

The Reliability of Fuel Price Trends in Kerala

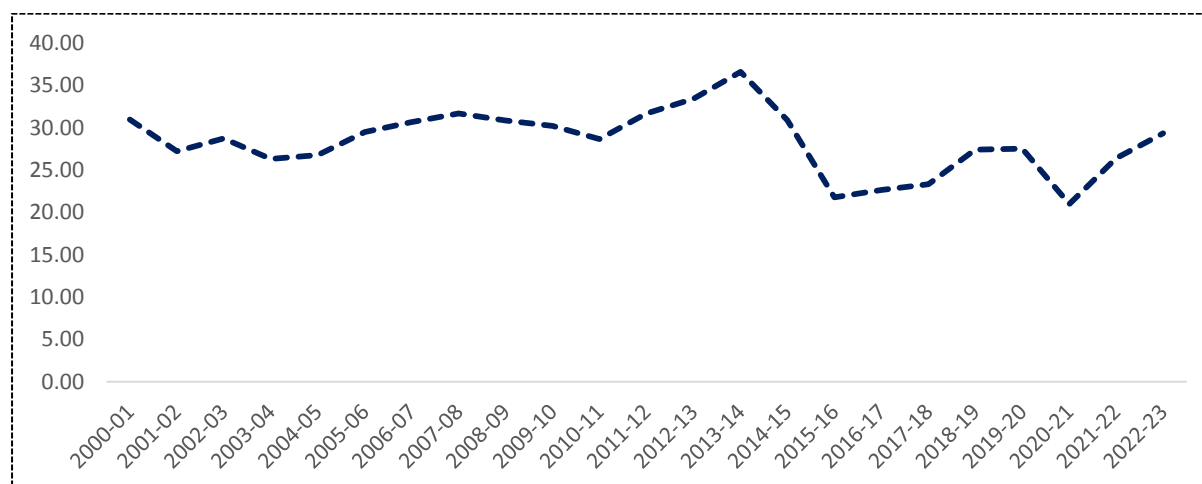
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Crude oil has been a significant energy source for several decades as it plays a crucial role in production and economic development. Therefore, changes in oil prices have far-reaching effects on various macroeconomic factors, including exchange rates, stock markets, trade balances, investments, fiscal balances, interest rates, and more. One key macroeconomic factor affected by oil prices is the inflation rate. Oil prices could impact inflation through both direct and indirect channels. The direct effect operates on the demand side, where higher oil prices can lead to inflation if oil-based products make up a substantial portion of consumer spending. On the other hand, the indirect effect operates on the supply side, influencing producer prices. Since oil is an essential input in the production process, an increase in oil prices results in higher producer costs, ultimately contributing to inflation. Further, an increase in oil prices can reduce consumer purchasing power, prompting households to demand higher wages, thus triggering a wage-price spiral which can lead to cost-push inflation.

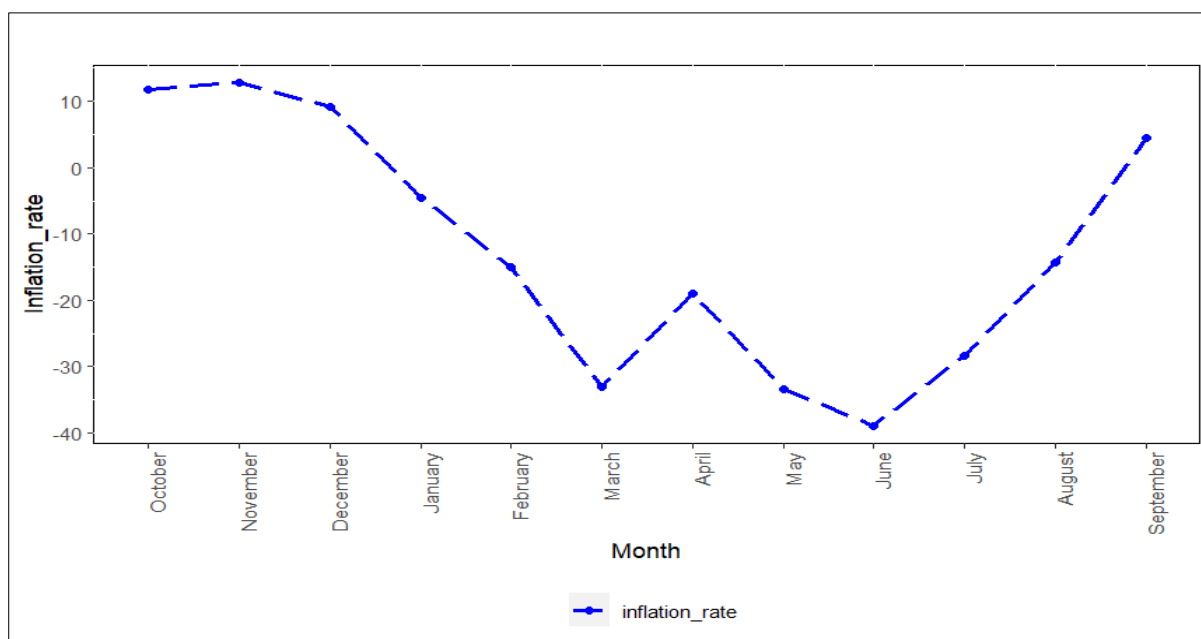
Countries that heavily depend on oil imports fall at higher risk as the international oil price shocks could transmit to the domestic economy. India is the third largest importer and consumer of oil. In 2022-23, India's oil imports amount to 209 billion US dollars.

Figure 1: Share of oil imports as % of total imports in India

Source: Author's calculation based on the RBI data

India's oil imports account for one-third of the total imports (Figure 1). The share of oil imports in total imports increased consistently till 2012-13, followed by a decline thereafter. During the pandemic year (2020-21), the share of oil in total imports declined to 20 per cent. As the economies are on a recovery path, the share of oil in total imports increased to almost 30 per cent, which is higher than the pre-pandemic level of imports.

Recent global economic conditions during and after the COVID-19 pandemic has contributed to significant fluctuations in oil prices. More importantly, the complex dynamics shaped by the Russia-Ukraine conflict caused disruptions in the supply chain and heightened volatility in the oil market both in emerging markets and advanced countries (IMF, 2022). Figure 2 shows crude oil inflation in 2022-23. The initial drop in oil prices from October 2022 to March 2023 was prompted by the European Union's imposition of a price cap on Russian seaborne oil, in conjunction with OPEC+'s decision not to cut oil production. Furthermore, the influx of oil from the United States and Canada contributed to deflationary pressures. However, in early April 2023, oil prices began to climb steadily due to an unforeseen reduction in supply by OPEC+. Subsequently, concerns about a potential recession in advanced economies led to a decline in prices, but OPEC+'s continued supply cuts ultimately resulted in a surge in oil prices. (RBI Bulletin, State of the Economy).

Figure 2: Brent crude inflation (2022-23)

Source: FRED Database

Against this background, this study analyses the trends in domestic fuel prices in India. Secondly, in the context of recent imposition of Rs. 2 per liter cess on fuel for social security pension in Kerala, this study analyses state-wise trends in fuel prices in Kerala in comparison with other states.

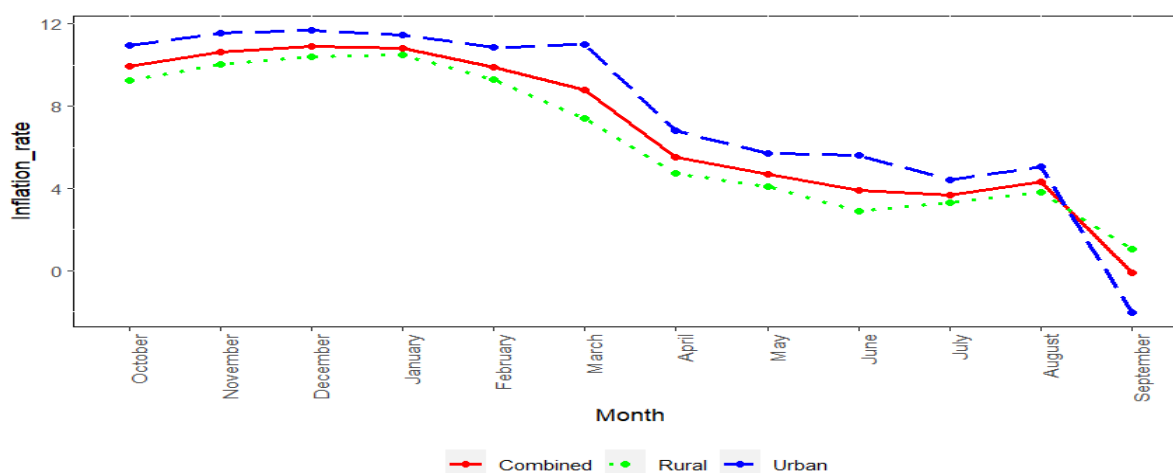
The article uses MoSPI monthly CPI data (2012 series) of Fuel and light components in the CPI basket. Global crude oil prices (in dollars per barrel) are obtained from the FRED database. In addition, a disaggregated look into fuel prices of Indian states with special attention to Kerala is required as it has introduced a fuel price hike through social security cess since the 2023-24 FY.

Composition of Fuel and Light Inflation in India

Fuel and light inflation consist of nine commodities. Of the nine commodities, electricity, firewood chips and LPG account for 82 per cent of the changes in prices. Table 1 shows how various components contribute to fuel and light inflation in India. It shows a continuous fall in Kerosene (distributed through PDS) and LPG prices in India since April 2023. This can be attributed to the base effect, where comparisons are made with respect to the highly inflated values since April 2022. The inflated values of April 2022 reflect the policy changes adopted

by India in its 2022-23 budget to cut down subsidies allotted for LPG and Kerosene. The Budget estimates for 2022-23 show that no subsidy was allocated for Kerosene and the LPG subsidy was reduced by 11% (PRS Legislative research). In addition, the falling diesel, coal, and firewood prices also contributed to the falling fuel and light inflation rates since April 2023.

Figure 3: Fuel & Light inflation in India



Source: MoSPI

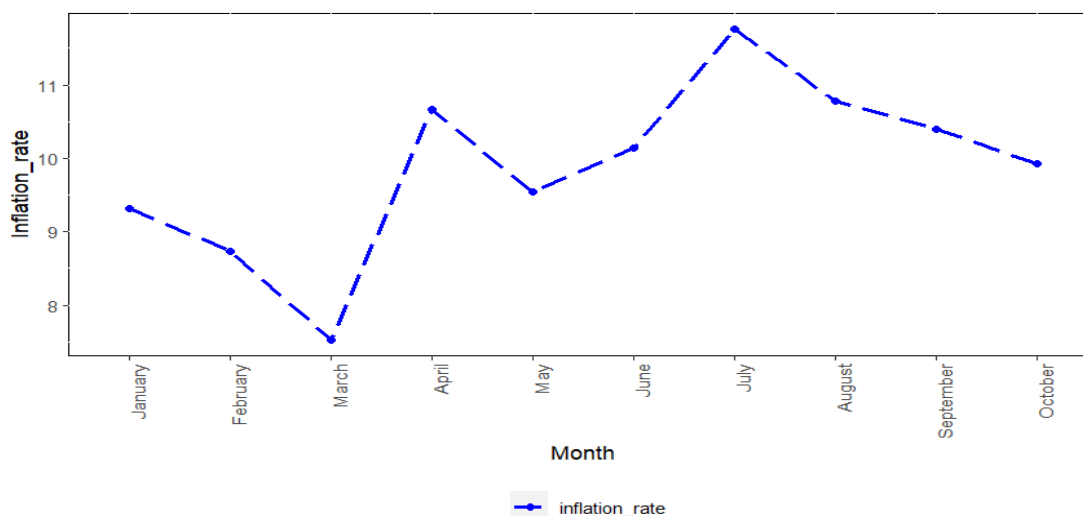
Figure 3, shows Fuel and light inflation rates in India from October 2022 to September 2023 for Rural, Urban, and Combined categories. The trend in prices displays a mixed pattern until April 2023, followed by a consistent decline. It's essential to assess how closely India's fuel and light inflation rates align with global oil prices. A direct comparison between crude oil prices and the Fuel and Light component isn't straightforward, as this component in the Consumer Price Index (CPI) includes various subgroups that don't have a direct correlation with Brent crude prices. When we analyze the inflation rate of diesel prices in India in relation to global oil prices, we observe that among the subgroups within the Fuel and Light component, diesel prices in India exhibited the lowest inflation levels, as illustrated in Table 1. It means fuel prices in India are moderately in consonance with global oil prices.

Table 1: Fuel and light inflation (component wise) October 2022 – September 2023

<i>Fuel and Light -Components (All India)</i>												
<i>Items</i>	<i>Month</i>											
	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>
<i>Electricity</i>	-0.29	3.10	3.10	3.02	3.02	3.10	2.25	5.21	8.72	13.42	13.49	11.18
<i>LPG</i>	16.01	16.02	15.97	16.17	16.11	19.97	15.14	10.98	9.23	4.96	4.24	-12.72
<i>Kerosene - PDS</i>	69.59	50.73	57.01	56.20	28.77	7.88	-12.93	-19.11	-26.76	-32.26	-25.09	-17.31
<i>Kerosene – others</i>	30.72	31.12	33.72	36.05	33.95	35.09	31.72	36.46	29.06	21.34	17.25	19.09
<i>Diesel</i>	-4.99	1.00	2.67	2.99	3.12	2.34	-6.90	-5.49	-0.31	-0.19	-0.06	-0.06
<i>Other fuel</i>	2.87	5.02	3.78	4.62	3.22	4.51	1.90	3.49	3.16	3.46	3.81	3.81
<i>coke</i>	-7.95	-7.69	-6.76	-7.28	-8.20	-7.97	-9.09	-8.59	3.93	0.65	1.67	0.50
<i>Firewood and chips</i>	6.17	6.72	7.01	7.14	6.63	6.44	5.71	5.26	4.80	4.58	4.20	3.34
<i>Coal</i>	12.30	13.06	11.08	10.23	10.37	11.33	11.13	9.07	6.11	5.88	5.21	5.04
<i>Charcoal</i>	2.14	1.85	8.18	11.07	11.46	11.94	11.84	9.36	8.74	10.87	11.89	11.20
<i>Dung cake</i>	4.41	5.74	5.62	7.04	7.01	6.95	6.20	6.82	7.12	6.97	7.70	7.41

Source: Authors Calculations using MoSPI data

The response of Fuel and light inflation rates to the subsidy reduction is evident from Figure 4. It shows fuel and light inflation in India from January 2022 to October 2022, where a serious hike witnessed in inflation rates from 7.52% in March to 10.67% in April due to the subsidy reduction for LPG and Kerosene. Later the inflation level hasn't returned to the previous position. The month-on-month (m-o-m) inflation levels of April 2023 have been declining due to this base effect of higher inflation rates since April 2022.

Figure 4: All India fuel & light inflation (January – October 2022)

Source: MoSPI

Subnational Analysis

A closer look into components of fuel and light inflation is required to get a holistic picture of the subnational trends and contributing factors. Table 2 provides the disaggregated picture of subnational trends in fuel and light inflation in India. It shows that all the major states taken for the analysis exhibit volatility in their prices till March 2023. Thereafter all the states except Karnataka, Maharashtra, and Rajasthan have shown a steady decline resembling the national pattern. The uniform fall in fuel and light inflation rates of major states in India reiterates the base effect rather than any uniform cut in fuel and light prices.

Table 2: Subnational Fuel and light inflation rates (October 2022 – September 2023)

<i>Fuel and Light -Combined</i>												
<i>States</i>	<i>Month</i>											
	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>
<i>Andhra Pradesh</i>	17.38	17.39	17.56	18.36	17.91	19.00	8.09	6.47	5.82	4.02	2.53	-4.03
<i>Karnataka</i>	5.83	5.59	5.88	5.74	9.09	10.62	9.79	8.65	7.83	12.09	11.46	5.41
<i>Kerala</i>	13.29	12.01	12.53	12.29	11.94	13.34	12.74	10.11	9.08	7.22	7.11	0.52
<i>Tamil Nadu</i>	20.51	20.63	20.63	20.49	20.13	22.00	20.39	17.97	17.01	15.24	14.56	-1.76
<i>Telangana</i>	16.96	17.11	17.31	17.86	17.69	18.96	6.89	4.29	4.59	2.51	2.46	-4.39
<i>Maharashtra</i>	15.14	12.35	12.06	11.12	8.92	6.84	0.26	4.10	3.57	-1.03	2.63	0.66
<i>Gujarat</i>	4.20	4.94	5.47	4.77	5.22	5.53	7.34	6.63	6.13	5.55	5.48	2.60
<i>Rajasthan</i>	-14.97	-14.55	-14.67	-14.33	-14.39	-14.18	1.16	-2.25	4.34	29.32	29.50	24.59
<i>Madhya Pradesh</i>	15.28	13.15	13.57	14.86	11.80	-6.31	-11.72	-12.80	-14.32	-15.20	-15.82	-18.68
<i>Uttar Pradesh</i>	6.25	6.65	6.54	7.21	6.99	7.58	6.00	5.51	5.31	4.68	4.71	1.03
<i>All India</i>	9.93	10.62	10.91	10.84	9.90	8.79	5.52	4.70	3.92	3.67	4.31	-0.11

Source: MoSPI

Kerala Case

India's scrutiny of fuel and light inflation rates brings Kerala into the spotlight, primarily because of its decision to levy a Rs. 2 per liter cess on petrol and diesel starting from April 1, 2023. It is noteworthy to observe how inflation rates in Kerala responded to rising fuel and electricity costs, especially in a context where national fuel prices have shown a declining tendency.

Table 3 shows fuel and light inflation rates of southern states from October 2022 to September 2023 for rural, urban, and combined categories. Looking at the provided table, it is evident that, following April 2023, there has been a decrease in inflation rates across all categories (rural, urban, and combined) for the southern states, with one notable exception being the rural sector of Karnataka. This declining tendency in inflation rates can be traced back to the impact of subsidy reductions that were introduced in the 2022-23 Union Budget, highlighting the role of the base effect. To illustrate how the base effect operates in Kerala, refer to Figure 5.

Table 3: Fuel & light inflation rates October 2022 to September 2023

Fuel and Light - Rural												
States	Month											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Andhra Pradesh	18.08	18.22	18.78	19.85	19.15	19.70	7.55	6.32	5.85	4.39	2.36	-2.14
Karnataka	4.45	4.26	4.89	4.17	8.54	9.56	10.29	9.84	5.59	13.46	12.59	9.27
Kerala	14.06	12.98	12.43	12.87	12.98	14.29	13.95	10.99	9.79	8.07	7.99	1.72
Tamil Nadu	17.67	18.16	17.26	17.04	16.68	18.26	17.52	15.56	15.03	13.42	12.36	0.16
Telangana	14.70	15.19	15.52	16.52	16.12	16.97	5.87	3.13	4.05	2.11	3.01	-1.53
All India	9.24	10.04	10.39	10.49	9.32	7.40	4.73	4.11	2.89	3.29	3.80	1.06
Fuel and Light - Urban												
Andhra Pradesh	15.94	15.70	15.36	15.40	15.49	17.77	9.11	6.65	5.72	3.33	2.81	-7.79
Karnataka	7.37	6.97	6.96	7.41	9.71	11.71	9.27	7.41	10.15	10.70	10.27	1.54
Kerala	11.62	9.98	12.84	11.01	9.83	11.30	10.18	8.26	7.68	5.30	5.16	-1.88
Tamil Nadu	23.01	22.85	23.55	23.55	23.19	25.17	22.86	20.16	18.67	16.76	16.44	-3.39
Telangana	19.59	19.35	19.43	19.34	19.49	21.33	8.08	5.56	5.15	2.88	1.93	-7.67
All India	10.97	11.57	11.69	11.45	10.86	11	6.80	5.71	5.60	4.40	5.04	-2.06
Fuel and Light - Combined												
Andhra Pradesh	17.38	17.39	17.56	18.36	17.91	19.00	8.09	6.47	5.82	4.02	2.53	-4.03
Karnataka	5.83	5.59	5.88	5.74	9.09	10.62	9.79	8.65	7.83	12.09	11.46	5.41
Kerala	13.29	12.01	12.53	12.29	11.94	13.34	12.74	10.11	9.08	7.22	7.11	0.52
Tamil Nadu	20.51	20.63	20.63	20.49	20.13	22.00	20.39	17.97	17.01	15.24	14.56	-1.76
Telangana	16.96	17.11	17.31	17.86	17.69	18.96	6.89	4.29	4.59	2.51	2.46	-4.39
All India	9.93	10.62	10.91	10.84	9.90	8.79	5.52	4.70	3.92	3.67	4.31	-0.11

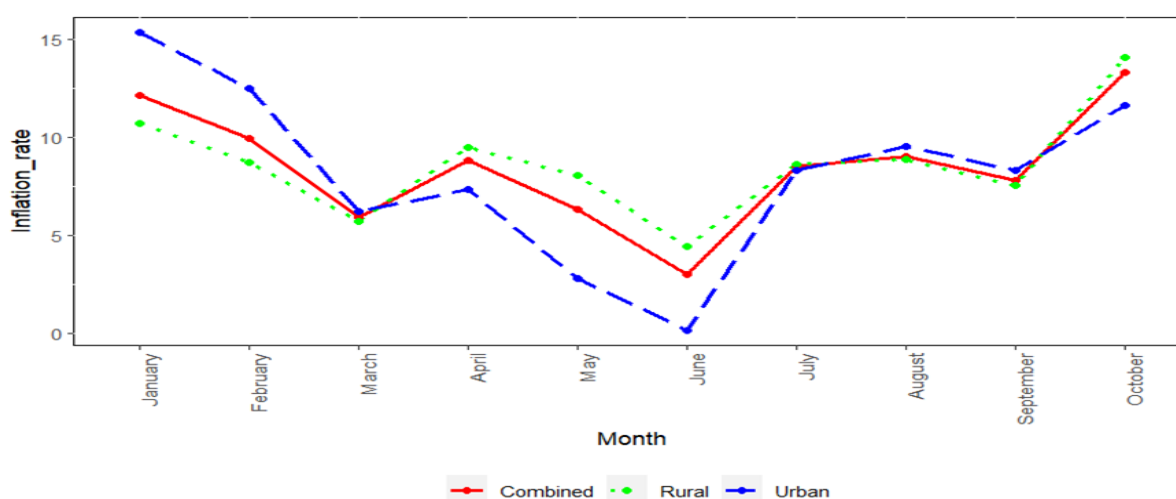
Source: MoSPI

The decrease in fuel and light inflation rates in Kerala in April 2023, despite the rise in fuel prices, can be attributed to the methodology of month-on-month (m-o-m) rate calculations, which utilize April 2022 as the reference point. In this scenario, the base effect comes into play because Kerala had elevated inflation levels in April 2022.

The significant impact of increases in fuel prices and the base effect can be observed in Table 3. Among the various southern states, Kerala experienced the smallest decline in prices even with the base effect. In April, Kerala's prices decreased by only 0.6% compared to March. In contrast, Andhra Pradesh, Karnataka, Tamil Nadu, and Telangana saw price drops of 10.9%,

0.83%, 1.61%, and 12.07%, respectively. Karnataka and Tamil Nadu experienced lower price drops since they did not witness a substantial rise in fuel prices in April 2022 following the subsidy cut. Specifically, Karnataka and Tamil Nadu had price changes of only 1.53% and 1.86%, while Andhra Pradesh and Telangana saw much higher increases of 10.28% and 12.09% in April 2022 (MoSPI, 2022). This accounts for a higher fall in the prices of Andhra and Telangana and a lower fall in prices for Karnataka and Tamil Nadu in the current April par with March 2023.

Figure 5: Fuel and light inflation rate in Kerala, January to October 2022 in %



Source: MoSPI

The strength of fuel price inflation in Kerala compared to other southern states can be observed in the subsequent months. The combined inflation rates of Kerala states that, next to Karnataka, Kerala witnessed least reduction in prices till August 2023 par with March 2023 due to the impact of its fuel price hike. For the month of May 2023, Kerala witnessed a drop of only 3.32%, compared to March 2023, whereas Andhra, Karnataka, Tamil Nadu and Telangana have shown a decline of 12.3%, 1.65%, 4.03%, and 14.67% respectively. Similar trends are visible for the months of June, July and August.

The average reduction in inflation levels from April to August 2023 compared to March 2023 shows that Kerala's average reduction in inflation is 4 % compared to 13.6%, 4.9%, 14.8%, and 0.65% in Andhra, Tamil Nadu, Telangana and Karnataka respectively. The all-India inflation levels have shown an average fall of 4.36%, which is even higher than that of Kerala. These statistics highlight the significant impact of fuel price hikes in Kerala. The

reduction in fuel and light inflation rates in Kerala can largely be attributed to the base effect. However, it's important to note that Kerala's relatively lowest decrease in fuel prices, even considering the base effect, demonstrates the adverse influence of recent fuel price hikes on the state.

Conclusion

The study intends to identify whether global crude prices are reflected in Indian fuel prices and thereby how subnational economies behave with special attention to Kerala. The study finds that the fuel prices of India were able to follow global oil prices and major Indian states witnessed a continuous fall in fuel and light inflation rates since April 2023, including Kerala. The key discovery of the research is that the decline in fuel prices can be attributed to the influence of the base effect, which has been noticeable since April 2022. This is primarily linked to the reduction in LPG and Kerosene subsidies initiated by the central government in April 2022. A similar trend is observed in Kerala, where fuel prices have been on a downward trajectory since April 2023, despite a price increase in the same month. This is because the increased pressure from rising fuel prices is counteracted by the presence of the base effect. An in-depth examination of Kerala's fuel price inflation rates reveals that they are decreasing slower than other southern states, largely due to the impact of fuel price hikes.

To conclude, the study suggests that one cannot infer that the fuel price hike introduced by the state government hasn't led to significant inflationary pressures keeping an eye on the falling rates. The disinflationary trend seen in Kerala, as well as other states since April 2023, is a byproduct of the base effect. The slower reduction in fuel & and light inflation rates of Kerala shows that fuel price hikes had such a strong impact on prices that they overwhelmed the base effect.

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