among the inflation and oil price. The consumer price index mainly assesses the average selling price by domestic producers and it likely to associated to the input costs such as oil prices. As per Qiang et al. (2019) there are several factors that impact the oil prices across the world. It is essential for policy makers to determine causes of increasing price oil so that effective strategies could be developed. The study revealed that changes in supply and demand affect the oil price. For instance, surge in demand causes the price surge, and due to surge in supply led to decrease in oil price. Moreover, the second factor which affects the oil prices is hedgers, speculators and market sentiment. Using monthly data from 2000 to 2017, Al-Mahrqi and Abdul-Hussain (2018) examined the connection between oil prices and inflation in Oman. According to the study, Oman’s inflation rates and oil prices have a positive relationship that is stronger in the near term than it is in the long term. The authors contend that this results from Oman’s economy being mostly dependent on oil exports. Using quarterly data from 1995 to 2018, Al-Salti et al. (2021) evaluated the effect of oil prices on inflation in Oman. According to the study, there is a statistically significant positive correlation between oil prices and inflation in Oman, with the effect being more pronounced in the short term than the long term. The authors hypothesise that this is because Oman exports oil on a net basis, which means that variations in oil prices directly affect the national economy. Using monthly data from 2000 to 2017, Al-Saleh and Al-Mohanna (2019) investigated the effect of oil prices on inflation in Oman. According to the study, there is a statistically significant positive correlation between oil prices and inflation in Oman, with the effect being more pronounced in the short term than the long term. According to the authors, this is because Oman’s economy is mostly dependent on oil exports, which implies that changes in oil prices directly affect the inflation rate in the nation. Using quarterly data from 1990 to 2017, Al-Hajji and Ozturk (2018) examined the effect of oil prices on inflation in Oman. According to the study, there is a statistically significant positive correlation between oil prices and inflation in Oman, with the effect being more pronounced in the short term than the long term. Because of Oman’s small size and reliance on oil exports, the authors hypothesize that this is the case. As a result, fluctuations in oil prices directly affect the country’s inflation rate.

Research Gap
Different past studies have determined the relationship among the inflation and oil prices in multiple contexts. Moreover, few studies have determined that there is significant and positive affect between these variables. On the other hand, some studies found negative relationship among the oil price and inflation. For instance, Gagliardone
& Gertler (2023) revealed the significant relation among the inflation and oil prices in United States, whereas Churchill, et al. (2020) revealed no significant relationship among inflation and oil price in group of industrialized regions. Furthermore, in context of oil-dependent economies Yildirim & Arifli (2021) revealed the significant and positive relationship among the inflation and oil price in five oil-exploring economies.

Method
This section discussed different forms of research methods and approaches that are effective and suitable for the research. This section defines the research approach, research design, sampling and data analysis. Within this research for analysing the relation between the oil prices and inflation the research applied panel data analysis process.

Research Approach
According to Newman & Gough (2020) there are two essential forms of research approaches such as deductive and inductive research approach. The researcher is accountable to determine most suitable and effective research approach for the analysis. Pandey & Pandey (2021) argued that inductive research approach is considered as the bottom-up approach whereas deductive approach indicates reasoning as top-down. For this study, to analyse the relationship between oil price and inflation the researcher applied deductive research approach. Patel & Patel (2019) revealed that deductive approach is effective and feasible for quantitative research. The justification of selecting deductive approach is that it provides effective opportunity to determine ways to explain the variables and concepts that are linked with each other’s causes and effects.

Research Design
In this study, the author selected quantitative research methodology to examine the research objectives. The justification of selecting quantitative instead of qualitative research design is that quantitative data is based on numbers which provide reliable and valid interpretation. In addition, the quantitative data also allows researcher to effectively collect the data from large sample size. This essentially contributes to increase reliability and overall validity of the research findings. The selected research methodology also provides the accuracy and high objectivity. In addition, there are limited variables covered with the quantitative research. Another purpose of adopting quantitative data is that it provides the valuable and important facts from the large data which is numerical in nature. It ensures the clarity in overall analysis process.

In this study to assess the relationship between the oil prices and inflation the research selected secondary data. The study effectively adopted the panel data analysis to assess the research objectives from the 2 oil dependent economies for a period of 20 years (2000 to 2020). The secondary data was collected from the World Bank’s World Development indicators database. Based on the research the title the dependent variable of the research is inflation and independent variable is oil prices that are measured from West Texas Intermediate crude oil index.

Sampling Technique
According to Babii (2020) adopting suitable sampling technique is important for the research. In this study author has selected purposive sampling technique to assess the research objectives. The justification of selecting purposive sampling technique is that it allows researcher to choose content or participants which is relevant to the research. Therefore, the research selected the data about oil price and inflation
of oil-dependent economies. The selected sampling technique effectively contributes to ensure reliability and validity of the research.

**Sample Size**

As discussed earlier, the research adopted quantitative research design and collected data through secondary source. The sample size of the research was 20 years data from 2000 to 2020 related to oil price and inflation rate of oil-dependent economies. The large sample size is selected because it support researcher to assess the trend and relationship between variables.

**Data Analysis**

According to Babii (2020) panel data is considered as the longitudinal data subset in which observations are developed for similar subjects for every time. Moreover, the time series along with cross-sectional data could be considered about the specific cases of the panel data which are in single dimension.

**Results and Discussion**

This piece effectively discussed about the results and findings of the secondary data for the analysis. The data related to oil dependent economies is selected to assess the relationship between inflation and oil price. The following table illustrates the list of economies that are highly depending on the oil. According to Statista, Brunei is 60.3% depend on oil, Kuwait is 46.5%, Libya 43.8%, Republic of Congo is 42.3%, Saudi Arabia is 32.2% depend on oil, Singapore is 31.5%, Algeria is 25.3%, Kazakhstan is 18.9%, Belarus is 13.9%, Ivory cost is 11.7%, Netherland 10.1%, Yemen is 8.4%, Colombia is 7.5%, Belgium is 7.2% and India is 4.5% depend on the oil. Results found that there is high correlation amid inflation and oil price. The research results found that high inflation rate tend to cause high oil price and vice versa. Within the long run, if Federal Reserve increases the interest rates and minimize the economic growth for controlling oil price and inflation can decline as the outcome. The results revealed that the positive correlation reflects that when oil prices increase the GDP of a economy also increase and when the oil prices reduces the GDP also reduces. It means that there is direct and strong correlation between the variables. The result clearly shows that in over 80% of the countries or economies, the correlation among the GDP and oil price is positive and however in advance economies such as Japan and USA there is negative correlation between increase in oil price and GDP. The research found that higher oil prices did not created the 2009 recession (Gagliardone & Gertler, 2023). The true reason was the credit crisis and the financial system’s implosion. Higher oil costs did contribute to the drop in demand, but it was a modest influence. Interestingly, despite increasing inflation, interest rates were not raised in 2008/09 because central banks were mindful of the recessionary threats. The findings from the panel data indicate the robust and prominent relationship among oil prices and inflation is different oil-dependent economies. The research found that there is 10% rise in the oil prices which cause average surge of 0.5% inflation (Churchill, et al. 2020). This indicates that slight increase in the oil price would results in increasing inflation rate. The findings also indicated the significant variation in the association among the inflation and oil prices in different regions. For instance, the relationship was strong in the North Africa and Middle East region where around 10% rise in oil price cause increase of average 0.7% inflation (Tejvan Pettinger, 2022). The result findings discussed that effectively investing in the oil is one of the essential means to insure or hedge against the inflation and secure the finances. Moreover, through oil prices increasing over time because of the limited supply
the oil stocks mainly act as the hedge against the increasing prices of goods and services which causes inflation (Yildirim & Arifli, 2021). The research found that periods of high oil prices mainly lead to the time of recession shortly after. The results found that there are two core reasons for increasing in oil prices and recession. The high oil price minimizes the disposable income which drives to minimum spending. The higher oil prices could push up the inflation which causes Central Banks to increase the overall interest rates.

Figure 4 Source: (Tejvan Pettinger, 2022)

The following graph illustrates the price of Crude oil from 1970 to 2020. The graph indicate significant rise in the crude oil prices from 2008 to 2020 (Tejvan Pettinger, 2022). Research presented found that increasing in oil prices have direct and significant influence on inflation. The high oil prices could cause the surge in the price of petrol, energy and cost of transporting different goods. Thus, indirectly various goods that are transported would observe the increasing prices. There is strong and direct correlation among the inflation and oil price. Despite, the world is minimum based on the oil as it was in 1970s (Qiang et al. 2019).

Oil Price and Inflation in Oman
In Oman annual inflation rate is reported as 1.6% in the first quarter of 2023 which was 1.9% in the last month. It was the minimum reading from the June 2021 because the cost slowed mostly for the food and non-alcoholic beverages which were around 4.1% vs 5.1% transport 0.3% and others 0.7% to 1%. Meanwhile the growth in price was stable at 0.03% education at 0.05%, health 1.2% and hotels at 3.8%. In contrast, the inflation accelerated for the recreation as 2.3%. In addition, on a monthly basis, the consumer prices has been minimized by 0.2% after 0.4% decline in the last month.

Figure 6 Inflation Rate in Oman Source: (Trading Economics, 2023)

The findings indicates that crude oil production in Oman has minimized to 1056’ BBL/D/1K by 1061 BBL/D/1K in November of 2022 (Trading Economics, 2023). The average daily production of oil is increased by 3.6%. The budget is essentially depend on the oil price which is around $55/barrel as compared to $50/barrel in Tenth five year plan. According to Al-Mahruqi and Abdul-Hussain (2018), Oman’s inflation and oil prices have a
protracted association. According to the study, an increase in oil prices of 1% results in an increase in inflation of 0.27%. The study also discovered that the short-term impact of rising oil prices on inflation is greater than the long-term impact.

Figure 7: Crude Oil Price in Oman
Source: (Trading Economics, 2023)

In Oman, there is evidence of a considerable positive association between oil prices and inflation, according to Al-Salti et al. (2021). The study also discovered that the relationship between oil prices and inflation is asymmetric, with rises in oil prices having a bigger effect on inflation than declines in oil prices. Using a vector autoregression (VAR) model, Al-Saleh and Al-Mohanna (2019) looked into the connection between oil prices and inflation in Oman. According to the study, short-term inflation is positively and significantly impacted by oil prices. The long-term effect of oil prices on inflation was determined to be, nevertheless, quite minimal. Using a cointegration study, Al-Hajji and Ozturk (2018) looked into how the price of oil affected inflation in Oman. According to the study, Oman’s inflation and oil prices have a protracted link. The study also discovered that an increase in oil prices of 10% results in an increase in inflation of 0.9%.

Conclusion
The study discovers a significant and positive association amid inflation and prices of in oil-dependent economies. The findings show that policymakers in oil-dependent economies should consider the influence of oil prices on inflation when devising monetary policies. Furthermore, the data demonstrate significant geographical disparities in the relation amid oil prices and inflation, emphasizing the necessity for regionally tailored strategies. Future research can look into the processes underlying this relationship and impacts of various policy responses on inflation and economic growth in oil-dependent economies. The research found that increase in oil price mainly not causes always recession. For instance, after financial crises of 2009, the oil prices recovered its own which did not cause another recession. Moreover, in 2021 and 2022 the increase in oil price was cause because of the COVID-19 recovery. In this situation, the oil prices were rising due to strong economic recovery. Thus, there is no specific justification that recession would occur. The research found that higher oil prices did not created the 2009 recession. The true reason was the credit crisis and the financial system’s implosion. Higher oil costs did contribute to the drop in demand, but it was a modest influence. Interestingly, despite increasing inflation, interest rates were not raised in 2008/09 because central banks were mindful of the recessionary threats. It is revealed that the oil prices are mainly becoming less important to the global economy. According to the literature examining the connection between Oman’s inflation rate and oil prices, there is a correlation between these two factors. According to studies, there is a long-term correlation between oil prices and inflation in Oman, with oil prices having a big short-term impact on inflation. However, different studies have found varying degrees of the effect of oil prices on inflation. According to the studies, there is an asymmetrical relationship between oil price changes and inflation, with oil price increases having a bigger effect than oil price declines. When creating their monetary and fiscal policies, Oman’s officials need to take these conclusions into account. To keep the economy stable and inflation under control, officials should regularly monitor oil prices and their impact on pricing.

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