

Oil Dependency and Economic Growth: A Comparative Analysis of Oil Producing and Oil Importing Countries

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Abstract:

Oil is considered as main element for transportations and energy sector. In the world some countries have abundant oil resources and some countries have not such type of natural resources. This leads to dependency on those nations which have more oil and natural resources. This study compare oil producing countries with the oil importing countries in context of economic growth. For the economic growth GDP (Gross Domestic Product) has been considered as variable. For oil producing countries major five countries have been considered namely USA (United States of America), Saudi Arabia, Chine, Iraq and Canada and for Oil Importing countries India, South Korea, Japan, Germany and Netherlands. The analysis indicates that many nations, whether oil producers or importers, have pursued balanced economic development. They don't rely solely on oil and have diversified economies, reducing vulnerability to the fluctuations in the oil market. the findings emphasize the intricate connections and diversity within the global oil market, illustrating the multifaceted roles of nations in both producing and consuming oil.

Keywords:

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I. Introduction:

In a world fueled by constant energy demands, the influence of oil has remained an enigmatic force, shaping the fortunes and misfortunes of nations for decades. The interplay between oil dependency and economic growth has long been a subject of intrigue, as it can be both a blessing and a curse. This study delves into this intricate relationship by undertaking a comprehensive comparative analysis of countries that produce and export oil, in contrast to those that are net importers. (Smith, 2019). This research draws from a wealth of academic literature, governmental reports, and empirical data. We scrutinize the experiences of oil-rich countries such as Saudi Arabia, Russia, and Venezuela, contrasting them with oil-importing nations like Japan, South Korea, and Germany, to discern the nuances and patterns that have emerged over time. (Dehn, 2020). this comparative lens, Researcher seeks to uncover the underlying factors that determine the impact of oil dependency on economic growth. By doing this researcher work hope to provide policymakers, economists, and scholars with valuable insights that can help mitigate the vulnerabilities of nations entangled in the intricate web of the global oil market. In a world increasingly concerned with sustainability and energy transitions, understanding the intricate dance between oil and economic growth is more pertinent than ever.

II. Literature review:

(Guan, Zhang, & Ahmad, 2021) have studied the volatility of natural resources prices and its impact on the economic growth for natural resource -dependent economies: a comparison of oil and gold dependent economies. Researchers investigate how volatility in oil and gold prices affects the growth of resource-producing economies. The report is based on data from 2000 to 2020 for the top oil-producing and gold-producing countries. The study concludes that, in the long run, volatility in the oil and gold markets may be deleterious to economic growth in resource-producing nations as measured by GDP. Using PMG/ARDL methodology, our research also indicates that the influence of price volatility on economic growth is not constant across all resource-producing economies in the near run.

(Ibrar, 2021) has worked on Effect of oil prices on the economic growth: panel data analysis of world net oil exporters and net oil importers countries. This piece of writing spans the years 1972–2021. The two-way

fixed effect and pooled OLS are used to analyses the effect. I obtain noteworthy outcomes for both net oil importers and exporters. Both the net oil exporter and net oil importer statistics deviate substantially from zero. However, these findings go counter to the body of current research. My research revealed that while an increase in oil prices benefits net oil importers, it has a beneficial effect on net oil exporters' economic development. Thus, the theoretical and empirical literature is likewise not supported by these data.

(Wang, Sharma, & Jain, 2022) have worked on the relationship among oil and prices volatility, inflation rate and sustainable economic growth: evidence from top oil importer and exporter countries. This study investigates the relationship between oil price volatility, inflation rate, and economic growth in top importers and exporters countries using a variety of panel data assessors such as fixed impacts, bias-corrected least squares dummy factors (LSDVC), generalized methods of moments (GMM), feasible generalized least squares (FGLS), and random coefficients (RC). This research spans thirty years, from 1990 to 2019. The major findings show that oil price volatility has a significant negative and measurable impact on the financial development and economic growth of oil importer and exporter nations. Furthermore, oil exporting countries, particularly Norway and Canada, are vulnerable to oil price volatility.

(Dragana Ostic & Osei, 2022) have assessed the impact of oil and gas trading, foreign direct investment inflows, and economic growth on carbon emission for OPEC member countries. For the multiple regression, the fully modified least squares (FMOLS) and the generalized techniques of moments estimators were employed. An association between oil and gas export and carbon emissions was shown to be positive, while not statistically significant, based on the results of the multiple regression analysis. Conversely, a statistically significant inverse link was shown between carbon emissions and inflows of foreign direct investment. Additionally, for OPEC member nations, a positive and statistically significant correlation was discovered between economic growth and carbon emissions. The study's conclusions add to the body of knowledge on petroleum exploration operations and provide stakeholders and policymakers with guidance on how to implement policies that will support environmental preservation and economic growth in OPEC member nations.

(Wang, Guo, & Li, 2023) have worked on Exploring the role of nuclear energy in the energy transition: a comparative perspective of the effects of coal, oil, natural gas, renewable energy, and nuclear power on economic growth and carbon emission. Economic growth and rising oil and natural gas prices are positively correlated, whereas rising coal prices are negatively correlated with growth in the economy. In the meanwhile, there is a considerable positive correlation between rising oil and coal use and rising carbon emissions, but not between rising natural gas consumption and rising carbon emissions. Therefore, rising coal use raises carbon emissions rather than promoting economic growth in the 22 nuclear-powered nations. Although it raises carbon emissions, more oil use boosts economic development. While increasing the use of natural gas increases economic growth, it has minimal effect on carbon emissions. Furthermore, these nuclear-power nations have alternatives to seek economic growth without raising carbon emissions, including nuclear power and renewable energy.

(Lan & Krishanan, 2023) have analyzed Impact of International trade on crude oil in political unstable economies: evidence from quantile regression. In the second scenario, states that depend on oil imports to satisfy their domestic oil needs are significantly more dependent on energy supplies and, thus, are indirectly vulnerable to the volatility of countries that export oil. The empirical results, which employ the ideas of out-degree and in-degree centrality in conjunction with a simultaneous quantile regression technique, demonstrate that depending too heavily on oil for energy and economic purposes might pose a threat to internal stability. For both oil-importing and oil-exporting nations, the results validate the resource curse theory. Political turmoil is a necessary import for the latter, particularly when their primary energy source is crude oil.

(Nazari & Asadi, 2023) have worked on Uncertainty, budget deficit and economic growth in OPEC member countries. This study examines the impact of government budget deficits and uncertainty on economic development in 12 OPEC member nations between 1997 and 2013. The PP-GARCH approach was employed to estimate the two uncertainties, production uncertainty and oil revenue uncertainty, which were included as a proxy for the uncertainty variable due to the structure of OPEC member nations. Using the panel ARDL model, which is based on two approaches of PMG and MG for scenarios with and without uncertainty, the association between the study variables was examined. The study's findings demonstrated that, in the absence of uncertainty, tax income and the government deficit significantly hampered the economic expansion of OPEC members.

(Moghaddam, 2023) has studied on the relationship between oil price changes and economic growth in canadian provinces: evidence from a quantile-on-quantile approach. This study used the quantile-on-quantile (QQ) method to examine the link between changes in oil prices and economic growth in Canadian provinces. The employed approach takes into account the magnitude and direction of changes in the price of oil and can capture the relationship between the two variables under various economic conditions. The findings demonstrate that there is significant heterogeneity in the effects of shifting oil prices on the economic growth of Canadian provinces across various quantiles of the two variables. The findings also show that there are variations in the

link between oil production and economic development among Canadian provinces, both within and between the categories of oil-producing and non-oil-producing provinces.

(Cappelli & Carnazza, 2023) have worked on the multi-dimensional oil dependency index(MODI) for the European union. the Multi-dimensional Oil Dependency Index (MODI) for the EU-28 nations from 1999 to 2019 (the UK included). Using the multivariate Principal Component Analysis approach, this composite score takes into account four major elements of oil dependency: energy, economic, international, and geopolitical dependence. Policymakers can establish benchmarks for policy actions and highlight critical areas where they should intervene to lessen reliance by using the rankings that are subsequently determined and their variations over time. First, there is still more that needs to be done by the EU to meet the environmental goals outlined in the European Green Deal and to decouple oil consumption from GDP development. Secondly, the degree of oil reliance varies greatly throughout EU member states, and trends are not in line in a number of areas.

Research Gap:

(Guan, Zhang, & Ahmad, 2021) have studied the volatility of natural resources prices and its impact on the economic growth for natural resource -dependent economies: a comparison of oil and gold dependent economies, (Ibrar, 2021) has worked on Effect of oil prices on the economic growth: panel data analysis of world net oil exporters and net oil importers countries. (Moghaddam, 2023) has studied on the relationship between oil price changes and economic growth in Canadian provinces: evidence from a quantile-on-quantile approach. These are few researches which studied in the area of oil production sector and economic growth but there is no study has been identified in the area of comparison of economic growth in context of oil producing and oil importing countries.

Research Methodology:

Following researcher methodology has been applied for the reaching to the conclusion for above said title.

Objectives of the study:

- To identify major oil producing economies in the world.
- To identify major oil importing economies in the world.
- To study economic growth of oil producing countries.
- To study economic growth of oil importing countries.
- To compare economic growth of oil producing countries and oil importing countries.

Hypotheses for the study:

- **H₀** = There no significant difference in selected oil producing economies and oil importing economies in the world.
- **H₁**= There significant difference in selected oil producing economies and oil importing economies in the world.

Period of the study:

This study covers only the year of 2022 for the collection of data. Gross domestic product has been considered as parameter for the economic growth for the year of 2022.

Selection of Samples:

Major Economies of Oil Producing and Oil Importing:

Table No. 1: Selection of Samples

Sr. No.	Oil Producing Economies	Oil Importing Economies
	Countries Names	Countries Names
1.	United State of America	India
2.	Saudi Arabia	South Korea
3.	China	Japan
4.	Iraq	Germany
5.	Canada	Netherlands

(Source: [Production of crude oil by country, 2023 - knoema.com](https://www.knoema.com))

Data Analysis and Interpretation:

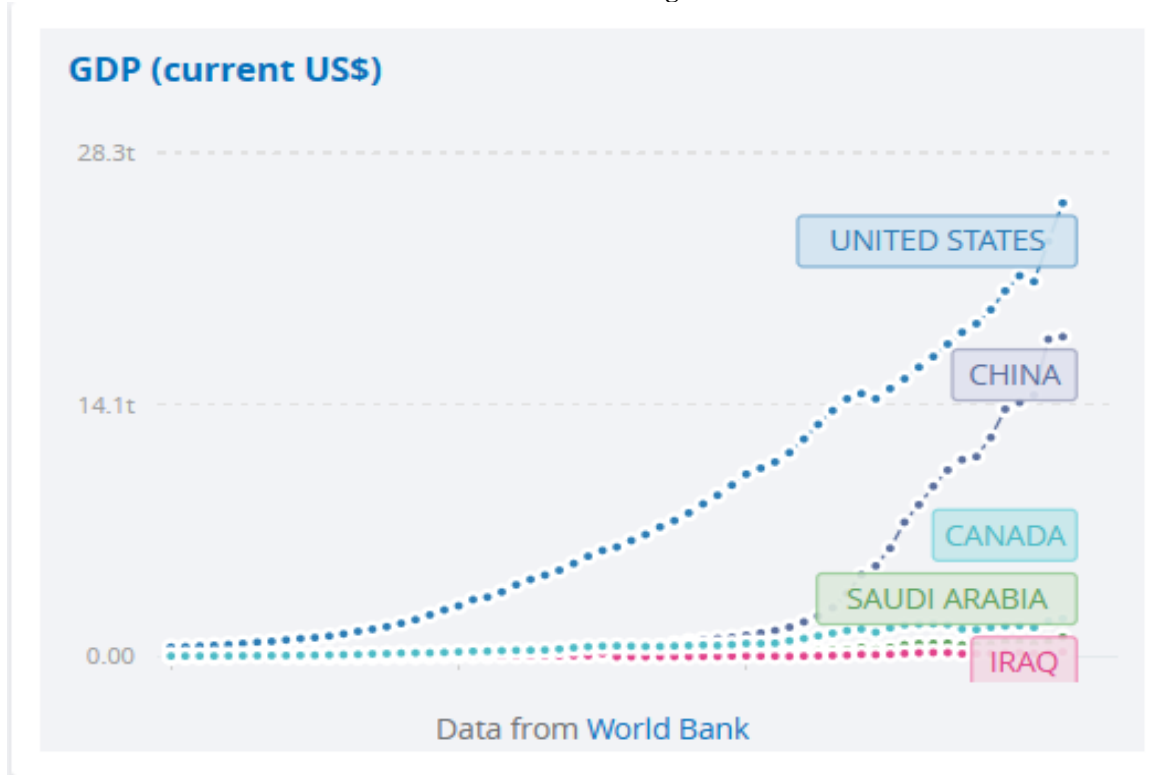
Table No. 2: Gross Domestic Product (GDP) for Oil producing and Oil importing Economies

Sr. No.	Oil Producing Economies		Oil Importing Economies	
	Countries Names	GDP (2022) (In Trillion)	Countries Names	GDP (2022) (In Trillion)
1.	United State of America	25.46	India	3.39
2.	Saudi Arabia	1.11	South Korea	1.67
3.	China	7.96	Japan	4.23

4.	Iraq	0.2468	Germany	4.07
5.	Canada	2.14	Netherlands	0.9911

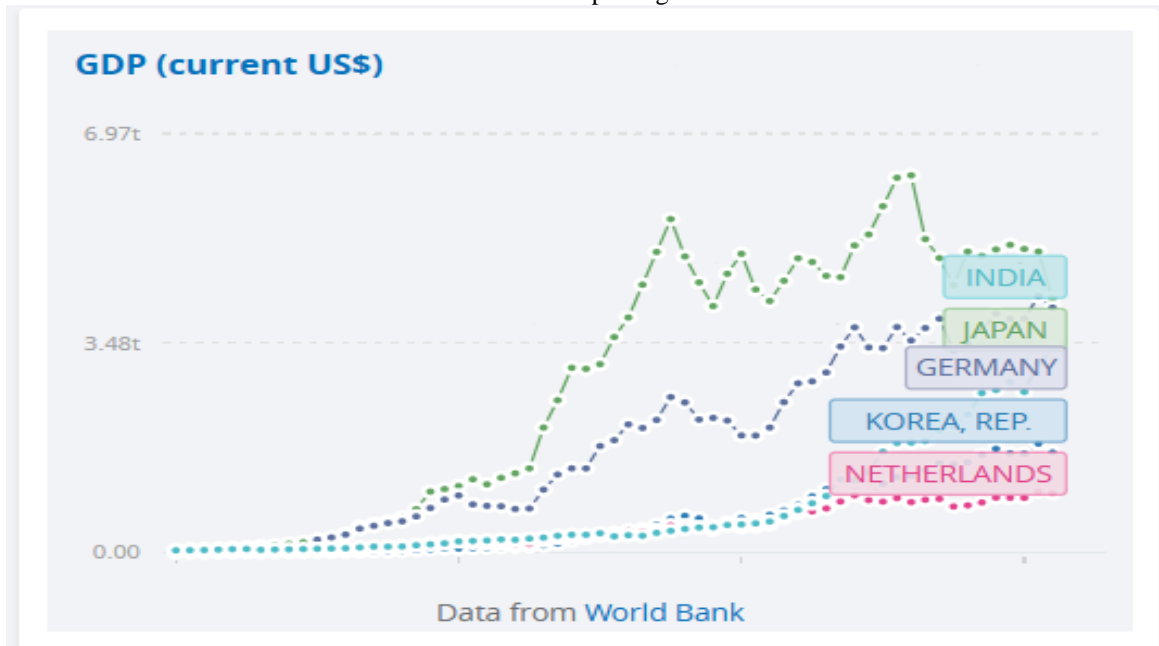
(Source: GDP (current US\$) – India, Korea, Rep., Japan, Germany, Netherlands | Data (worldbank.org) GDP (current US\$) - United States, Saudi Arabia, China, Iraq, Canada | Data (worldbank.org))

Chart No. 1: Oil Producing Economies



(Source: GDP (current US\$) - United States, Saudi Arabia, China, Iraq, Canada | Data (worldbank.org))

Chart No. 2. Oil Importing Economies



(Source: GDP (current US\$) – India, Korea, Rep., Japan, Germany, Netherlands | Data (worldbank.org))

United States of America With a GDP of 25.46 trillion, the USA is a major oil producer and has a robust and diverse economy. Saudi Arabia Despite having a smaller GDP of 1.11 trillion, Saudi Arabia is a significant oil producer, and oil plays a crucial role in its economy. China, with a GDP of 7.96 trillion, is not only a major oil consumer but also a significant producer. Its economy is diverse, with oil being just one component. Iraq having a relatively small GDP of 0.2468 trillion, Iraq is an oil-producing nation, and oil revenues are vital for its economic stability. Canada With a GDP of 2.14 trillion, Canada has a strong economy, and oil is a major contributor. However, its economy is not solely dependent on oil.

India With a GDP of 3.39 trillion, India is a substantial oil importer. Its economy is diverse, and oil imports are crucial for meeting energy demands. South Korea Despite a GDP of 1.67 trillion, South Korea is a major oil importer. Its industrialized economy relies on oil for energy and manufacturing. Japan, with a GDP of 4.23 trillion, is a significant oil importer. The country has a highly developed and diversified economy, with oil being a key component. Germany, with a GDP of 4.07 trillion, is a major European economy and relies on oil imports for various sectors. However, its economy is well-diversified. Netherland With a GDP of 0.9911 trillion, the Netherlands is a smaller economy but still imports oil to meet its energy needs.

The oil-producing economies have varying levels of economic diversification, with the USA being highly diversified, while Saudi Arabia is more dependent on oil. China's position as both a major producer and consumer reflects its economic complexity. The importing economies have diverse economies, with oil being a crucial but not exclusive factor. Overall, the GDP figures highlight the economic strength and diversity of these nations, emphasizing their roles in the global economy.

The global oil market is complex, with both major producers and importers contributing significantly to the world economy. The figures emphasize the interdependence of nations, as oil-producing economies supply the needs of oil-importing economies, contributing to a globally interconnected economic landscape.

Hypothesis Testing:

Table No.3: F-Test of Identification of Equality of Variance

F-Test Two-Sample for Variances		
	<i>Oil Producing Countries</i>	<i>Oil Importing Countries</i>
Mean	7.38336	2.87022
Variance	111.2189	2.132566
Observations	5	5
df	4	4
F	52.15263	
P(F<=f) one-tail	0.001049	
F Critical one-tail	6.388233	

Table No.4: T- test

t-Test: Two-Sample Assuming Equal Variances		
	<i>Oil Producing Countires</i>	<i>Oil Importing Countries</i>
Mean	7.38336	2.87022
Variance	111.2189	2.132566
Observations	5	5
Pooled Variance	56.67576	
Hypothesized Mean Difference	0	
df	8	
t Stat	0.947873	
P(T<=t) one-tail	0.185472	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.370943	
t Critical two-tail	2.306004	

Above table indicated F-Test and T-test for the testing hypotheses. F-test used for the identification of equality of variance and T-test has been used for the identification of difference in GDP for oil producing and oil importing economies. The test has been performed 5% level of significance. The p-value of two tailed test indicated 0.37 which is more than 0.05 that means there is no significant difference in GDP of oil producing economies and oil importing economies during the study period.

III. Findings

- The analysis reveals that oil-producing economies like the United States, Saudi Arabia, China, Iraq, and Canada have diverse economic structures. While oil plays a significant role, these nations are not solely dependent on it, showcasing economic resilience and versatility.
- The interplay between oil-producing and oil-importing economies is evident. Major oil producers like the USA, China, and Saudi Arabia contribute to meeting the energy demands of importing nations, fostering a global interdependence in the oil market.
- China stands out as a major player, being both a substantial oil consumer and producer. Its large GDP reflects a complex economy with multiple sectors, indicating a balanced approach to energy and economic development.
- Nations like Iraq, with a smaller GDP, demonstrate the importance of oil revenues for economic stability. For these countries, oil production serves as a critical source of income, albeit with potential vulnerabilities due to reliance on a single commodity.
- Importing economies such as India, South Korea, Japan, Germany, and the Netherlands showcase diverse economic structures. Oil is crucial for these nations, but their economies are characterized by a range of industries, highlighting resilience against oil price fluctuations.
- The high GDP figures of major players like the USA, China, and Japan underscore their economic strength. These nations contribute significantly to the global economy, and their positions as both producers and consumers make them key players in shaping international economic dynamics.
- The analysis indicates that many nations, whether oil producers or importers, have pursued balanced economic development. They don't rely solely on oil and have diversified economies, reducing vulnerability to the fluctuations in the oil market.

In summary, the findings emphasize the intricate connections and diversity within the global oil market, illustrating the multifaceted roles of nations in both producing and consuming oil.

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