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Russia's Power on Energy: An Analysis of Dependency on Russia's Crude Oil

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Abstract: This paper presents a methodology that integrates data and policy analysis to investigate the dependency of countries on Russian crude oil and the extent of Russia's energy power. Specifically, the study examines the global crude oil market and international policies, identifies the relationship between crude oil market demand and supply, and assesses the impact of national energy policies on this relationship. The research also investigates the dependence of major crude oil exporters on Russian oil. By combining these indicators, the paper concludes that while China and Europe are reliant on Russian crude oil in terms of market performance, they are not entirely dependent on it from a policy perspective. Hence, other policy factors diminish Russia's energy power.

Keywords: energy power, demand and supply relation, dependency on Russian crude oil, energy transition, energy security

1. Introduction

Energy trade has a vital role for Russia. Energy revenues are a large component of Russia's fiscal revenue; furthermore, Russia's military operations require substantial financial support. Russia's military expenses compose 20% of the world's military expenses in 2021; meanwhile, over a third of Russia's federal budget comes from energy export revenue [1]. Additionally, Russia's continued geopolitical influence and power in political negotiations; for many countries depend on Russian energy sources. These countries include not only Russia's strategic partners, such as China and India, but also NATO countries, which Russia has long viewed as a threat, and many of whose members are also members of the European Union. As a response to the invasion of Ukraine by Russia, in June 2022, the European Council adopted a sixth set of sanctions that prohibit the purchase and import of seaborne crude oil from Russia to the EU. Since some EU countries are dependent on crude imported by pipeline, the sanction does not cover this area. However, by the end of 2022, the sanction initiative could reduce imports of Russian crude oil by 90% [2]. However, the EU is facing energy insecurity fears. Before the EU sanctions against Russia came into effect, and while the war in Ukraine was going on, the NATO country Germany bought a lot of Russian crude oil to stabilize its oil stocks [3]. It is clear from the preceding that Russian oil export is critical for both Russia and the EU countries, and that mutual dependence is the result of the demand-supply relationship. However, international policy factors can break this relationship; for example, when the global energy transition occurs, or new importers are found to replace Russia, this dependence of the demand side on the supply side will be dismantled, and Russia's energy power as the supply side will be reduced.

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In this paper, the dependence of countries on Russian oil energy provides an indication of Russian energy power after its invasion of Ukraine in 2021. In more nuanced terms, this paper indicates the dependency of Russia's major crude oil exporting countries on Russian oil by integrating the market economy and international policy perspectives. Furthermore, the analysis of the supply and demand relationship of Russian oil exports demonstrates the dependency of Russian crude oil exporting countries from the perspective of the marker. Also, this approach is to analyze the dependency on Russian crude oil according to the supply and demand relation of Russian crude oil exports from a market perspective. As a result, the purpose of this paper is to first identify the major supporting states of Russian crude and the main component of Russia's crude oil export revenue. Russia, as a crude oil exporter, is the supplier side of the supply-demand relationship, and an examination of the destination composition of Russia's crude oil exports reveals the extent to which Russian crude oil export revenue is dependent on the exporting countries. After the research on the major import states of Russian crude oil, the range of research on policy narrows to the EU and China, which together compose 77% of Russia's crude oil export. Then this paper examines the demand side, that is, the degree of dependence of crude importer countries on Russian crude oil. In this section, this paper focuses on the policy factors that influence the dependency on Russian crude oil. The policies cover both the issues of energy security and energy transition. Lastly, the paper concludes that Russian energy power is not only determined by market supply and demand, but also by policy-level factors that affect the dependence of individual countries on Russian crude oil. The paper concludes with the prediction that Russia will gradually lose its energy power as a result of international and global emerging energy innovations in the EU.

2. Literature Review

Prior empirical research on the dependence on Russian crude oil has focused on the demand and supply relationship between Russia and other importing countries; however, such approaches do not explain the complexities of importing countries' energy policies. In addition, the prior measurement of dependency is based on precious data collected, and it does not represent the factors of policy change on dependency; therefore, it is not able to provide a measurement that includes prediction values for international policy practitioners. For instance, the import rate of Russian crude oil in both the EU and Germany increased compared to the previous year in 2022. Due to the limitation on the analytic skill of the author of this paper, this paper focuses on a set of indicators including the demand and supply relations and policy factors to determine the dependency on Russian crude oil rather than an index with empirical evidence and measurement. In addition, empirical measurement of the dependency on Russian crude oil that combines both the import index and the policy factors could be a potential research topic with significance in the future. It would be beneficial for both international policy practitioners and scholars.

3. Indicators on Dependency

In this paper, the dependencies on Russian crude oil of exporter states are determined by the indicators of dependency, rather than a measurement that focuses on empirical evaluations of dependency. The indicators of dependency on Russian crude oil are based on the net imports from Russia and total imports of crude oil; also, the policy factors focus on the alternatives for Russian crude oil by energy transition and energy preservation. As mentioned above regarding the research gap, the contemporary measurement of dependency on crude oil import is determined by the net imports and products supplied; however, such an approach is not able to explain the complexity of energy policies of importing countries. First, consider the policy factors that for example, importing countries' use of Russian crude oil is distributed differently. For example, prior measurements of dependency do not

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account for the impact of policies on energy transition on countries' reliance on crude oil. Furthermore, the use of crude oil could be replaced by other alternatives. For example, following the sanctions imposed on Russia by EU countries, many EU countries are gradually transitioning away from reliance on Russian crude oil through an energy transition policy, and looking for alternatives for oil energy. Germany uses Russian oil primarily for freight roads (13%), transportation (13%), and agriculture (9%) [4]. Moreover, the current technology in sustainable development allows Germany to fully transition to sustainable and environmental approaches for public transportation, freight roads, and agriculture. Therefore, there is an opportunity of getting rid of the dependency on Russian crude oil. Furthermore, the policy factor of energy security also has an influence on countries' dependency on Russian crude oil. For instance, even though Russia is the third producer of crude oil in the world, there are also alternatives to the supply of oil. For instance, the United States, Saudi Arabia, and other gulf region states have the reserve to back up the supply of crude oil trade globally. In conclusion, the indicators of the dependency on Russian crude oil are not only determined by the demand and supply relation between Russia and other importing countries but also the international energy policy influences on the dependency on Russian crude oil.

4. Demand and Supply Relation

In the below figures, there is a high demand for Russian crude oil according to the demand and supply relation between Russia and its crude oil export destination states. As mentioned above, China and the EU compose 74% of Russia's crude oil export (figure 1); meanwhile, Russia is the top 1 crude oil import source Russia is the of the EU, with 29% of the composition (figure 3), and the second biggest crude oil import source of China with 16% of the composition (figure 2). Therefore, the analysis of the policy factors would mainly focus on the EU and China, because of their significant portion of crude oil on both export on Russia's side, and on import of Russian crude oil on their side. Furthermore, the dependency of Russia's crude oil revenue relies on the EU and China more than the EU and China rely on imports from Russia.

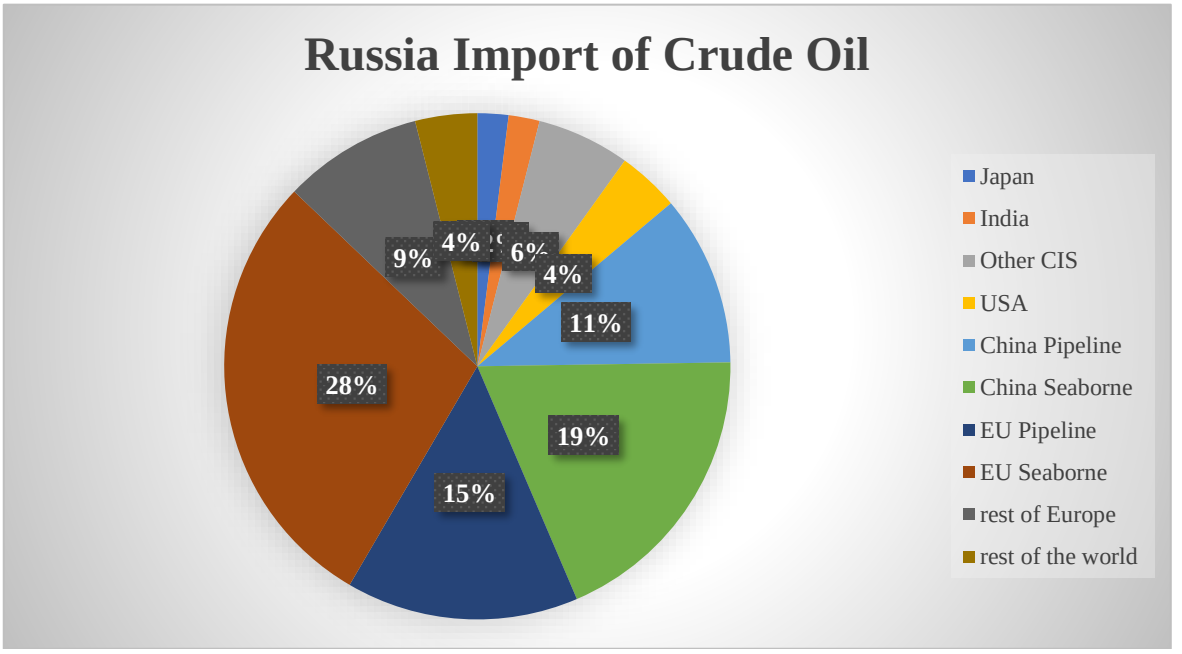

Figure 1: Russia import of crude oil.

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Figure 1 shows the percentage distribution of Russia's import of crude oil by country and transportation mode. The graph indicates that Russia imports crude oil from various countries, with China Seaborne being the largest transportation mode at 28%, followed by EU Seaborne at 16%. The other transportation modes include China Pipeline (15%), EU Pipeline (11%), and rest of Europe (9%). Among the countries, Russia imports most of its crude oil from Other CIS (28%), followed by rest of the world (22%), and then China (19%).

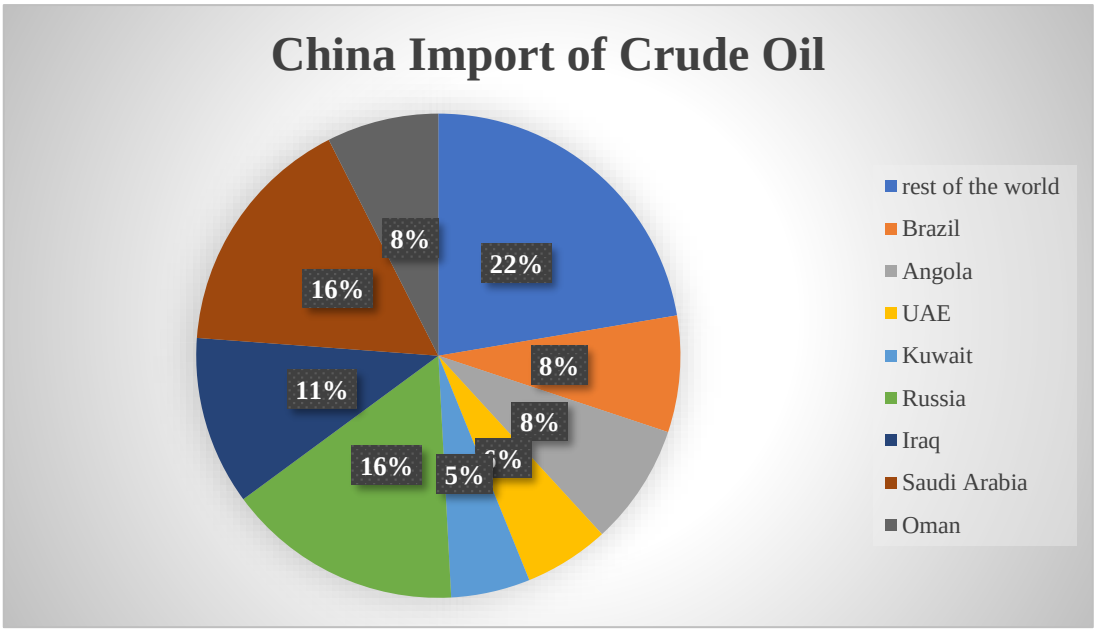

Figure 2: China import of crude oil [5].

Figure 2 displays the percentage distribution of China's import of crude oil by country. The graph indicates that China imports most of its crude oil from rest of the world at 45%, followed by Russia at 16%, and then Angola at 11%. The other countries include Brazil (9%), UAE (8%), Kuwait (7%), Iraq (6%), Saudi Arabia (5%) and Oman (5%).

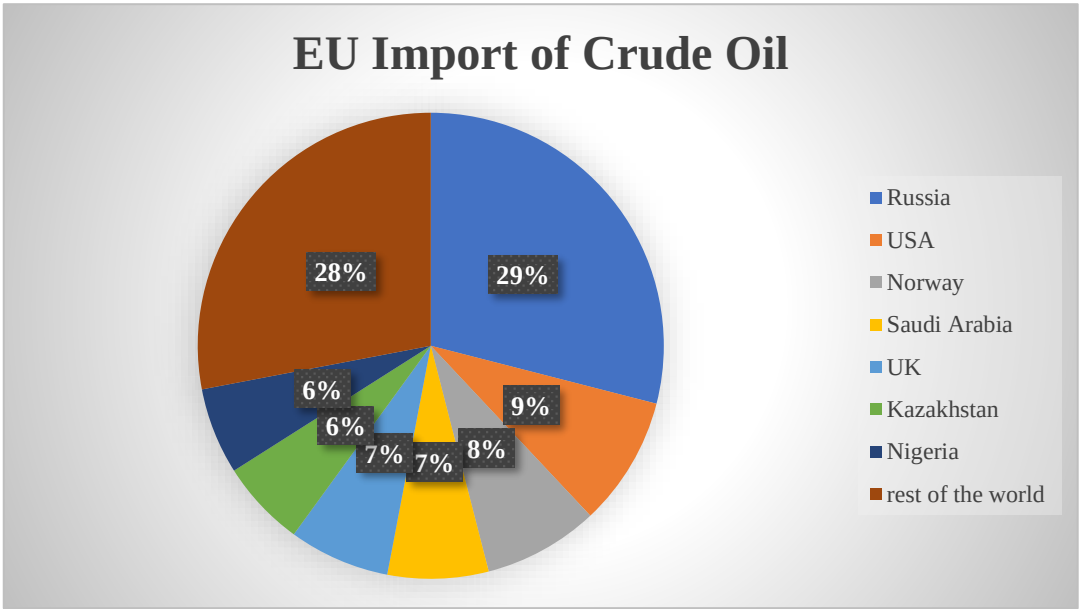

Figure 3: EU import of crude oil [6].

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Figure 3 illustrates the percentage distribution of EU's import of crude oil by country. The graph indicates that EU imports most of its crude oil from Russia at 29%, followed by Norway at 28%, and then Saudi Arabia at 8%. The other countries include USA (9%), UK (7%), Nigeria (6%) and Kazakhstan (5%).

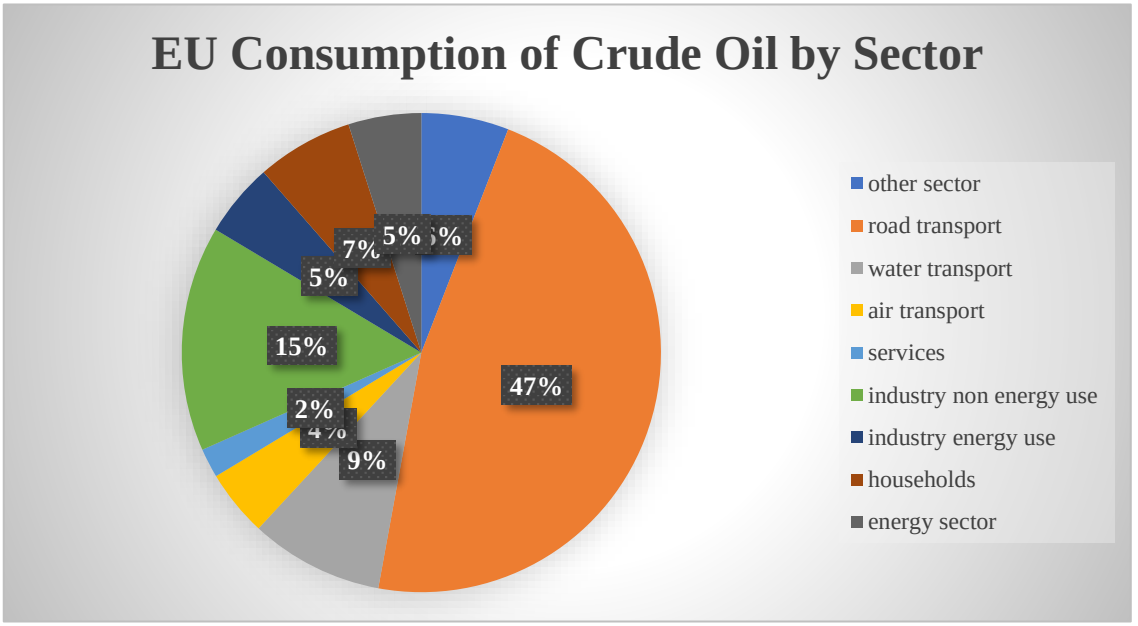

Figure 4 : EU consumption of crude oil by sector [7,8].

Figure 4 shows the percentage distribution of EU's consumption of crude oil by sector. The sectors included in the graph are energy sector households industry-energy industry-non energy use air transport water transport road transport and other sectors.

5. Policy Analysis

5.1. European Union

In addition to international market factors, there are also geopolitical factors in the relationship between EU countries and Russia in crude oil trade. First, Russia has always been sensitive to the expansion of NATO, and even Russia's self-stated reason for invading Ukraine is its opposition to NATO's expansion. At the same time, there is a significant overlap in the membership of the EU and NATO, and the major EU countries are also NATO countries, for example, France and Germany. Therefore, there is an urgency to get rid of dependence on Russian crude oil. According to the European Commission, in response to the sanction prohibiting the import of Russian crude oil, the EU has proposed energy policies that help to maintain energy security while improving the development of energy transition and energy security, aiming to reduce the reliance on Russian crude oil import.

When the EU announced its sanction of crude oil imports from Russia, the main challenges for the EU in terms of energy security policy were the rise in crude oil prices and the insecurity of crude oil reserves. In response to the challenges, the EU has addressed policies that aim to ensure energy security. Figure 4 shows that road transport accounts for nearly half of the crude oil consumption by sector. In recent years, the EU has proposed several initiatives aimed at replacing existing modes of transportation in order to achieve the vision of the EU's Paris Agreement and, ultimately, a reduction

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in CO2 emissions. Because crude oil is primarily used in transportation, the new transportation method can effectively reduce crude oil consumption, and it is a simple task for EU countries.

5.2. China

Even though China and Russia are strategic partners, China's energy policy is more focused on its own interests. China's approaches toward energy independence are the main guidelines of China's energy policy. China's energy independence is intended to help China move away from a single source of energy and to provide a sustainable resource for China's social and economic development. In the context of China's energy independence, China is attempting to secure a supply of fossil fuel energy while maintaining the use of clean coal resources and exploring cleaner energy sources to gradually replace energy types that have a negative impact on the natural environment. Energy security has a vital role in China's economic development, so China values crude oil reserves. According to the policy guidelines of the Chinese State Council, China's energy imports, especially oil imports, have continued to grow steadily since the 18th Communist Party Congress in order to ensure energy security. Also, China is also attempting an energy transition as it aims to achieve its goal of zero carbon emissions by 2030 [9].

As the West began to collectively sanction Russia and halt imports of Russian crude oil, China chose to purchase large quantities of Russian crude oil at low prices. However, based on the import index, China appears to be dependent on Russian crude oil, as low prices allow China to import Russian oil in large quantities; however, simple figures do not directly indicate China's dependence on Russian oil, as they ignore China's energy security policy [10].From this perspective, China is dependent on Russian crude oil, as Russia is the second largest importer of Chinese crude oil. However, China's oil trading partners are diverse, and China can also adjust China's relations with crude oil importers through national consultation and cooperation. According to the Chinese State Council's policy summary, China has implemented a policy of prioritizing the development of non-fossil energy sources after the 18th National Congress, with a focus on coal and crude oil. The new energy policy states that solar and wind energy should be developed to replace dependence on coal, natural gas, and crude oil. Wind and solar energy can be converted into electricity for the development of energy-washing vehicles and agriculture. China is also encouraging the development of new energy vehicles; moreover, there is a trend for new energy vehicles to replace traditional vehicles [9].

As a result, China is reliant on Russian crude oil, but this reliance does not place Russia in a strategic position. In terms of energy policy, China's energy security and energy transition policies may help China reduce its future reliance on Russian crude oil for social production.

6. Discussion

The dependency on Russia's imported crude oil mentioned in the literature review is based on the conclusion of the past imports index, but the indicator on dependency is a concept that focuses on the prediction of dependency that includes the factors of policy changes that influence supply and demand relations. For instance, by simply implying the import index of Germany’s Russian crude oil import, it seems that Germany’s reliance on Russian crude oil is high. However, such an approach does not explain the complexity of the policy factor that reduces the reliance on Russian crude oil imports. In this research, the indicators of dependency on Russian crude oil do not only include the import index used by prior literature but also add policy factors. The existing literature on Russia's crude oil imports has primarily relied on the past imports index to assess the level of dependency on Russian crude oil. However, the concept of dependency involves predicting the degree of dependence, and considering the policy changes that may affect the demand and supply relationship. For instance, a simplistic approach to evaluating Germany's dependence on Russian crude oil may involve merely examining

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its import index. While this index suggests a high level of reliance, it fails to account for the complexity of the policy factors that may reduce the dependence on Russian crude oil imports. To overcome this limitation, this study incorporates policy factors along with the import index to construct more comprehensive indicators of dependency on Russian crude oil.

7. Conclusion

This paper combines the analysis of market supply and demand and policy factors for the two main crude oil exporters of Russia, China, and the European Union, and concludes that the determining factor of Russia's energy power is not only the supply and demand on the resource market but also the energy policy of each country. This is because these energy policies can influence the amount of crude oil used in each country. At the same time, this paper also reflects that for resource-dependent indication, it is not known to consider supply and demand, but also to consider other policy factors. The only regret of this paper is that there is no way to find out the measurement of a specific number, such as an index, that can include the policy factor as well, due to the author's ability limitation.

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