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Rising oil prices: What does the past tell us?

Evaluating historical data of international crude price and its impact on India's growth and inflation reveal some interesting results. Over the past 51 years, we found that on16 occasions (excl. FY22-base anomaly), global crude prices rose more than 20% in a year. And within these 16 events, India's growth was adversely impacted in 9 of them. For inflation (WPI: Fuel and power) pass through is more evident, where on 13 occasions inflation rose considerably. Thus, we feel that downside risk to our growth forecast of 7.4-7.5% and upside risk to our CPI inflation forecast of 5.5%-6% prevails.

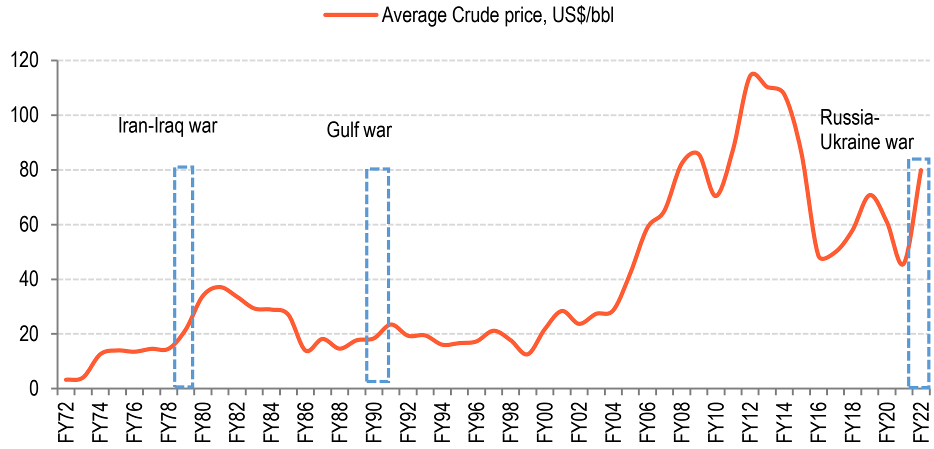
Historically, crude prices have been impacted by geopolitical tensions. We have the analysed past 51-years, to identify the occasions when there has been significant jump in crude prices. Out of 51 years data points that we looked, only in 17 occasions (includes current year), oil prices rose more than 20%.

Table 1: Listing out Years where oil price shock have been observed and what caused the same

Year	Average Crude price, US$/bbl	Abs change in crude price, US$/bbl	Change in crude price, YoY	Major Economic Events
FY73	4.1	1	26.7%	Organization of Arab Petroleum Exporting Countries proclaimed an oil embargo
FY74	12.5	8	206.9%	
FY79	21.6	7	48.0%	Iran-Iraq War
FY80	33.9	12	57.0%	Iran oil embargo
FY87	18.1	4	30.2%	OPEC price accord begins to deteriorate
FY89	17.7	3	20.9%	Spill and to potential shortages on the west coast
FY91	23.4	5	27.5%	SPR released oil post Gulf war
FY97	21.1	4	22.6%	
FY00	21.7	9	73.1%	Energy crisis
FY01	28.4	7	30.5%	Recession and 9/11
FY05	42.2	14	47.4%	Hurricane Katrina
FY06	58.8	17	39.4%	North Korea's missile launch and Israel-Lebanon war
FY08	82.1	17	26.2%	Financial crisis
FY11	87.2	17	23.9%	Political turmoil in Egypt, Libya, Yemen, and Bahrain
FY12	114.2	27	30.9%	US European sanctions on imports of Iranian oil
FY19	70.7	13	22.0%	US sanctions on Venezuela and Iran and OPEC led supply cut
FY22	79.9	34	74.6%	Russia-Ukraine war

Source: Bank of Baroda Research

Fig 1. Impact of war on crude prices over the years:



Source: Bloomberg, Bank of Baroda Research

What has been the impact on India's GDP?

Over the years, we find that out of 16 occasions (excl. FY22, due to significant anomaly in the base), where crude prices rose more than 20%, India's GDP growth fell in 9 of the events. In case of the remaining 7 occasions GDP growth has not been impacted with a lower number being registered. *Interestingly, in periods of major economic events such as war or financial crisis, growth has been thoroughly impacted in tune with rising crude prices*. The details are listed below:

1. In FY73, when OPEC imposed oil embargo, crude prices rose by 27%, India's GDP showed a decline of 0.3% during the same period.
2. In FY79 and 80, during the Iran-Iraq war, when crude prices rose by 48% and 57% (on an average by 53% during these two years), India's growth fell from 7.5% in FY78 to 5.5% and (-) 5.2% respectively, in the subsequent two years (on an average growth was 0.2% during FY79-80).
3. Even in FY91 post the Gulf war, crude prices rose by 28%, GDP growth moderated to 5.3% from 6.1% in FY90.
4. Similar thing happened during the financial crisis as well, crude price rose by 26% and in FY08, India's growth moderated to 7.7% from 8.1% in FY07.
5. Thus, it is evident that FY23, is going to be impacted adversely by the Russia-Ukraine war. However, the quantum of growth deceleration depends on the longevity of the supply disruption due to the war.

Table 1: Listing out years where oil price shock have impacted India's GDP

Year	Average Crude price, US$/bbl	Crude price change, YoY	India's Real GDP growth, YoY
FY72	3.22		1.0%
FY73	4.08	26.7%	-0.3%
FY74	12.52	206.9%	4.6%
FY78	14.57	0.3%	7.5%
FY79	21.57	48.0%	5.5%
FY80	33.86	57.0%	-5.2%
FY86	13.93	-48.4%	4.2%
FY87	18.14	30.2%	4.3%
FY88	14.6	-19.5%	3.5%
FY89	17.7	20.9%	10.2%
FY90	18.4	4.0%	6.1%
FY91	23.4	27.5%	5.3%
FY96	17.2	3.7%	7.3%
FY97	21.1	22.6%	8.0%
FY99	12.6	-29.1%	6.7%
FY00	21.7	73.1%	8.0%
FY01	28.4	30.5%	4.1%
FY04	28.6	4.7%	3.9%
FY05	42.2	47.4%	15.2%
FY06	58.8	39.4%	7.9%
FY07	65.1	10.7%	8.1%
FY08	82.1	26.2%	7.7%
FY10	70.4	-17.8%	7.9%
FY11	87.2	23.9%	8.5%
FY12	114.2	30.9%	5.2%
FY18	58.0	16.1%	6.8%
FY19	70.7	22.0%	6.5%
FY21	45.7	-24.9%	-6.6%
FY22	79.9	74.6%	8.9%

Source: Bloomberg, CEIC, Bank of Baroda Research, Note: Pastel shaded areas show growth years where higher crude price have impacted GDP print adversely, green shaded areas represent years where growth not impacted due to energy price shock; preceding years have also been kept for base reference.

What has been the impact on India's inflation?

Over the past 51-years, rising crude price have kept WPI fuel inflation fairly elevated. We find that out of 16 occasions where crude prices rose more than 20% YoY, WPI: fuel inflation rose at a higher rate on 13 occasions. Notably, the correlation coefficient between WPI: fuel and power inflation and crude price was at 0.45 since FY14 onwards.

Interestingly, we see that that during periods where crude prices rose between 18-22%, responsiveness of WPI: fuel and power inflation has been in the range of 36-53%. Fuel and power has a major share (13.15%) in WPI basket. Thus we have taken this component to see a better pass through of crude price.

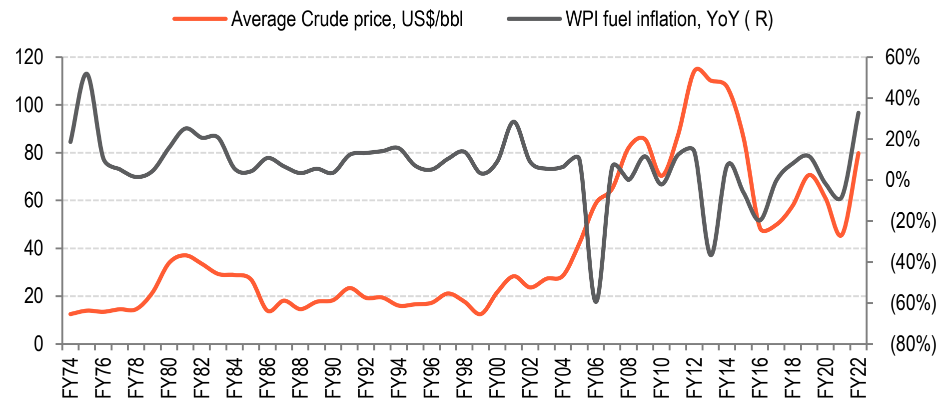
Table 2: Showing pass through of crude to WPI historically

	Change in crude price, YoY	WPI Fuel and power inflation, YoY	Ratio of change in WPI: fuel to change in crude prices
FY79-81	38.2%	15.1%	40%
FY89-91	17.5%	7.1%	41%
FY97	22.6%	10.4%	46%
FY00-01	51.8%	18.8%	36%
FY11-12	27.4%	13.1%	48%
FY19	22.0%	11.6%	53%
FY22	74.6%	32.8%	44%

Source: Bloomberg, CEIC, Bank of Baroda Research

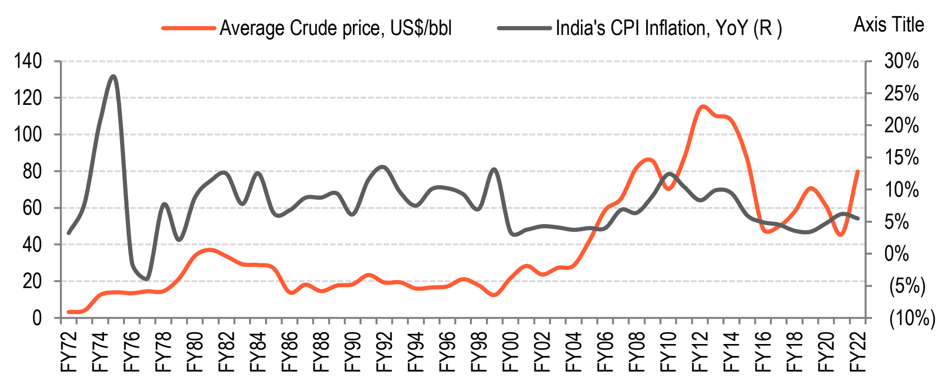
In the past the responsiveness of the WPI to changes in crude oil price has ranged between 36-53%. However, until the last 8-12 years when subsidy was being provided on certain products by the government the ratio of impact was lower. The last three episodes show an average impact of around 48% on the WPI.

Fig 2. Higher crude price pose risk to WPI fuel and power inflation



Source: Bloomberg, CEIC, RBI, Bank of Baroda Research

Fig 2. Impact of crude price on CPI inflation



Source: Bloomberg, CEIC, RBI, Bank of Baroda Research

What it holds for our forecasts:

- **Growth:** We expect growth at 7.4%-7.5% in FY23. However, this depends on how prolonged the war will be and the likely impact on supply disruption. It is quite likely that higher oil price will weigh on private consumption demand and in turn impact growth as also pointed by IMF in its recent report. Thus, there remains a downside risk to our forecast and another 25-50bps may be shed off if crude continues to remain in the range of US$ 100-110/bbl in the next 6-months. Also this can last for two years depending on how fast consumption and investment bounces back.

- **Inflation**: Inflation has ended Q4FY22 breaching RBI's upper tolerance of 6%. Even we expect this is likely to persist in H1FY23 as well. Our forecast of CPI print is in the range of 5.5-6% for FY23. For WPI, we expect it to be above 13% in FY23. However, as seen historically, for periods where crude prices rose sharply, ratio of change in WPI: fuel to change in crude prices will be in the range of around 48%. This means that upside risk to inflation persist and CPI may breach the 6% mark in FY23 as well and WPI would also be elevated if oil price shock does not dissipate in the near term.

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