



Economic Consequences of Oil Price Shocks in India: Pre and Post Russia-Ukraine War

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ABSTRACT:

Oil price shocks have significant impact on the Indian economy. The Russia – Ukraine war has affected India especially by increase in oil price. The study focused on economic consequences of oil price in India, pre and post Russia – Ukraine war by the macro variables and monetary policy. The study was based on both qualitative and quantitative analysis. The study results in increasing oil prices would also increase the inflation, impact GDP growth and influence monetary policy. The committees recommends regarding the significance of long term solutions. This would make the economy stronger and can tackle the future oil price shocks and maintaining financial stability.

Key words: Oil prices, Macro variables, Russia – Ukraine war.

INTRODUCTION

Oil price shocks have significant implications for the economy. India, as a major oil importer, is particularly vulnerable to fluctuations in global oil prices. The Russia – Ukraine war witnessed fluctuation in oil prices. The Russia – Ukraine war in early 2022 altered the global oil market, resulting in increased volatility and substantial price fluctuation.

In the pre-war period, India's economy experienced the effects of oil price changes, including adjustments in inflation rates, fuel subsidies and trade deficits. In contrast, post-war period has been characterized by increasing economic stress due to sharp price increases and supply chain disruptions. This has increased the inflationary pressures, fiscal policy and economic uncertainties.

Oil prices are determined by a factors, including geopolitical events, supply and demand and market speculation. Sudden changes in oil prices have had profound effects on economy. For instance, sharp increase in oil prices can lead to higher production and transportation costs which in turn, increase consumer prices and contribute to inflation. In contrast, a reduction in oil prices can reduce costs, stimulate consumer spending and support economic growth.

Before the war, oil prices had already been subject to fluctuations but remained within a predicable range. During this period, lower oil prices were associated with reduced inflation and increased economic stability. The Reserve Bank of India (RBI) adjusted its monetary policy in response to these conditions, managing interest rates to support economic growth and control inflation. The increase in oil prices due to supply disruptions has increases inflationary pressures and impacted the trade balances, as cost of oil imports has increased.

The economic consequences of oil price shocks in India impact of rising oil prices on inflation, economic growth and monetary policy. The aggregate demand and aggregate supply provides the framework for this analysis, suggesting that fluctuations in oil prices. This analysis will examine the economic consequences of oil price shocks in India by comparing the pre- and post- war periods, focusing on the effects on inflation, fiscal stability and overall economic growth.

OBJECTIVES

- To evaluate the influence of repo rate adjustments on inflation rates in India during periods of fluctuating oil prices.
- To analyse the impact of repo rate changes on GDP growth in India in varying oil price conditions.
- To assess the effectiveness of repo rate changes in stabilising the economy and compare this effectiveness across different oil prices.

LITERATURE REVIEW

Kaur C, et.al (2024) conducted the study on the asymmetric impact of input prices, the Russia-Ukraine war and domestic policy changes on wholesale electricity prices in India, highlights the presence of asymmetric in the long run relationship between wholesale electricity prices. The paper examines the quantile – dependent short and long run relationships of wholesale electricity prices with exchange rate, economic policy uncertainty and the prices of fossil fuels like coal, natural gas and crude oil. The result of the study highlights the impact of the volume trade and input prices on electricity prices insignificant in post war. These insignificant impacts are likely to be due to the prevalent government interventions undertaken as precautionary measures to protect the consumers from the global instability caused by the war.

Govindharaj Y (2024) conducted the study on the effects of the Russian invasion of Ukraine and its Russian migrants on consumption, money transfers, and exports and the slowdown in global growth, highlights consequences of sanctions on Russia, businesses related to the Caucasus and Central Asia. However Russian immigrants affected inflation by raising demand not supply. The study employs the conceptual, diagnostic and descriptive study design. The study results in trade between Caucasus and central Asia increased due to rising oil and gas prices caused by Russia's invasion of Ukraine and sanctions. This surge was attributed to increased Russian exports and migration, while the post-soviet south experienced remarkable growth.

Pathak S, et.al (2022), conducted the study on impact of Russia - Ukraine war on sustainable development goals, highlights the measures impact of geopolitical crisis concerning Russia Ukraine war with reference to sustainable development goal 8 which is decent work and economic growth. The study employs the stock market, crude oil, GDP Index and SDG are measured using NIFTY, MCX iCOMDEX and analyse with vector autoregression (VAR), a multivariate algorithm, is employed using Python. The study results in the GDP Index is adequately demonstrated by the lagged values of crude oil prices and NIFTY index. The NIFTY index causes change in MCX crude oil index and GDP index whereas MCX crude oil does not cause much change.

Joshi V, et.al (2023) conducted the study on repercussions of Russia – Ukraine conflict to attain trade and industrial sustainability highlights the conflict has created caused great uncertainty and has challenged many assumptions about the existence of the nation and bilateral relations. The study explains the significant effects of the disputes on and impacting numerous aspects like the economy, trade, bilateral relations and manufacturing capacities. The results highlights an increasing trade deficit and suggested India should move forward and become Atmanirbhar.

Mishra A, et.al (2023) conducted the study on impact of the Russia – Ukraine crisis on food inflation and stock markets in Asian economies highlights the current geopolitical risk posed by the Russia – Ukraine war has significant implications on the stock markets and the commodities markets of several countries. The study employs the OLS technique to estimate the food inflation and stock markets and descriptive statistics. The study results in the impact of the Russia – Ukraine war on the food inflation to be visible in china and japan whereas the war's effect on the stock markets of china, japan, Thailand, India is insignificant. The study suggests the investors to reduce diversify their portfolios and look into stocks of other countries that show low variability in their stock market returns.

Behera C (2023) conducted the study on the crude oil price – stock return connectedness and the impact of the Russian – Ukraine war on stock returns in East Asian countries. The study employs the Time-varying Parameters-Vector Autoregressive (TVP-VAR) approach to analyse the connectedness between stock returns and crude oil prices. The variables used are stock returns-impact of the Russia-Ukraine war, average crude oil prices calculated from WTI and Brent oil prices-war dummy variable representing the Russia-Ukraine war. The research gap of the study was investigating the connectedness between crude oil prices and stock returns in East Asian countries. On average, 42.52% of shocks to one asset spill over to all other assets, while 57.48% of shocks affect the asset itself, indicating a high degree of interconnectedness between stock returns and oil prices. The Russia-Ukraine war had a significant negative impact on the Indonesian stock market, but not on the other markets in the study.

Bagchi B, et.al (2023) conducted the study on effects of crude oil price shocks on stock markets and currency exchange rates in the context of Russia – Ukraine conflict for G7 countries highlights the oil price shocks on the stock price returns and currency exchange rates of G7 countries. The study examine the impact of the Russia-Ukraine conflict-conducting descriptive statistics and CUSUM test to assess the nature and stability of the data. Applying the fractionally integrated GARCH model to examine the long memory effects of crude oil price shocks on returns and exchange rate. Stock price returns of G7 countries, currency exchange rates of G7 countries. Brent crude oil price-Russia Ukraine conflict. The stock price returns of G7 countries experienced structural breaks, coinciding with the outbreak of the Russia Ukraine conflict.

METHODOLOGY

The methodology used to analyse the economic consequences of oil price shocks in India, particularly during the pre – and post – Russia – Ukraine war periods, both quantitative and qualitative methods. The study involves examining economic indicators such as inflation, GDP growth and the repo rate. The study used the correlation analysis to analyse the relationship between oil prices and the macro variables and regression analysis to determine oil price fluctuation and repo rate identifies between two periods. The study also focuses on comparing the economic responses of effectiveness of monetary policy.

THEROTICAL FRAMEWORK

The economic consequences of oil price shocks in India can be effectively analysed through the theoretical frameworks of aggregate demand (AD) and aggregate supply (AS). These frameworks highlights the fluctuations in oil prices that impact the economy, influencing output, inflation.

Aggregate demand represents the total demand for goods and services within an economy at a given price level. Components of aggregate demand are consumption, investment, government spending and net exports. Oil price shocks affects the aggregate demand by higher oil prices tend to increase transportation and production costs, leading to reduced disposable income for households. This reduction can decrease the consumer spending. In contrast, when oil prices decline leading to increase in disposable income, which increases the consumer spending. Increasing oil prices can create uncertainty among businesses regarding the future economic conditions. This may lead to reduction in investment plans due to higher operational costs. In contrast, lower oil prices can enhance business and encourage investment. Additionally, higher prices can strain fiscal resources in an oil-importing country like India, leading to reduced public expenditure or increased borrowing.

Aggregate supply refers to the total output that firms are willing to produce at a given price level. Oil price shocks directly impact production costs. Increased oil prices typically lead to higher production costs, resulting in a leftward shift of the aggregate supply curve. This shift can cause inflationary pressures as businesses on increased costs to consumers through higher prices, leading to cost-push inflation that decrease purchasing power and economic growth.

The interaction between aggregate demand and aggregate supply shows the overall impact of oil price shocks on the economy. In short run, negative supply shocks due to rising oil prices lead to stagflation. In long run economies may adjust to changes in energy policy or investments in alternative energy sources that mitigate the adverse effects of oil price volatility.

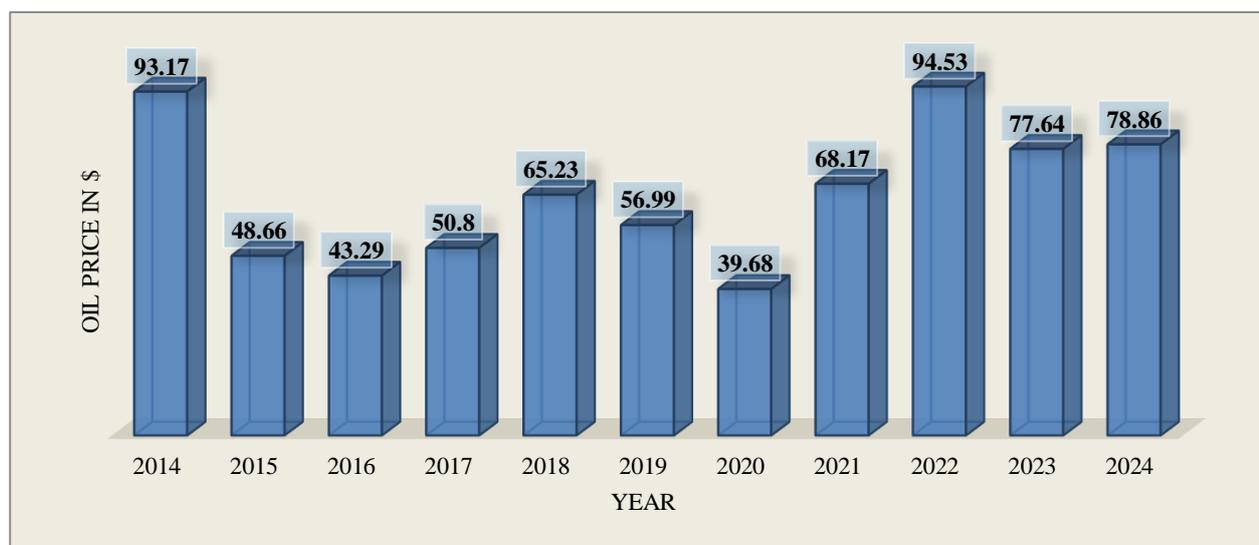
ANALYSIS

Table 1: Oil price, inflation rate, GDP, Repo rate of India

| YEAR | OIL PRICE (IN \$) | INFLATION RATE | GDP (US billion dollars) | REPO RATE (%) |
|------|-------------------|----------------|--------------------------|---------------|
| 2014 | 93.17 | 6.67 | 2039.13 | 7.3 |
| 2015 | 48.66 | 4.91 | 2103.59 | 7.3 |
| 2016 | 43.29 | 4.95 | 2294.8 | 6.3 |
| 2017 | 50.80 | 3.33 | 2651.47 | 6 |
| 2018 | 65.23 | 3.94 | 2702.93 | 6.3 |
| 2019 | 56.99 | 3.73 | 2835.61 | 5.85 |
| 2020 | 39.68 | 6.62 | 2674.85 | 5.3 |
| 2021 | 68.17 | 5.13 | 3167.27 | 4 |
| 2022 | 94.53 | 6.70 | 3353.47 | 5.3 |
| 2023 | 77.64 | 4.38 | 3572.08 | 6.5 |
| 2024 | 78.86 | 3.65 | 3937.01 | 6.5 |

Source: Computed from the secondary data by the researcher, 2024

Figure 1: Oil price of India, 2014-2024



Source: Computed from secondary data by the researcher, 2024

The chart shows that there is fluctuations in oil prices have an impact on aggregate demand and aggregate supply, influencing economies. Before the Russia – Ukraine war, oil prices experienced fluctuations due to market conditions. From 2014 to 2016, oil prices had fallen significantly, reducing production costs for businesses and allowing consumers to spend more, thereby increasing aggregate demand. The lower oil prices also supported aggregate supply as businesses from reduced input costs, increasing production capacity. In 2020, oil prices reduced due to reduced demand caused by the pandemic, leading to a contraction in both aggregate demand and supply. Businesses cut down production and consumers reduced spending. By 2021, Oil prices began to increase, improving aggregate demand and supply. In 2022, the Russia – Ukraine war caused the sudden increase in oil prices. Sanctions and disruptions to Russian oil supplies increased production and transportation costs, negatively impacting the aggregate supply by raising business expenses. On demand side, higher fuel prices reduced disposable income, restrain consumer spending and lowering aggregate demand. From 2023 to 2024, oil prices stabilized, but it remained higher than pre-war levels, indicating persistent inflationary pressures.

Table 2: Correlation analysis of inflation and repo rate

| | INFLATION RATE | REPO RATE |
|----------------|----------------|-----------|
| INFLATION RATE | 1 | |
| REPO RATE | -0.133 | 1 |

Source: Computed from the secondary data by the researcher, 2024

The correlation analysis of -0.133 for inflation rate and repo rate shows a weak negative association between the variables. Here, as the repo rate increases, inflation rate would decrease and vice versa. When the Reserve Bank of India raises the repo rate, borrowing costs increase, which reduces consumer spending and business investment reducing aggregate demand. However, weak correlation shows that changes in the repo rate do not have significant change in inflation, because inflation is influenced by supply-side factors. If rising oil prices driving inflation, increasing the repo rate may have little impact on reducing inflation.

Table 3: Regression analysis of inflation, GDP, Repo rate

| | | | | | |
|--------------------------|---------------------|--------------------|-----------------------|----------------|-----------------------|
| Multiple R | | 0.492238954 | | | |
| R Square | | 0.242299188 | | | |
| Adjusted R Square | | 0.052873985 | | | |
| Standard error | | 18.64998137 | | | |
| Observations | | 11 | | | |
| | df | SS | MS | F | Significance F |
| Regression | 2 | 889.817614 | 444.9088 | 1.279129 | 0.329603 |
| Residual | 8 | 2782.574441 | 347.8218 | | |
| Total | 10 | 3672.392055 | | | |
| | COEFFECIENTS | | STANDARD ERROR | T STAT | P-VALUE |
| INTERCEPT | -16.0400 | | 59.2806 | 0.27058 | 0.793566 |
| GDP | 0.01662 | | 0.010525 | 1.57087 | 0.152791 |
| REPO RATE | 5.5879 | | 6.71408 | 0.83228 | 0.429394 |

Source: Computed from the secondary data by the researcher, 2024

$$Y = -16.0400 + 0.01662 X$$

If the GDP rate increases by one unit, the oil price is expected to increase by 0.001662 assuming the repo rate to be constant. The p-value is greater than 0.05 which is statistically insignificant indicates that the changes in GDP do not have strong influenced by the oil price, and relationship between economic output and aggregate demand is weaker than expected. This shows the other factors such as consumer spending play an important role to shift aggregate demand than GDP alone.

$$Y = -16.0400 + 5.5879$$

Similarly, if the repo rate increases by one unit, the oil price is expected to increase by 5.5879 assuming GDP to be constant. The p-value is greater than 0.05 which is statistically insignificant indicates that the changes in repo rate do not influenced by the oil price and shows the cost of borrowing may not be affecting aggregate supply.

When oil prices are volatile, it can significantly impact the economy. Increase in oil price leads to increase in transportation and production costs which affects the aggregate supply. This results in lower output and higher prices leads to increase in inflation. In this situations, RBI adjust the repo rate to stabilize the economy. A lower repo rate makes borrowing cheaper, encourage business to invest and consumers to spend more and boost the aggregate demand. If the oil prices reduces, the inflation would fall and consumers spending would increase. Here, the RBI raises the repo rate to stabilize the prices.

FINDINGS

The study results in the relationship between the oil prices, aggregate demand and aggregate supply by Russia – Ukraine war. Fluctuations in oil prices influenced by economic dynamics. From 2014 to 2016, there is decrease in oil prices positively impacted the aggregate demand and aggregate supply. However the pandemic in 2020 caused a decline in oil prices due to reduced demand, which affected the negatively affected the aggregate demand and aggregate supply. In 2022 the Russia – Ukraine war had a sharp increase in oil prices, by sanctions and disruptions in Russian oil supplies. Correlation analysis between the inflation and repo rate indicates an increase in the repo rate lower the inflation rate by the weak negative relation and suggests that inflation is more influenced by supply side factors. Regression analysis shows neither GDP nor repo rate changes significant relation to the oil prices. The effectiveness of repo rate was adjusted by the RBI to stabilize the economy when the oil prices are volatile.

SUGGESTION

The Kirit Parikh Committee suggested that India should lower its fuel subsidies and set domestic fuel prices with global market rates. By doing this the government would be able to control fluctuations in the price of oil globally save money. Similarly, the Kelkar Committee on Fiscal Consolidation suggests lowering the fuel subsidies to reduce the government's financial deficit. India finds it challenging to handle oil shocks without straining the economy due to substantial subsidies. Both committees recommends regarding the significance of long term solutions.

CONCLUSION

The study on oil price shocks in India, pre and post Russia – Ukraine war, shows the fluctuations in oil price affects the Indian economy. The study highlights the increasing oil prices would also increase the inflation, impact GDP growth and influence monetary policy. The findings shows that relying on fuel subsidies to protect consumers from higher prices is not a good long term solution. This approach puts too much pressure on the government's budget and limits its ability to manage future changes in oil prices.

The committees recommends regarding the significance of long term solutions, the Kirit Parikh Committee suggested that India should lower its fuel subsidies and set domestic fuel prices with global market rates. By doing this the government would be able to control fluctuations in the price of oil globally save money. Similarly, the Kelkar Committee on Fiscal Consolidation suggests lowering the fuel subsidies to reduce the government's financial deficit. India finds it challenging to handle oil shocks without straining the economy due to substantial subsidies.

To conclude, the study suggests that India should move toward market-based fuel pricing and reduce reliance on subsidies, in line with these committee recommendations. This would make the economy stronger and can tackle the future oil price shocks and maintaining financial stability. The government should focus on long term policies to protect consumers from global oil price changes and ensure economic growth.

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