

Oil Price Volatility, Macroeconomic Policy & Economic Growth

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Abstract. Since oil entered the production and life of mankind, it has profoundly affected and changed the whole world. With the continuous development of society, oil has become one of the indispensable energy sources for modern industrial production and life. At the same time, petroleum, with its special commodity attribute, is closely linked with national strategic interests and is an important strategic material for all countries in the world. The fluctuation of the international oil market and the change in the oil price are pulling the development of the global economy, even contributing to the outbreak of the financial crisis. In this paper, the three major oil crises in history as a starting point, from the nature of oil to seek the international oil price fluctuations, and fluctuations of the theoretical basis to build a new theoretical analysis of international oil price fluctuations path. From the aggregate supply, aggregate demand, and other, specific aspects of the impact of international oil price fluctuations on the macroeconomy. At the same time, an analysis of China and the west monetary policy explores the national currency, monetary policy, and international crude oil price fluctuations between the relationship. Finally, the paper discusses the influence of the fluctuation of international crude oil prices on the national macro-economy, and takes China as an example, drawing the conclusion that the change in oil prices will have many influences on the national macro-economy.

Keywords: International crude oil prices, monetary policy, emerging economies.

1. Introduction

The outbreak of the Russian-Ukrainian War in 2022 has directly or indirectly affected the international political and economic situation. As the world's major energy supplier, Russia has a large amount of crude oil, natural gas, and other non-renewable resources, the European Union and China are heavily dependent on Russia, Roth's oil, gas and coal, and other fossil fuels. As a result, economic sanctions against Russia will have a significant impact on the economies of many countries. The ups and downs of international oil prices will bring a great impact on the world economy, there have been three impacts in history, a more extensive oil crisis appeared in 1973, 1979, and 1990.

The first oil shock came in the context of the fourth Middle East War, which broke out in October 1973. The aim was to crack down on Israel and the countries that supported it. The OPEC organization of the Petroleum Exporting Countries (OPEC) announced an oil embargo and suspended exports, and the withdrawal of the right to price crude oil, so that oil prices more than doubled, thus causing the world after the Second World War the most serious economic threat [1]. At the end of 1978, the revolution that overthrew the Pahlavi dynasty in Iran, the world's second-largest crude exporter, brought about serious political upheaval. Within a few months, Iran stopped exporting oil, causing global oil price volatility and supply constraints. The second time, the oil crisis was born.

In addition, the outbreak of the Iran-Iraq war in 1980 led to the complete cessation of oil production in the two major oil-saving countries, with a serious impact on world oil production. At the same time, the OPEC organization also split, lost to the oil market, the ability to regulate. The oil crisis exacerbated the economic crisis of the time and was one of the causes of the economic decline of the West in the late 1970s [1]. The outbreak of the Gulf War in 1990 was the trigger for the third oil war. Because of the war on Iraq's international economy, sanctions led to the disruption of Iraq's oil supply, and the global oil price soared. Fortunately, when the International Energy Agency launched its contingency plan, oil-rich countries such as Saudi Arabia increased production, quickly stabilized oil prices, and caused less global economic damage than in the previous two crises [1]. Many studies show that oil shock is an important variable that causes world economic fluctuation. In recent years,

many scholars are studying the worldwide economic depression caused by the oil crisis. This paper will also analyze the impact of oil price fluctuation on the macroeconomy.

2. Analysis of Core Factors Affecting International Oil Price Fluctuation

The global economy is highly dependent on oil prices, and fluctuations in these prices can have significant impacts on macroeconomic variables such as inflation, trade balances, and economic growth. By analyzing the core factors that affect international oil price fluctuations, policymakers can develop more effective response policies to mitigate the negative impacts of these fluctuations. To reduce the impact of oil prices on the global economy, it is very important to analyze the core factors affecting international oil price fluctuations, to make a good response policy in advance.

2.1. Basic Properties of Oil Price

Oil is a resource product, commodity, and financial and political multiple attributes of special goods, it also means that the system of price forming machine and the wave principle is relatively complex. Petroleum is a kind of non-renewable fossil energy, which has limitations, extensive use, spatial distribution, and unbalance of natural resources [2]. As a mineral resource, oil cannot be regenerated in a short time and its total amount is relatively fixed. The finite nature of oil results in significant price fluctuations when its size and reserves change. In recent years, the idea of “Green life” has been propagandized, and people pay more attention to the “Surplus reserves” of oil because of the predicament of the depletion of fossil resources such as oil. One of the uses of oil, nicknamed the “Black blood” of industry, is that it has a wide range of uses, including fuels, solvents, bitumen, etc... It has penetrated all aspects of people's lives; it has high industrial value and low-price elasticity of demand. In addition, the global distribution of oil is very uneven, more than 70% of the recoverable oil is in the Middle East region, with obvious spatial distribution, and imbalance. The unbalanced distribution of resource space makes the problem of energy monopoly occur frequently, which leads to conflict.

As a class of industrial products, from production to consumption, the price of oil is affected by supply and reserves. At the same time, oil, the world's largest traded commodity, is a key factor in the creation of social wealth [3]. Oil operates according to the law of market economy and follows the theory of product pricing in the field of economics. Therefore, its price is greatly influenced by the cost of production. The financial nature of the oil can be reflected in many ways. In terms of currency, the “Petrodollar clearing system” pegs the price of oil to the US dollar, keeping the US dollar highly correlated with the price of oil. As a commodity, oil, like gold, has the characteristics of value preservation and appreciation, the price is relatively stable, and the change is small [2]. However, after entering the capital market, the speculation phenomenon of oil trading also increases day by day, and the attribute of capital also gradually aggravates. The financial nature of oil not only breaks down the barriers between financial markets, such as oil spot and futures but also, because it is the upstream raw material for many commodities, leads to a stronger market among the prices of many commodities, field correlation [2]. For example, the uneven spatial distribution of oil leads to the change of its price with a certain political color. Most of the world's oil suppliers are in the Middle East, and most of the major energy-consuming countries have the problem of lack of oil resources, and the political stand of both sides, etc., lead to the fluctuation not fully conform to the law of economics.

2.2. Factors Impact International Oil Price Fluctuations

The factors of international oil price fluctuation are mainly discussed from the angle of supply and demand, geopolitics, and other special angles such as climate, conditions, and so on.

2.2.1 Supply-side factors

The supply-side factors that affect the fluctuation of international oil prices are mainly the production and supply of world oil. The global distribution of crude oil is not uniform, the Middle

East, Central and South, and North are the world's largest relative reserves of crude oil. In view of the geopolitical structural characteristics of the world's oil resources, the extremely unbalanced distribution of the global oil resources reserves has caused an imbalance between the output and supply of crude oil in various countries, thus triggering the monopoly of oil production, increasing market competition, resulting in geopolitical, political conflicts, and so on [4]. Oil resources are organic organisms in the mountains and rivers under the years of "Precipitation", in the long time accumulated and "Buried" in the land, land or sea. Therefore, the production cost of oil exploration and production has become an important factor affecting the production and supply of the international oil market. The natural environmental conditions in which oil resources are buried have become a key factor in determining the cost of oil production, but with the development of technology and progress, the disadvantages of the natural environment in the process of exploitation can be offset to some extent [4].

2.2.2 Demand-side factors

Since 1965, the world economic growth rate and the global oil and gas consumption growth rate have shown obvious synchronous changes. In this process, because the 20th century 70's to 90's three times the oil crisis caused by the world economic crisis, making the world, the economic growth rate obviously weakens. After the first oil crisis, the worst global economic crisis since World War II, world economic growth fell to 0.74 percent in 1975, from above 5 percent before, world oil consumption also showed negative growth in 1974 and 1975 [4]. In the long run, advances in energy technology can directly reduce the demand for oil in economic production and social life, and ultimately reduce the dependence on fossil energy consumption, therefore, it becomes an important demand-side factor that affects the fluctuation of international oil prices.

2.2.3 Geopolitical factor and others

As an important strategic material, oil has become the focus of competing for resources [5]. Therefore, this has become one of the key reasons for the oil price volatility, skyrocketing. The Middle East War in the first oil crisis, the conflict between Iran and Iran in the second oil crisis, and the Gulf War in the third oil crisis are all conflicts over oil interests. This factor also affects the country, and the international oil price is in a pivotal position. The financial nature of oil pegs oil trading to the dollar, so that changes in the exchange rate between the dollar and other currencies have a direct impact on the real prices at which oil products are bought and sold [6]. Global warming, the greenhouse effect, and other abnormal weather will also affect the extraction of oil and other work. Extreme weather can even cause irreversible damage to production facilities, leading to disruptions in the supply of oil.

3. Impact of Oil Price Shock from the Perspective of Monetary Policy

The oil price fluctuation caused by the outbreak of the oil crisis will trigger the adjustment of the monetary policy of various countries, and the adjustment of the national monetary policy may further expand the oil price shock effect, a study of the different reforms of monetary policy by the central bank authorities would be useful in preparing a response to a possible oil shock.

3.1. A Comparative Analysis of Chinese and Western Monetary Policies

The central bank of the western capitalist countries mainly takes the control of the currency held by the citizens and the base money of the banks to regulate the total amount of money in circulation in the socioeconomic operation [7]. Since modern times, western countries have established such monetary policies as the "Bretton Woods system" and the "European monetary system", which hinder the independent development of each country. With the further development of the market economy, countries pay more attention to establishing an independent monetary policy system under a floating exchange rate. Therefore, the monetary policy framework of Western countries is not eternal and

changeable, but an optimal setting according to the development trend of the market economy, international relations, and national conditions [7].

In contrast to the western monetary policy, the Chinese monetary policy is based on money supply as the intermediate target of monetary policy, and its monetary policy adopts a multi-objective system, that is, considering the inflation rate, economic development, balance of payments and other aspects. In China, after the gradual development of the Socialist market economy market, interest rate liberalization was basically achieved by the end of 2015. However, there are still many partners, this occurs with problems such as capital outflows, interest rate fluctuations, or increased financial burdens [7]. Since 2005, China has no longer fixed the exchange rate the combination of the US dollar and the Chinese dollar and has gradually promoted a floating exchange rate system adjusted for the development of a market economy.

Through the above-mentioned interpretation of the Chinese and western monetary policy, we can see that the two are very significant differences in that the developed countries in the west, generally have a mature and perfect monetary policy adjustment system. Because of China's social nature and historical reasons, the development of the market economy is still in a state of constant development, interest rate marketization and monetary policy regulation marketization are still in the stage of development and perfection. In terms of monetary policy tools, China's commonly used tool is the deposit and loan benchmark interest rate, while the western developed countries use the central bank, the bank's strong market participation, to influence the market interest rate, it then channels interest rates through its financial system to the real economy [7]. In the transmission mechanism, interest rate, asset price, and exchange rate are the three most efficient ways in western countries, while China pays more attention to the credit transmission mechanism.

3.2. The Impact of Monetary Policy on International Crude Oil Prices

Compared with the previous two oil crises, the fluctuation of international oil prices after 1986 is more severe, but the influence of oil price fluctuation on the main, macro variables is not as significant as that before 1986, the relationship between national oil price fluctuation and macro-economy shows a trend of gradual weakening. Since the 1980s, scholars have found a dynamic change in the relationship between the two: on the one hand, the impact of oil price fluctuations on the macro-economy has shown asymmetry, on the other hand, the relationship between the fluctuation of international oil price and the macro-economy is gradually weakened, and the macroeconomy is affected by the oil price, the impact of the impact has weakened.

3.2.1 Tight monetary policy

The increase in the social price level caused by the increase in the oil price will make the national economy face the threat of inflation. At this time, adopting the tight monetary policy will help to restrain the increase of the price level, but it will also cause the gradual reduction of the overall productivity of society, easy to lead to the country, the People's economic downturn [8]. Higher oil prices will lead to small and medium-sized enterprises using less oil, directly resulting in a reduction in total demand. At this point, the adoption of tight monetary policy measures will make the total demand smaller. Therefore, when oil prices go up, the use of tight monetary policy measures in the short term will lead to a reduction in total demand.

3.2.2 Expansionary monetary policy

A sustained rise in oil prices will lead to a decline in total output, which will lead to cost-push inflation if the central bank is to maintain steady economic growth and adopts an expansionary monetary policy [8]. Oil prices rise, and the economy will occur in the short-term price increases and real output, volume decline coexistence situation. As real output falls, the number of unemployed will rise above the natural rate. In such a situation, the government's finances would be under great pressure due to the demands of Society for the restoration of full employment. Suppose that the Central, banking, and government authorities increase the money supply through an expansionary monetary policy, and as a result aggregate demand rises further. Expansionary, monetary policy will

result in the real aggregate output below the perennial average level, but the price level will increase further. Crude oil producers, to restore the relatively high price of crude oil, will continue to increase the price of oil. The actual number of people out of work at this time is higher than the natural number of people out of work, and because the government adopts an expansionary monetary policy, increasing the supply of goods, will make the total demand rise further. Continued use of expansionary monetary policy would lead to a spiral of rising prices, which would lead to cost-push inflation, even though full employment would recover [8].

3.3. The Impact of International Crude Oil Price Shocks on Monetary Policy

Crude oil, as an important fossil energy and raw material for the production of products, under the background of high oil prices caused by the oil crisis, will inevitably cause a continuous rise in the price level and eventually lead to inflation, affecting the country's macroeconomic environment. The theory of interest rate channel and the theory of real balance effect are the main ways to spread the influence of crude oil price fluctuation on monetary policy. The main connotation of the interest rate channel theory is that the fluctuation of the oil price affects social development by changing the interest rate. International originally, the change in oil price will lead to a change in interest rate, the change in interest rate will change the amount of social output, thus affecting the government's adjustment of monetary policy [9]. The basic idea of the theory of the real balance effect is that the real balance value of money will change with the change in price. As a result, the ratio of consumption to saving changes, and the type of consumption changes to a certain extent, thus affecting the direction of consumption and investment of the consumer [9].

4. Impact of High Fluctuations in International Oil Prices on National Macro-Economy

As a basic energy product, oil and oil-related products are widely used in all aspects of domestic social production and life. The rise in oil prices will permeate all aspects of social life, this eventually led to an overall rise in domestic prices. Therefore, the large fluctuations in oil prices have a great impact on the macro-economy of each country. To stabilize the domestic macroeconomic situation, the study of oil price fluctuations is very important.

4.1. Aggregate Effect of International Oil Price on Macro-Economy

Supply Shock is an important part of analyzing the impact of oil price fluctuation on the macro-economy from the perspective of supply and demand. When the price of oil increases, industries tend to reduce their use of oil, which may lead to a proportionate decline in the ratio of other production factors to their production factors, there has even been a decline in labor productivity and the volume of output of products, triggering layoffs in factories, leading to even greater declines in production, rates, and output, creating a vicious circle [10]. Besides, the CPI index is one of the important indicators to measure inflation, and oil is an important component of CPI calculation, so the fluctuation of oil prices will have some influence on the inflation index [10]. An increase in the price of oil will raise the price of the corresponding downstream products, driving up the inflation index and affecting the consumption structure of consumers. People usually save more and consume less. The increase of oil price will lead to inflation, and inflation may directly lead to a rise in price. The central bank will adjust monetary policy in response to inflation. Normally, monetary authorities would raise domestic interest rates, a move that would normally lead to a reduction in consumption and investment, with negative effects on economic development [10]. Therefore, the transmission effect of monetary policy is indirect.

4.2. The International Oil Price Affects the Distributional Effect of Macro-Economy

In today's world, the degree of economic globalization is increasing. On the one hand, it's good for the world's resources to be better allocated, to promote economic development; on the other hand,

when the price of resources increases, it will cause a huge impact on many countries concerned, resulting in global, wide-ranging losses. The effects of oil price volatility are usually transmitted through both investment and trade channels [10]. Rising prices for energy such as oil could have a different effect. One possibility is to raise the CPI to a certain extent to promote economic recovery; another possibility is that the increase in production costs of enterprises is too large to be offset by the rise in commodity prices, and the profits of enterprises are affected, affecting the production level of society. The above phenomenon reflects the expected uncertainty of oil price fluctuation, people tend to reduce consumption of oil products, products, and consumption, resulting in economic weakness [10].

4.3. Case Analysis: China

In recent years, the world's economic trade more and more frequent, and the degree of economic globalization is increasing. The fluctuation of international oil prices will lead to the "Butterfly Effect", and the Chinese economy will also have a certain impact. At the same time, China is a globally important crude oil import, the country, the domestic economic situation will also have an impact on international oil prices.

4.3.1 Mechanism of the impact of international oil prices on China's economy

In this part, three important indicators of China's economy, industrial output, consumer price, and economic growth are chosen, and analyze the mechanism of the impact of international oil price fluctuation on China's economy. In the aspect of industrial output, the fluctuation of international oil prices has both positive and negative effects on China's industrial production. On the one hand, as crude oil is the raw material of many industrial products, the rise and fall of oil price has a great influence on the cost of oil and its derivatives used by enterprises, factories, and firms tend to adjust their output, output, and prices, shifting the impact of oil price fluctuations further down the production chain [11]. On the other hand, the fluctuation of oil prices will also encourage enterprises to develop the use of crude oil substitutes, such as nuclear energy, wind energy, solar energy, and so on, to promote the development of related industries.

The impact of fluctuations in international oil prices on consumer prices is mainly reflected in the consumption of end products. The price of terminal products, changes, to a certain extent, will cause changes in the consumer sector [11]. As an important indicator of economic development, CPI will rise with this change, affecting China's economic development. As for the impact of international oil prices on China's economic growth, on the one hand, the rise in international oil prices will increase the cost pressure on enterprises that use oil as a raw material, thus directly raising the production costs of domestic-related industries, consumer goods prices, so that profits are reduced, resulting in a negative impact on domestic economic growth [11]. At the same time, oil-dependent products as raw materials costs, and rising prices will lead to a general increase in inflation, a serious problem. On the other hand, with China's "Sustainable development" concept, the idea of continuous promotion of clean energy development, China's economy has gradually reduced its dependence on oil. When international oil prices rise, China's non-fossil energy industry is more advantageous in the world, and global trade will promote domestic economic development.

4.3.2 Impact of international oil price fluctuations on China's economy

A substantial increase in the price of oil would lead to a reduction in the production of related industrial products and a high rate of social inflation. In history, three times and three times of oil crises have produced great side effects on international economic development. The rise in the price of oil has to some extent hindered China's economic growth. Oil is still one of the most widely used energy sources in China, and the fluctuation of oil prices directly or indirectly influences the price of products and further influences the macroeconomic development and policy adjustment in China [12]. Inflation is one of the main adverse effects of oil price fluctuation. As a major oil importing country, China's oil price is greatly affected by the price fluctuation of the international crude oil market, which will lead to the adjustment of the domestic crude oil price directly and lead to imported inflation [13].

Rising international oil prices will eventually lead to higher domestic prices, triggering, cost-push inflation [13]. With the use of chemical products more and more widely, the oil market deeply penetrates the financial market and has a close relationship with the prices of futures and financial derivatives, the financialization of oil is becoming more and more obvious. The interaction between the oil market and the financial system has deepened the need for oil security not only to achieve a balance between supply and demand for oil production but also to secure financial and financial prices in international trade [13].

5. Conclusion

As an important raw material for basic energy and chemical products, oil plays an important role in economic growth. When crude oil is used as the world's main energy source, its value rises sharply. Thus, once the oil supply gap, it will lead to a certain political and economic turmoil, the "Oil crisis" into the 20th century a new type of crisis. At present, the world is facing the double test of economic crisis and energy crisis. The Russia-Ukraine conflict caused the energy crisis; the crisis also reflects this phenomenon. To avoid the recurrence of such a crisis, it is of great significance to study the fluctuation of international oil prices and its impact on the macroeconomy, the relationship between the fluctuation of international oil prices and the macroeconomy, as well as the transmission mechanism. In view of the new type of crisis, we must consider the sustained development of the national economy, look at the overall situation at home and abroad, and focus on strengthening oil, to ensure the safety of the industrial chain, we should take measures to improve the utilization rate of oil resources, establish a sound oil and financial system, and strengthen international cooperation.

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