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## **EFFECTS OF COVID-19 PANDEMIC ON DIESEL: A BOON OR BANE IN THE INDIAN CONTEXT**

### **ABSTRACT**

The ongoing Covid-19 pandemic has had a serious impact on the global economy and has brought a considerable part of the industry, worldwide, to a standstill. Long unprecedented lockdowns worldwide, to control the spread of corona virus, have affected many individuals and businesses which led to a fall in consumption of commodities to a level never seen before. Shutdown of travel and commercial activities during the lockdowns resulted in reduction of oil import and diesel consumption in India. The reduced consumption of commodities has, in turn, affected the government's tax revenue. Despite the biggest drop in crude oil price in global market since 1991, the retail price of diesel in India has touched a new high-level record. It was because, in order to overcome the debilitating effects on both the central and state finances, the Indian government has doubled the taxes on diesel. Across the world, diesel is commonly used by various sectors as a means of transporting and electricity generating fuel. It is essentially a price-determining commodity. Therefore, any change in its price may affect the economy to the micro-level, including nation's Gross Domestic Product (GDP). This study aims to assess the significant effects of the pandemic situation of Covid-19 on diesel in the Indian context.

*Key Words: India, Covid-19, Diesel, Taxes, Inflation, WPI.*

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## **INTRODUCTION**

### **Corona virus disease 2019 (Covid-19)**

India confirmed its first case of Covid-19 in Kerala on January 30, 2020. The affected one had a history of travel from Wuhan, China. At the insistence of the Prime Minister Shri Narendra Modi, India enforced a 14-hour voluntary 'Janta Curfew' (People's Curfew) on Sunday, March 22, 2020. As the number of Covid cases increased rapidly worldwide, in order to halt the spread, a nationwide lockdown of 21 days was put in place in India from 25<sup>th</sup> March, which was extended until 03<sup>rd</sup> May and was followed by two extensions up to 31<sup>st</sup> May with substantial relaxation. However, from 01<sup>st</sup> June, the government began "unlocking" the country barring the "containment zones."

### **Diesel pricing policy in India**

The pricing of petroleum products was brought under the Administered Price Mechanism (APM) effective July 1975 when the pricing of petroleum products was shifted from import parity principles to cost plus principles. On November 21, 1997, the Indian government made its intention clear that it planned to abolish the APM, to be carried out in a phased manner over the period 1998-2001, starting from April 01, 1998. Thereafter, effective April 01, 2002, the APM was dismantled, however, the diesel prices deregulated by the government with effect from October 18, 2014. This has helped the Oil Marketing Companies (OMCs) to determine the price of diesel and to check and revise it every fortnight. Further, on June 16, 2017, a new scheme was implemented under which the diesel prices were to be revised on a daily basis according to the dynamic fuel price method. It has been done to ensure that dealers can make the most of the smallest change in international oil prices (Bandopadhyay, 2009; MPNG, 2017).

### **Wholesale price index (WPI)**

In India, the WPI series is compiled and released by Office of the Economic Adviser (OEA). It is a price index which captures price changes at the factory/wholesale level and is used as a measure of inflation in India. The current series with base year 2011-12 was introduced by the OEA in May 2017, effective from April 2017 (OEA-1, 2017). It has a total of 697 items including diesel. In the 2004-05 WPI series, ex-factory prices, including excise duties, were used as the first point of bulk sales for manufactured products. However, in the 2011-

12 WPI series, the effective prices for manufactured products used for compilation have been changed to excluding any indirect taxes such as the Central Excise Duty (OEA-2, 2017).

### **Petroleum planning & analysis cell (PPAC)**

After dismantling of the APM in the petroleum sector, Oil Coordination Committee (OCC) was abolished and a new cell called PPAC, was created effective April 01, 2002 to assist Ministry of Petroleum and Natural Gas (MPNG) of Government of India. The PPAC website is the most genuine official source of data and policy analysis on the country's crude oil, petroleum products and natural gas (PPAC-1, 2020).

## **LITERATURE REVIEW**

Several prior research papers, reports, articles, etc., were studied for proper understanding of the concepts discussed in this study.

Parikh committee, which constituted to study “a viable and sustainable system of pricing of petroleum products” did not recommend anything in its report on the taxation of petroleum products and noted that the government is already working on and preparing a roadmap for the introduction of the Goods and Services Tax (GST) (Parikh, 2010). But while implementing, the government of India has kept diesel outside the purview of GST.

On the basis of time-series data from January 2009 to December 2019, Shinghal and Paliwal (2020) found that the structure of diesel pricing mainly has four factors, i.e., crude oil price, currency exchange rate, government taxes, and other costs, including margins, but they do not have any set pattern and their impact also differs according to time. Their study concluded that, in Delhi, India, on an average domestic price of crude oil including currency exchange rate accounts for 56% of the retail price of diesel, 30% of the retail price of diesel is accounted for taxes imposed by the central and state governments, and the remaining 14% account for other costs including margins.

According to PPAC, India's oil dependence rose to 83.8% in 2018-19 (The Economic Times, 2019; MPNG, 2020). Consequently, any change in the global market's price of crude oil impacts the domestic price of petroleum products. The retail price of diesel has not only been affected by the change in the basic price of crude oil in the global market, but the foreign exchange rate has also played a significant role in international transactions. The Indian government can therefore save the cost of currency exchange if they can manage

netting-off of export receivables against import payments instead of making each transaction in US Dollars (USD) (Shinghal and Paliwal, 2020).

While studying the relationship of crude oil prices, currency exchange rates, and taxes with the retail price of diesel in Delhi, India, Shinghal and Paliwal (2020) observed that the retail price of diesel in Delhi has increased by 80% in the last 11 years (from January 2009 to December 2019), mainly due to 26.5% inflation in the currency exchange rate, 8.5% inflation in the crude oil price, 17.5% inflation in other costs including margins, and 27.5% inflation in taxes on diesel.

While studying the relationship of inflation in diesel price with the inflation considered in WPI (All Commodities) and Construction Cost Indices (CCI), Shinghal and Nagar (2020) concluded that there is a low positive inter-correlation between inflating diesel price and inflation considered in WPI. However, it indicates that whenever diesel prices increase there is an increase in WPI, but its impact on WPI is very low.

As per the budget for the financial year 2020-21, the central government of India estimated a 10% growth in the country's nominal GDP, and more than half of the States estimate their nominal GDP growth rate in the range of 8% to 13%. In 2020-21, the central government expected 73% of the revenue to come through taxes. Likewise, state governments also estimated that nearly 70% of their revenue will come from taxes (45% from their own taxes and 25% from their share of central's taxes). However, the lockdown has severely impacted the consumption, and thus the tax revenue that the central and state governments would be able to generate is expected to be much lower than the budgeted projections (Tiwari, 2020).

With the economy coming to a virtual standstill under the coronavirus lockdown, the target set by the Indian Finance Ministry for the fiscal deficit for the financial year 2020-21 may be missed by a wide margin, especially with revenues dropping and the government spending more on stimulus packages (Mulye, 2020).

Despite the global price of crude oil falling to the lowest level, OMCs have not lowered the diesel prices. It has been noticed that the taxes on fuel prices are higher than their actual cost. It clearly shows the government's intentions that the Government of India is trying to generate more money by imposing various taxes on fuel prices so that it can cover the revenue losses that have occurred due to the lockdown (Tamanna, 2020).

According to an online study conducted by IIM Lucknow on "Understanding public sentiment during lockdown," people in India are more concerned about the economic crisis than about health issues arising from the coronavirus pandemic (Week, 2020).

Since this study is based on current real-world problem amid the Covid-19, thereby, not much is explored yet on this topic. Several segments, in India, have been freed from government interference, though restrictions remain in the oil sector. Taxes on petroleum products are an important source of revenue for both the central government and states, as these taxes are discretionary. As despite the reduced international price of crude oil, the government is not allowing fuel prices to fall in India, it would have a negative impact on the economy. Thus, its effect on other commodities needs further attention from the researchers.

## THE PRICING STRUCTURE OF DIESEL IN INDIA

To identify various variable factors that influence diesel price, the pricing structure of diesel in India is studied. From the data in **Table 1**, it is found that the domestic price of crude oil account for 25.4% in the retail price of diesel, about 62.6% of that retail price is accounted for by the taxes and the remaining 12.0% accounts for other costs. Since India is highly dependent on oil imports, the domestic price of crude oil depends on the global price of crude oil and foreign currency exchange rate, thereby, any change in either of the two affects the domestic price of crude oil.

**Table 1. Price calculation of diesel for base location Delhi, India as on July 16, 2020**

International Price of Crude Oil	43.71	USD/Barrel	A
Exchange Rate of 1 USD	75.14	INR	B
International Price of Crude Oil	3,284.37	INR/Barrel	C=AxB
One Barrel of Crude Oil is equivalent to	159.00	Litre	D
Domestic Price of Crude Oil	20.66	INR/Litre	E=C/D
Entry Tax, Refinery Processing, Freight Cost, OMC Margin etc	7.16	INR/Litre	F
Base Price of Refined Diesel	27.82	INR/Litre	G=E+F
Central Taxes: Excise Duty	31.83	INR/Litre	H
Price to Dealers	59.65	INR/Litre	I=G+H
Dealer Commission	2.55	INR/Litre	J

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Price of Diesel before State Taxes	62.20	INR/Litre	K=I+J
State Tax: Pollution Cess	0.25	INR/Litre	L
Sub-total	62.45	INR/Litre	M=K+L
State Tax: VAT @ 30%	18.74	INR/Litre	N
Retail Price of Diesel in Delhi on 16-Jul-2020	81.19	INR/Litre	O=M+N
Ratio of Domestic Price of Crude Oil w.r.t. Retail price of Diesel	25.4%		E/O
Ratio of Central Taxes w.r.t. Retail price of Diesel	39.2%		H/O
Ratio of State Taxes w.r.t. Retail price of Diesel	23.4%		(L+N)/O
Ratio of Other Costs w.r.t. Retail price of Diesel	12.0%		(F+J)/O

## RESEARCH OBJECTIVES

The overall objective of this research paper is to assess the significant effects of the pandemic situation of Covid-19 on diesel in the Indian context. Thereby, this study aims to empirically test:

- 1) Whether the relationship of crude oil price, currency exchange rate and taxes remained the same with the retail price of diesel in India or a significant change occurred due to Covid-19,
- 2) Impact of lockdowns on oils imports and diesel consumption in India,
- 3) Financial impact on government treasury due to the changed scenario, and
- 4) Whether WPI could significantly capture the inflation in diesel price.

## METHODOLOGY

This study is country specific. It adopted quantitative method and descriptive research design to provide empirical solution to the research problems using existing data. The asymmetrical/symmetrical relationship between the variables is presented in graph form. Percentage variations are compared to a hypothetical baseline scenario without the Covid-19.

### Sample size and data sources

This study considers January 2009 to June 2020 as its study period. The time-series data for this study were extracted from various reliable external secondary sources and used for the variables.

**Table 2. Data sources**

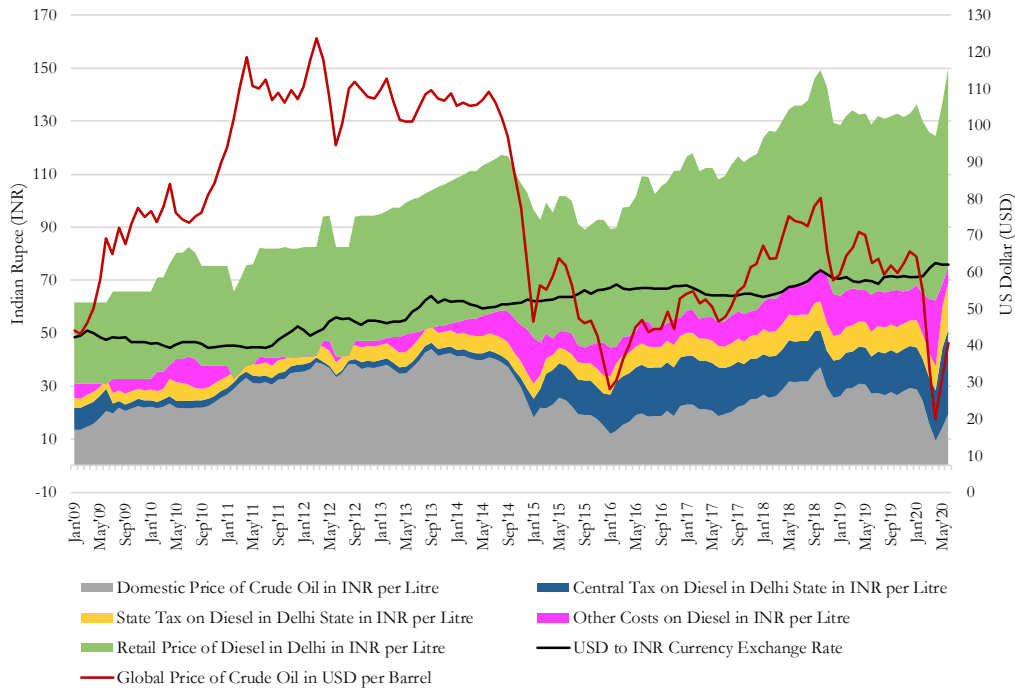
Name of variables	Source
Average monthly global price of crude oil	(PPAC-2, 2020)
Average monthly USD to INR currency exchange rate	(X-RATES, 2020)
Daily retail price of diesel in Delhi, India	(IOCL, 2019), (IOCL, 2020), (PPAC-3, 2020)
Dealer's commission on diesel in India	(PPAC-4, 2020)
Rates of taxes and cess by Central Government of India	(Department of Revenue, 2020)
Rates of taxes and cess by Delhi State Government	(Finance (Revenue-1) Department, 2020)
Monthly diesel consumption in India	(PPAC-5, 2020), (MPNG, 2020)
Monthly net import of crude oil and petroleum products by India	(PPAC-6, 2020)
WPI Index for All Commodities and High-Speed Diesel components from 2004:05 and 2011:12 series	(OEA-3, 2017), (OEA, 2020)

## FINDINGS AND ANALYSIS

### Diesel price components and their trends - A comprehensive analysis (2009-2020)

The monthly average price trends, from January 2009 to June 2020, of each time-series variables on which diesel price is dependent i.e., (a) global price of crude oil in USD per barrel, (b) USD to Indian Rupees (INR) currency exchange rate, (c) domestic price of crude oil in INR per litre, (d) taxes and cess by the central government of India in INR per litre, (e) taxes and cess by the Delhi state government in INR per litre, (f) other costs on diesel in INR per litre, and (g) retail price of diesel in Delhi in INR per litre are plotted in a graph (Figure 1). The graph clearly depicts that the inflation/deflation trends of these variables are not identical throughout the sample period. The detailed study of graph in Figure 1 indicates the following –

**Figure 1. Average monthly price trends of each variables from Jan'2009 to Jun'2020**



- 1) the global price of crude oil had been rising until the 2<sup>nd</sup> quarter of 2014, followed by a declining trend until 1<sup>st</sup> quarter of 2016, thereafter had an upward trend until 2019, but after the global spread of Covid-19, prices have fallen sharply and even during April 2020 oil prices tumbled to levels not observed during the last two decades;
- 2) currency exchange rate has always been on a steady upward trend, except for small drops at some points in-between;
- 3) other costs, never had a stable trend and had seen many ups and downs, at times it remained very low and even negative, that could be due to the subsidies given by the government of India to keep the retail price of diesel under control when the global price of crude oil was on a rising trend;
- 4) the central tax rate decreased from mid-2009 and then remained almost same until 2014 except reduction for almost six months during mid-2012, but then there was an increasing trend until mid-2017, followed by a declining/stable trend until mid-2019, but during the lockdown, the tax rate increased twice, once in the month of March 2020 and again in May 2020 as a result of which the retail price of diesel



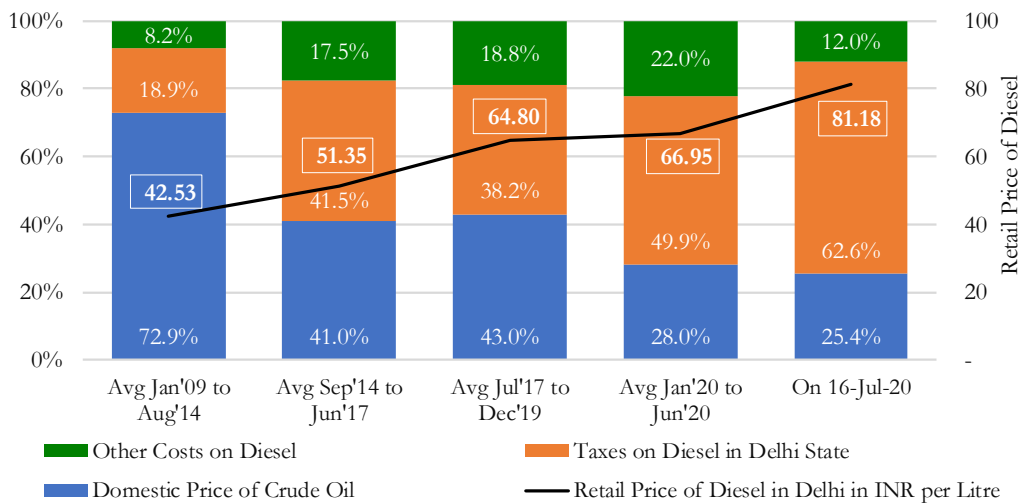
had touched the highest price, and by the end of June 2020, for the first time in history of India, the diesel had been sold at a price higher than petrol;

- 5) the state tax rate remained the same until mid-2015, except for the increase in the 2<sup>nd</sup> quarter of 2010, followed by a twofold increase, one in mid-2015 and the other in early 2016, while the tax rate remained the same until the beginning of May 2020 which witnessed a high rise in tax rate;

### Dependency of diesel price from global market to taxes - A paradigm shift

Figure 2 deciphers the relationship/dependence of retail price of diesel with other components/variables. It reconfirms the finding of Shinghal and Paliwal (2020) that the ratio of these variables does not have any set pattern.

**Figure 2. Break-up of diesel price components**



The break-up of diesel price components reveals that, between January 2009 and August 2014, the ratio of global price of crude oil was almost four times the taxes. On an average domestic price of crude oil including currency exchange rate accounts for 73% of the retail price of diesel, 19% of the retail price of diesel was accounted for taxes imposed by the central and state governments, and the remaining 8% account for other costs.

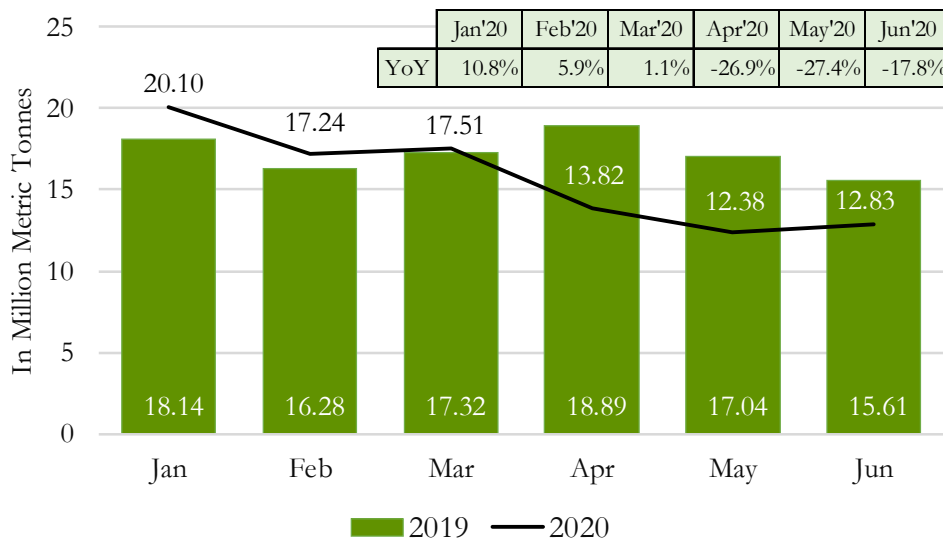
Whereas, during the period from September 2014 to December 2019, the ratio had changed. Crude oil price as well as taxes, both, had almost equal ratio with the retail price of diesel.

But the equation has changed completely in 2020. The global price of crude oil dwindles as the majority of the world’s population faced lockdown due to the Covid-19 pandemic, which has led to a slump in demand for crude oil. While comparing the average prices for the period from January 2009 to August 2014 and the price on July 16, 2020; it can be seen that, although the ratio of the crude oil price has fallen almost by one-third, the ratio of taxes on diesel in India has risen more than threefold.

### Effects of Covid-19 on imports of crude oil

Figure 3 shows the monthly average net import (i.e., import – export) data of crude oil and petroleum products by India from January 2020 to June 2020 with January 2019 to June 2019 and compares them on a Year-over-Year (YoY) basis. The YoY calculation compares a statistic for one period to the same period of the previous year. The YoY comparison shows a sharp decrease in net imports from April 2020 onwards. In April 2020, net imports dropped YoY 26.9% to 13.82 million metric tonnes (MMT). In May 2020, it dropped YoY 27.4% to 12.38 MMT, the biggest decrease since the last five years. In June 2020, it dropped YoY 17.8% to 12.83 MMT. However, there was a slight increase in net import in the month of June 2020 compared to the previous month. It appears that post declaration of unlock 1.0, the requirement of import has marginally increased.

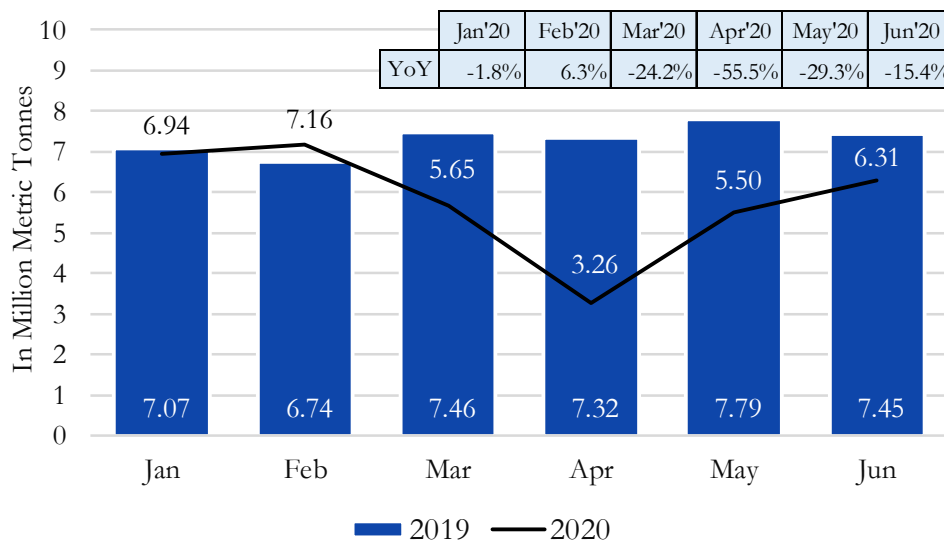
**Figure 3. Monthly net import of crude oil and petroleum products, a YoY comparison**



### Effects of Covid-19 on consumption of diesel

Figure 4 shows the monthly average trend of diesel consumption in India between January 2020 to June 2020 with the data from January 2019 to June 2019 and compares them on a YoY basis. The YoY comparison shows a sharp decrease in diesel consumption from March 2020 onwards. In India, nationwide lockdown has begun from 25<sup>th</sup> March and Covid-19 had dried up the demand from road, rail transport and airlines, thereby, in March 2020, consumption fell YoY 24.2% to 5.65 MMT. In April 2020, it dropped YoY 55.5% to 3.26 MMT, the biggest decline in more than a decade, as nationwide lockdown halted economic activities and travel. In May 2020, it fell YoY 29.3% to 5.50 MMT, but the consumption grew by 69% compared to the previous month, as from 03<sup>rd</sup> May some relaxation was given in the lockdown. In June 2020, it dropped YoY 15.4% to 6.31 MMT, but there was a further increase in consumption by 14.5% compared to the previous month, with unlock 1.0 beginning from 01<sup>st</sup> June and people being allowed to travel on the road.

**Figure 4. Monthly consumption of diesel, a YoY comparison**



### Taxes on diesel - During Covid-19

During Covid-19, both the central government of India (see Table 3) and the Delhi state government (see Table 4), imposed heavy taxes on diesel by increasing the existing tax rates. In March 2020, the taxes were increased by 12%, and in May 2020, further by 71%. Thereby, even after a record drop in the price of crude oil in the global market, the retail price of

diesel in Delhi, India has witnessed a record increase due to the steepest ever increase in the taxes by both the governments (i.e., Central and State).

**Table 3. Taxes on diesel by central government of India (INR/litre)**

Effective date	Basic excise duty	Special additional excise duty	Additional excise duty	Total excise duty
06-Jul-19	4.83	2.00	9.00	15.83
14-Mar-20	4.83	4.00	10.00	18.83
06-May-20	4.83	9.00	18.00	31.83

**Table 4. Taxes on diesel by Delhi state government**

Effective date	Value added tax	Environment cess in INR/litre
07-May-16	16.75%	0.25
05-May-20	30.00%	0.25

### Financial impact on Indian treasury - Due to Covid-19

**Table 5. Consumption of diesel viz-a-viz revenue earned by government of India**

Month	Monthly average total taxes on diesel in Delhi	Monthly consumption of diesel in India	Revenue earned through taxes
	INR Per Litre	Million Litre	Billion INR
Mar'2019	23.69	9,025.51	213.85
Apr'2019	23.59	8,861.32	209.07
May'2019	23.60	9,423.64	222.43
Jun'2019	23.32	9,016.15	210.29
<b>Sub-Total 'A'</b>		<b>36,326.62</b>	<b>855.64</b>
Mar'2020	26.84	6,837.92	183.51
Apr'2020	28.02	3,939.45	110.37
May'2020	45.08	6,659.58	300.23
Jun'2020	49.37	7,629.19	376.63
<b>Sub-Total 'B'</b>		<b>25,066.15</b>	<b>970.74</b>
<b>'B' - 'A'</b>		<b>(11,260.47)</b>	<b>115.10</b>
		<b>-31.00%</b>	<b>13.45%</b>

**Table 6. India's Net import**

Net import of crude oil and petroleum products by India	
MMT	Billion USD
18.89	8.39
17.04	7.74
15.61	7.00
<b>51.54</b>	<b>23.13</b>
13.82	2.66
12.38	1.92
12.83	2.81
<b>39.02</b>	<b>7.39</b>
<b>(12.51)</b>	<b>(15.74)</b>
<b>-24.28%</b>	<b>-68.03%</b>

Due to consistent declines since April 2020, India's net imports fell about YoY 24% to 39 MMT in the first quarter of 2020-21 fiscal year. As a result, India reduced its net import bill by 68.03% (i.e., 15.74 billion USD) in the first quarter (April-June) of fiscal year 2020-21 compared to the first quarter of last financial year (see **Table 6**). The net import bill may fall further below this year, as the continuity of Covid-19 may further dent the oil market. Further, due to lockdown, although diesel consumption decreased by YoY 31% to 11,260 million litres between March and June, the government of India managed to earn 13.45% more revenue (i.e., 115.10 billion INR) by increasing the taxes on diesel (see Table 5).

### **Impact of inflated diesel price on WPI**

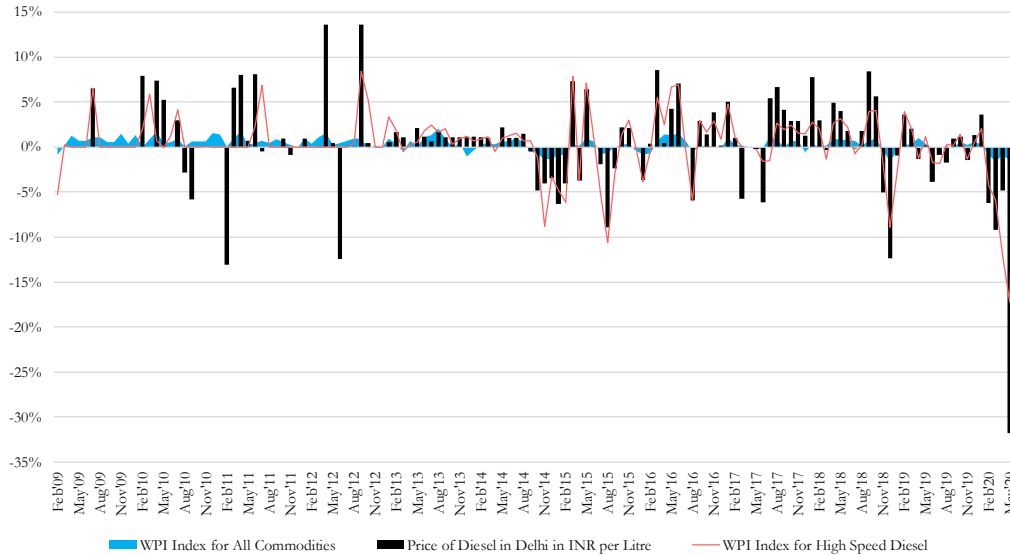
Since the WPI captures price changes and is used as a measure of inflation in India, the inflation/deflation pattern of diesel price is compared with the WPI - All Commodities and WPI - High-Speed Diesel components.

The current WPI series with base year 2011-12 was introduced with effect from April 2017 and, prior to that, the WPI series with base year 2004-05 was in use. In the 2004-05 series, effective prices, including taxes were used, but in the 2011-12 series, effective prices, excluding taxes are taken. Therefore, to analyse the trends of inflation/deflation the time-series data are divided in two sections i.e., from January 2009 to March 2017, and from April 2017 to June 2020. Accordingly, diesel prices from January 2009 to March 2017 are taken inclusive of taxes, but exclusive of taxes from April 2017 to June 2020. Likewise, indices from January 2009 to March 2017 are taken from WPI series 2004-05 and from April 2017 to June 2020 from the 2011-12 series.

As because in most of the construction projects in India, monthly indices are considered to calculate the price adjustment amount, Figure 5 compares the Month-over-Month (MoM) rates of inflation in diesel price and WPI (All Commodities and High-Speed Diesel). MoM inflation rates define the monthly percentage change in the series. For e.g., June 2020 inflation rate will be the percentage change in the series from May 2020.

Figure 5 shows that the trend of MoM inflation rate of the WPI (All Commodities) has flattened movement throughout the study period, therefore, it is amply clear that this component of WPI is not at all close to the inflation trend of diesel prices. Furthermore, it is clear from the graph in Figure 5 that the WPI (High-Speed Diesel), of both the series too, could not significantly capture the actual inflation in diesel prices.

**Figure 5. Trends of MoM rates of inflation from Jan'2009 to Mar'2017 and Apr'2017 to Jun'2020**



## CONCLUSIONS

The study concludes that the pricing structure of diesel mainly has four components, i.e., crude oil price, currency exchange rate, government taxes, and other costs. The inflation/deflation trends of these variables, on which the retail price of diesel is dependent, are not identical throughout the sample period and none of the variables moved together. The ratio of these variables also does not remain the same and changes with the time. Between January 2009 and August 2014, global price of crude oil dominated the retail price of diesel in India. Whereas, during the period from September 2014 to December 2019, the ratio had changed and crude oil price as well as taxes, both, had an equal influence on the retail price of diesel. However, during Covid-19, the equation in 2020 has completely changed and retail price of diesel in India is dominated by taxes.

Due to Covid-19, India's net imports of crude oil and other petroleum products fell about 24% YoY in the first quarter of 2020-21 fiscal year, resulting, reduction in India's net import bill to 15.74 billion USD. Basically, cheap oil prices on the international market and a reduction in oil imports significantly lowered the country's import bill, saving the government's expenditure. Similarly, although, due to lockdown, the consumption of diesel in India between March 2020 to June 2020 is decreased by 31% YoY, India managed to earn

115.10 billion INR more revenue by increasing the taxes (12% in March 2020 and further 71% in May 2020) on diesel.

Since WPI (All commodities and High-Speed Diesel, both the components) did not significantly capture the actual inflation in diesel prices, the Indian construction industry remained deprived of full reimbursement against escalation in costs due to an unprecedented increase in diesel prices. Thereby, leading to further savings by the government of India in government owned projects.

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