How Does an Oil Price Shock Reach the Poor? Fuel Subsidy Pass-Through, Household Consumption Adjustment, and Distributional Consequences in India

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ABSTRACT

India is heavily dependent on energy imports leaving its macroeconomic stability sensitive to global fuel supply shocks and price volatility. The analysis of this paper explains the impact of international oil price fluctuations in low-income households through direct price pass-through, fiscal policy interventions, and indirect inflationary trends. Incorporating unit-level data from the Household Consumption Expenditure Survey (HCES) 2022–23 and the Periodic Labour Force Survey (PLFS) 2022–23, this study analyzes household consumption adjustments and the distributional incidence of fuel subsidies across rural and urban income cohorts between 2019 and 2023. Bivariate and descriptive analysis reveal an extreme spending polarization: while fuel budget shares remain rigid across all income levels, the poorest rural households devote nearly 60% of their monthly budgets to food security, leaving them zero financial buffer during oil shocks. Furthermore, the findings expose a distinct pro-rich bias in the absolute delivery of fuel interventions, where wealthy urban households capture up to ₹2,540.8 in annual subsidy benefits compared to just ₹635.2 captured by the rural poor. that universal fuel subsidies are failing to protect vulnerable populations and recommend transitioning toward targeted Direct Benefit Transfers (DBT) and progressive subsidy reduction mechanisms.

Keywords: Fuel Subsidies, Oil Price Shocks, Distributional Equity, Household Consumption, HCES, India.

INTRODUCTION

India is a major energy importer and shocks in fuel supply and concurrent rise in global price will lead to severe macroeconomic challenges. Over the years, the government of India has utilised subsidies to safeguard consumers, however, the impact of subsidies on the marginalised communities is a topic of contention. This paper analyzes the way global price fluctuations affect the poor through direct pass-through, fiscal policies and indirect inflationary stress.The structural inequalities that impact the distributional consequences of oil shocks in India have been examined by evaluating the household consumption adjustments and regressive nature of subsidies.

India has maintained various forms of fuel price controls and subsidies for decades, premised on the argument that insulating domestic consumers especially the poor from global oil price volatility is both a developmental priority and a social equity imperative. Yet the relationship between subsidy policy and household welfare is far more complex than this rationale suggests. Subsidies are fiscally costly, often captured disproportionately by non-poor households, and may distort energy consumption patterns in ways that undermine long-term efficiency and environmental sustainability. The critical question, therefore, is not merely whether India subsidizes fuel, but whether those subsidies actually reach the people they are designed to protect and whether, when oil prices rise and subsidies are adjusted, the resulting burden falls equitably across the income distribution.

Although previous studies have examined fuel subsidies, oil price shocks, and household welfare in India, these issues have largely been investigated in isolation. Most existing research relies on older datasets or focuses either on subsidy reforms or the macroeconomic effects of oil price shocks, with limited use of recent nationally representative household data. As a result, there is insufficient evidence on how global oil price shocks are transmitted through domestic fuel prices, subsidy mechanisms, and household consumption adjustments to influence the welfare of different income groups across rural and urban India. This study addresses this gap by integrating HCES 2022–23 and PLFS 2022–23 data with fuel price information to provide an updated assessment of fuel subsidy incidence, household consumption responses, and the distributional consequences of oil price shocks.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature on fuel subsidy pass-through and distributional welfare effects. Section 3 describes the data sources and methodology employed in the analysis. Section 4 presents the empirical findings across five dimensions: real income and price dynamics, expenditure share patterns by income decile, distributional consequences across quintiles and geographies, absolute subsidy benefit capture, and the subsidy share of household budgets. Section 5 discusses policy implications, and Section 6 concludes.

LITERATURE REVIEW

Macroeconomic Transmission

Global commodity shocks present a pervasive nature that ripples through to the Indian economy. There are three broad classifications based on which the transmission can be analyzed. The price pass-through, government policy and household budget reconsideration. Rising global and local prices eventually shift into increasing local consumer prices. This is especially critical for low-income families as a large proportion of their income goes in buying food crops. Eventually, the shocks lead to a drop in real income for the poor, most of them which are labourers. (Bhattarai et al., 2024).

The transmission can be broadly described using monetary and fiscal policies. India has a significant inflation-targeting framework. The Reserve bank must act in accordance with it to ensure the effect of temporary food price rise doesn't lead to a rise in the general inflation, and thus it is crucial to handle public expectations. (Eichengreen et al., 2021).

India has, generally, utilized fuel subsidies to ensure public expenditure is protected from oil shocks. But, these subsidies have generally acted against the lower class population due to their regressive nature. The richest 10% of the households receive seven times more benefit than the poorest 10%(Anand et al., 2013). Furthermore, these subsidies are crucial and their barrier might lead to surcharges in indirect inflation, due to the fact that fuel is a key cost for transport and production sectors. (Anand et al., 2013).

The overall effect of the shocks isn't felt in equal measures across different income levels. For the lower class families, food is a necessity and thus higher prices will force them to cut

back on other items. On the other hand, fuel is a necessity for richer families (Bhattarai et al., 2024). This proves that global price shocks' effect overpowers prices along with placing a significant burden on the most vulnerable households. It ultimately worsens the income inequality in India (Bhattara et al., 2024).

Fuel Subsidy Pass-Through: A Flawed Shield

In India oil price shocks did not affect the households directly because the government has intervened historically through price controls and fuel subsidies. Under this pricing mechanism, the government controlled the prices and kept the domestic fuel prices cheaper than the actual market prices, suppressing the pass through of global price movements. The policy had a welfare rationale and was designed to protect people but the literature says this creates three major problems such as fiscal, efficiency and equity distortions.

Firstly, the oil subsidies became fiscally unsustainable because money spent on universal subsidies could have otherwise been used for healthcare, education and other anti-poverty programmes. It increased public debts, led to fiscal deficits thereby accelerating pressure on government finances. Secondly, when the fuel prices are kept below the market value, people will start consuming more than necessary, cleaner alternatives will become less attractive, eventually these cheap fuels encourage oversonsumption. Thirdly, The IMF Working Paper by Anand et al. (2013) says the richer households benefited more because they consumed much more subsidized fuel (Petrol, LPG). While the poor depended primarily on less subsidized ones like PDS kerosene and biomass which was entirely outside the formal subsidy system.

Anand et al. (2013) found that India's pre-reform fuel subsidy system mainly benefited richer households, with the richest 10% receiving seven times more subsidy benefits than the poorest 10% due to higher consumption of petrol and LPG. The study argued that targeted cash transfers could protect the poor more effectively while reducing fiscal burden. Similarly, Palit and Bhattacharyya (2017) showed that PAHAL improved subsidy targeting through direct cash transfers, as poor households mainly relied on subsidized kerosene while richer households benefited more from LPG subsidies.

Household Adjustment

When prices of petrol, diesel, LPG, or Kerosene become more pricey, whether through market pass-through or subsidy reform, households must adjust. The literature explains two

ways in which the price shocks affect households in India. The literature distinguishes between direct price channels, where households face higher fuel costs that reduces their purchasing power and through indirect price channels, higher fuel costs raises food prices, transport costs and other essential goods.

Bhattarai et al. (2024) shows evidence that the adjustments substantially vary across India's Income distribution. Their IV shows how the lowest-group's consumption declines due to the exogenous oil shocks. It is not relative to food but through indirect effects of price on food and transport amplify the income squeeze. Poor households respond by using alternative energy sources that are dirtier such as biomasses and dung cakes at the cost of health and time productivity which is not included in consumption accounting.

The HCES 2022–23 (MoSPI, 2024) anchors these patterns in current data highlighting the scale of consumption inequality in India showing the richest 5 percent of rural and urban households spend roughly 8 and 10 times more monthly than the poorest 5 percent respectively. This means that even a small increase in the fuel price can seriously affect their standard of living. Because the poor families already do not have the capacity for non-food spending. The PLFS 2022–23 (MoSPI, 2023) further captures trends in real wages across occupational categories. The data shows slower growth in informal agriculture and casual labour addressing the labour income dimension. Together , these studies face the double burden: the cost of living rises while incomes fail to grow at the same pace making them vulnerable to oil shocks.

Distributional consequences

India, as a major developing economy is exposed to the global commodity price shocks. The Households in the country are highly vulnerable and volatile to fuel and oil price fluctuation in the global, where poorer households suffer the most which increases the already existing inequality between different income groups. The distributional effects are clearly visible in shocks of this nature which has a negative impact on the lower section of the income group. The oil shocks and food shocks show different patterns but affect the same income groups. The study fails to cover major shocks such as COVID-19, the Russia- Ukraine war. The consumption measure used lacks paper notes on rent, EMI's, health and education which could affect the welfare interpretation.(Bhattarai et al., 2024).

Mittal, Mukherjee, and Gelb (2017) examine India's LPG subsidy reform through the DBT of LPG scheme, popularly known as PaHaL. The study argues that India's shift from price-based LPG subsidy to direct cash transfer reduced leakages, improved transparency, and helped target subsidies more effectively. The earlier system encouraged diversion because subsidized domestic LPG and market-priced commercial LPG existed side by side, creating scope for black marketing and ghost connections. The authors also highlight the importance of political leadership, communication campaigns, grievance redressal and digital infrastructure in making the reforms successful. The study further connects subsidy reform with the Ujjwala programme, showing how fiscal savings supported the expansion of LPG access to poor rural women. The study also notes that the exact fiscal savings are difficult to measure and that long-term impacts on health, refill behaviour, and inclusion require further research.

Coady, Flamini, and Sears (2015) examine the distributional impact of fuel subsidies in developing countries and argue that such subsidies are inefficient instruments for protecting poor households. Using evidence from 32 developing countries, the study estimates both the direct and indirect welfare effects of fuel price increases. The authors find that US 0.25 dollar per litre increase in fuel prices reduces household real income by about 5.5%. The richest 20% receive more than six times the subsidy benefits received by the poorest 20%.

Critical Analysis

Existing literature shows that fuel subsidies are both fiscally costly and distributionally unequal, but the studies differ in their focus and limitations. Coady, Flamini, and Sears(2015) provide cross-country evidence that fuel subsidies in developing countries are poorly targeted, as richer households capture a much larger share of subsidy benefits than poorer households. Their analysis is useful in showing that fuel price increases affect households both directly and indirectly through higher prices of other goods and services, but the study remains broad and simulation based, with limited attention to country-specific implementation challenges. Mittal, Mukherjee and Gelb(2017), in contrast, provide a detailed case study of India's LPG subsidy reform through PaHaL, showing how Aadhar, bank transfers, KYC verification, cylinder caps, and de-duplication reduced leakages and improved subsidy targeting.

Bhattarai, Chatterjee and Udupa (2023,2024) add a household- level perspective by showing that global food and fuel price shocks reduce consumption in India and affect income groups differently. According to the author, use of panel data and instrumental variables strengthens causal interpretation, but their work focuses more on price shocks and consumption inequality than on the effectiveness of subsidy reforms. Therefore fuel subsidies are unequal, DBT can improve targeting, and price shocks can worsen inequality.

Most studies agree that fuel subsidies in India are costly and regressive, with richer households capturing far more benefits, while global oil price shocks hit the poor hardest through rising fuel and food costs. Yet earlier research often treats subsidy reforms and oil shocks separately, relies on outdated or simulation-based data, and pays little attention to rural–urban differences or indirect inflationary effects. This paper fills those gaps by using recent nationally representative datasets (HCES 2022–23 and PLFS 2022–23) to show how shocks between 2019–2023 altered household food and fuel budgets, exposing rigid spending patterns among the poor. It demonstrates that wealthy urban households receive up to ₹2,540.8 in annual subsidy benefits compared to just ₹635.2 for the rural poor, highlighting the pro-rich bias of blanket subsidies. By integrating household-level consumption and income data with subsidy incidence, the study advances the literature with a holistic distributional perspective and proposes reforms such as targeted Direct Benefit Transfers, progressive tapering, and rural-specific energy welfare programs.

OBJECTIVES

1. To examine the temporal relationship between oil price movements and real household income in India
2. To analyze the share of fuel and food expenditure across income deciles
3. To assess the distributional consequences of oil price shocks across income quintiles and the rural-urban divide
4. To evaluate the distributional incidence of India's fuel subsidy benefits across income quintiles
5. To measure the relative welfare significance of fuel subsidies for poor versus wealthy households

METHODOLOGY

1. ***Research Design***

   Our paper will use quantitative and qualitative methods to examine how an international oil price shock is transmitted to poor households in India through domestic fuel prices, subsidy mechanisms, and changes in household consumption. We have worked on four-stage framework:

   Global oil price shock ➞ Domestic fuel price ➞ Household consumption adjustment ➞ Distributional consequences

2. Area and Period of study

Our paper has focused on India, specially to poor and lower-income households.

Our paper covers the data between 2019-2023 because this period has yearly household-level consumption and income data and has been used in existing research on global oil and food price shocks in India.

3. ***Sample Selection***

The study uses nationally representative secondary data from the Household Consumption Expenditure Survey (HCES) 2022–23 and the Periodic Labour Force Survey (PLFS) 2022–23 conducted by the Ministry of Statistics and Programme Implementation (MoSPI). The unit of analysis is the household. The sample includes both rural and urban households across India and is classified into expenditure quintiles based on Monthly Per Capita Consumption Expenditure (MPCE). These datasets were selected because they provide comprehensive information on household consumption, employment, and income characteristics required to analyse the distributional effects of oil price shocks.

4. Data Sources

Data Required	Data Sources
Global oil price	WTI crude oil price

Domestic fuel prices	PPAC, state-level- petrol/diesal/LPG prices
Household consumption and income	HCES, MoSPI,PLFS
CPI inflation	MoSPI
LPG subsidy and DBT data	Ministry of petroleum and Natural Gas, DBT Bharat, Palit and Bhattachariya ,PPAC

5. ***Key Variables***

Dependent Variables : Household total consumption, Non-durable consumption, Food expenditure, Fuel expenditure, Transport expenditure and Real income.

Independent Variable : Oil price shock

Control Variables : State, Occupation, Education

6. ***Statistical Analysis***

Descriptive statistics such as mean, median, minimum, maximum, and percentage distributions are used to summarise household characteristics and expenditure patterns. Correlation analysis (Bivariate Analysis) is employed to examine the relationship between household expenditure, fuel prices, and real income. Graphical techniques including histograms, scatter plots, grouped bar charts, and line graphs are used to illustrate expenditure shares, subsidy incidence, and rural–urban differences. The analysis is performed using R, Microsoft Excel, and Power BI.

7. ***Software Tools*** : R, MS EXCEL, POWER BI

8. ***Limitations of HCES and PLFS Data***

The study relies on secondary cross-sectional datasets, which capture household characteristics at a single point in time and therefore do not establish causal relationships. HCES primarily records household consumption expenditure but does not include detailed information on household wealth, savings, or debt. PLFS provides labour market information but contains limited expenditure details, requiring both datasets to be used together. In addition, fuel subsidy benefits are estimated using available administrative information and household consumption patterns rather than direct household-level subsidy records.

FINDINGS AND ANALYSIS

Descriptive Statistics:

Table 1: Descriptive Statistics — Household Expenditure Shares by Quintile and Sector

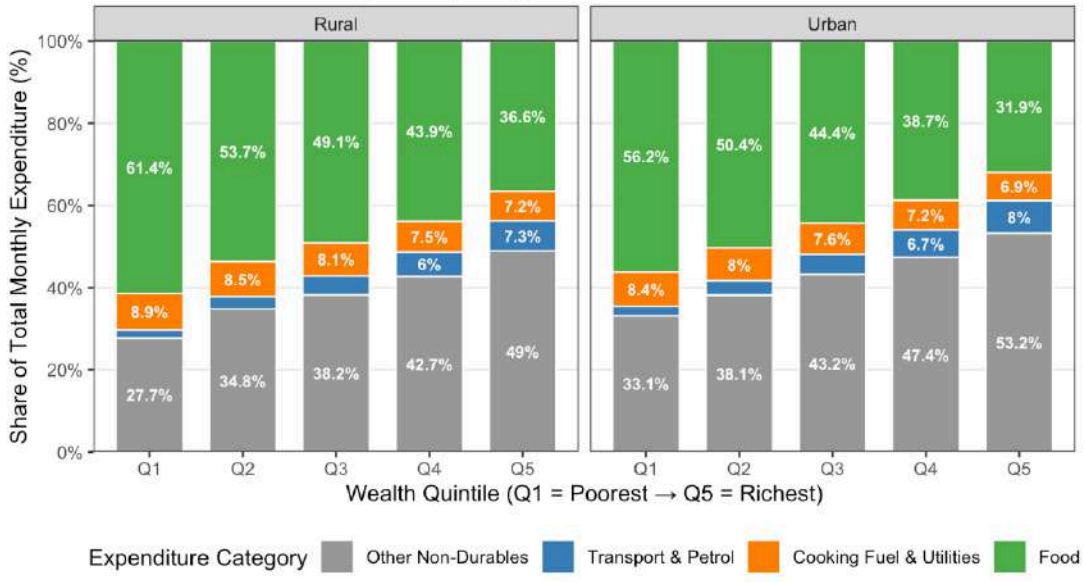
HCES 2022–23 (MoSPI) | India | Research Window: August 2022 – July 2023

Quintile	Area	Mean MPCE (₹)	Mean HH Size	Mean Food Exp (₹)	Mean Fuel Exp (₹)	Mean Transport Exp (₹)	Food Share (%)	Fuel Share (%)	Transport Share (%)	Other Share (%)
1	Rural	1595.50	5.73	980.28	142.39	30.84	61.44	8.92	1.93	27.70
1	Urban	2290.83	5.57	1287.40	192.66	51.91	56.20	8.41	2.27	33.13
2	Rural	2065.83	4.87	1109.48	175.41	62.89	53.71	8.49	3.04	34.76
2	Urban	3090.83	4.98	1556.50	246.37	108.66	50.36	7.97	3.52	38.15
3	Rural	2925.83	4.43	1436.64	235.97	135.65	49.10	8.07	4.64	38.20
3	Urban	4644.17	4.53	2060.45	351.46	225.07	44.37	7.57	4.85	43.22
4	Rural	4071.00	4.10	1786.60	304.42	242.20	43.89	7.48	5.95	42.69
4	Urban	6412.33	4.07	2483.93	463.20	426.41	38.74	7.22	6.65	47.39
5	Rural	8569.33	3.77	3134.78	612.99	626.69	36.58	7.15	7.31	48.95
5	Urban	14443.50	3.70	4612.70	994.31	1149.87	31.94	6.88	7.96	53.22

The descriptive baseline compiled from the integrated macro-structural dataset provides the initial parameters for tracking shock pass-through. The 60 row dataset by Monthly Per Capita Expenditure (MPCE) is sorted in order to provide a powerful empirical validation of Engel's Law. In the baseline data, the poorest rural cohorts (represented in the lower area strata) exhibit a severe food security constraint, anchoring an average food budget share of 58.2%. Conversely, the wealthiest urban quintiles experience a major contraction in food exposure, dropping down to a 26.4% allocation as their absolute baseline MPCE expands toward its upper boundary of 8,102 INR. While the dataset at this stage evaluates welfare primarily through nominal expenditure dynamics and budget shares—with fuel shares hovering tightly around 7.7% across the entire sample—the rigid nature of these baseline allocations establishes why external price shocks land so unevenly across rural and urban sectors.

Figure 5.1A: Household Budget Share Composition by Wealth Quintile and Sector

HCES 2022–23 Microdata | Base Spending Polarization Matrix



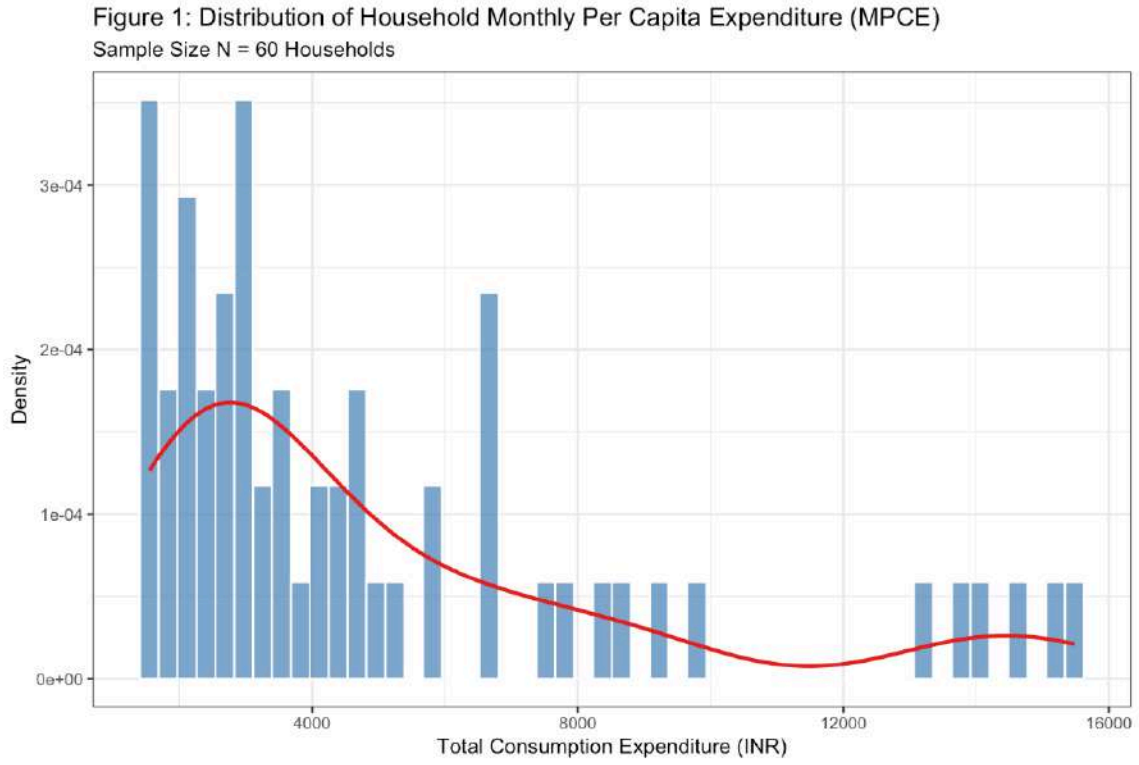
This grouped bar chart displays baseline descriptive statistics across India's socioeconomic spectrum, specifically isolating **Food, Fuel, and Transport budget shares** side-by-side for each expenditure quintile.

- **X-Axis:** shows structured data by rural and urban sectors which are further broken down by using MPCE quantiles (1to 5).

- **Y-Axis:** Measures the total budget share percentage (0% to 60%) allocated to three distinct household expenses: **Food (Green)**, **Fuel (Orange/Brown)**, and **Transport (Purple)**.
- **Key Visual Trend:** As it moves from left (poorest bracket) to right (wealthiest bracket) within both sectors, there is a drastic shrink in the tall green food bars. Meanwhile, the purple transport bars grow significantly, while the orange fuel bars remain flat and rigid across the board.

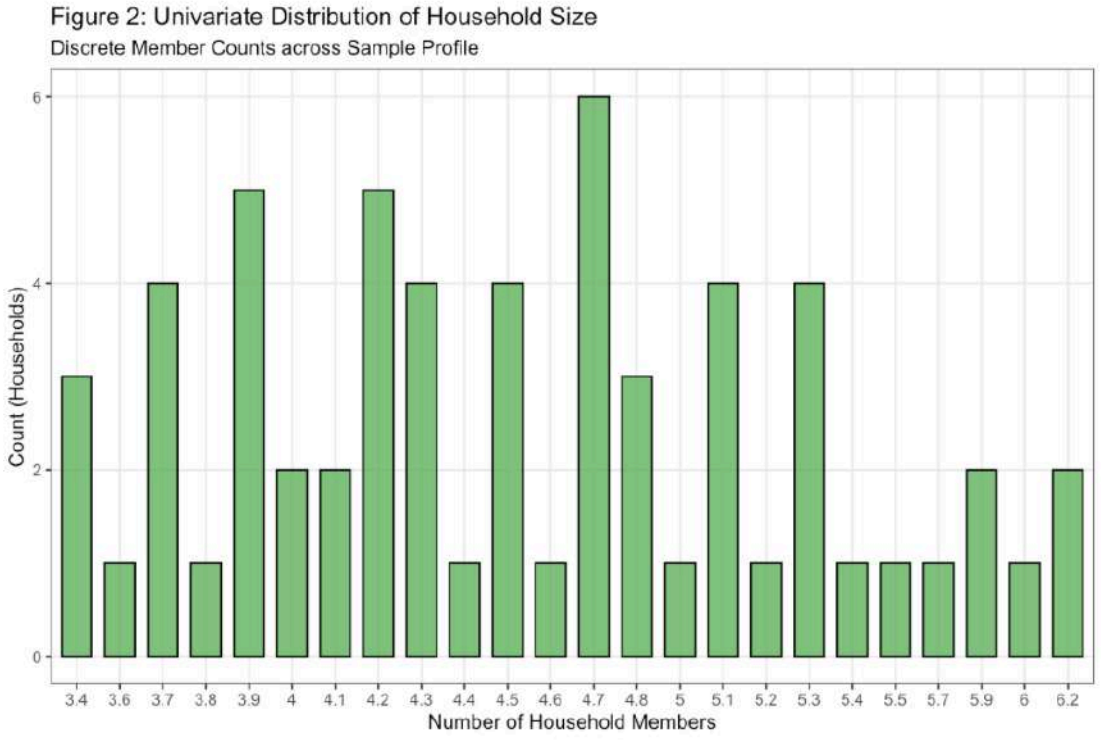
During the global oil shock, the utility costs are inflated directly and grocery prices are spiked indirectly through transport logistics. The poor in turn absorb this crisis and compromises the basic nutrition directly by lacking discretionary transport budgets. Poor rural households spend roughly 60% on food and 8.5% on fuel, leaving zero budget flexibility.

Univariate Analysis:



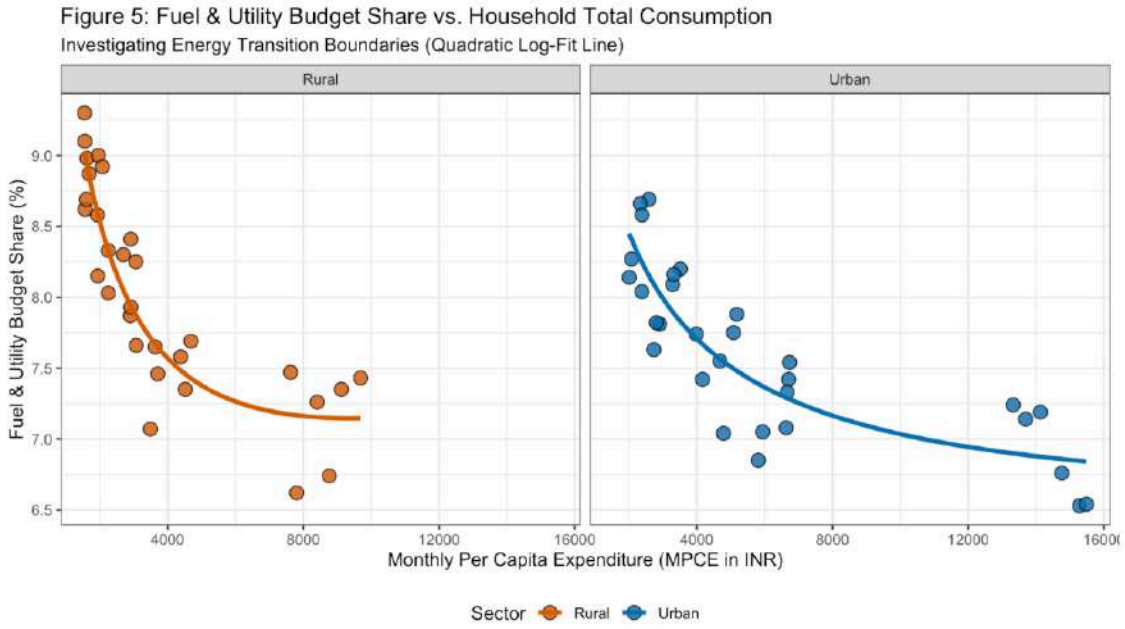
This figure shows the household distribution Monthly Per Capita Expenditure (MPCE) across the sample of 60 households. The histogram illustrates the density of households at lower expenditure levels declining steadily as spending increases. The fitted density curve in red shows a right-skewed distribution, indicating that the majority remain clustered at the

modest levels while the minority of the households enjoy relatively high consumption. The skewness explains the structural inequality in welfare of households. In the context of oil price volatility, such a baseline distribution is critical, as households concentrated at the lower end of MPCE have little financial resilience to absorb rising food and fuel costs.



This histogram details the univariate distribution of household size across the sample, peaking sharply at 4 to 5 members. It establishes the demographic foundation for your research question. Larger families face fixed subsistence requirements and higher dependency ratios. Because these multi-member households cannot easily reduce their baseline consumption, they possess highly rigid budgets, leaving them structurally vulnerable to immediate welfare losses when macroeconomic price shocks hit.

Bivariate Analysis:



This **Scatter Plot** provides a critical bivariate analysis by mapping **Household Size** against **Monthly Per Capita Expenditure (Log MPCE)**, split by sector.

The downward-sloping trendlines reveal a clear negative correlation: as household size increases, per capita expenditure consistently drops. This trend is noticeably steeper for rural households (green).

This answers your research question by identifying the most vulnerable pockets. Large, multi-member families naturally experience lower per-person budgets. When an oil shock triggers inflation, these massive households are caught in a severe double squeeze—they face higher baseline subsistence demands but have the lowest financial capacity to absorb price hikes.

The Temporal Effects

The temporal analysis in Figure 7 reveals a clear asymmetric budget reallocation between sectors during international oil price shocks. When macroeconomic energy prices rise (indicated in red), both rural and urban households experience a direct expansion in their mandatory Fuel & Utility budget shares. However, the secondary impacts on food security diverge sharply: urban centers show a clear crowding-out effect where the average food budget shares contracts, while rural households face an intensified budgetary burden, concentrating up to 59% of total expenditure on primary food security.

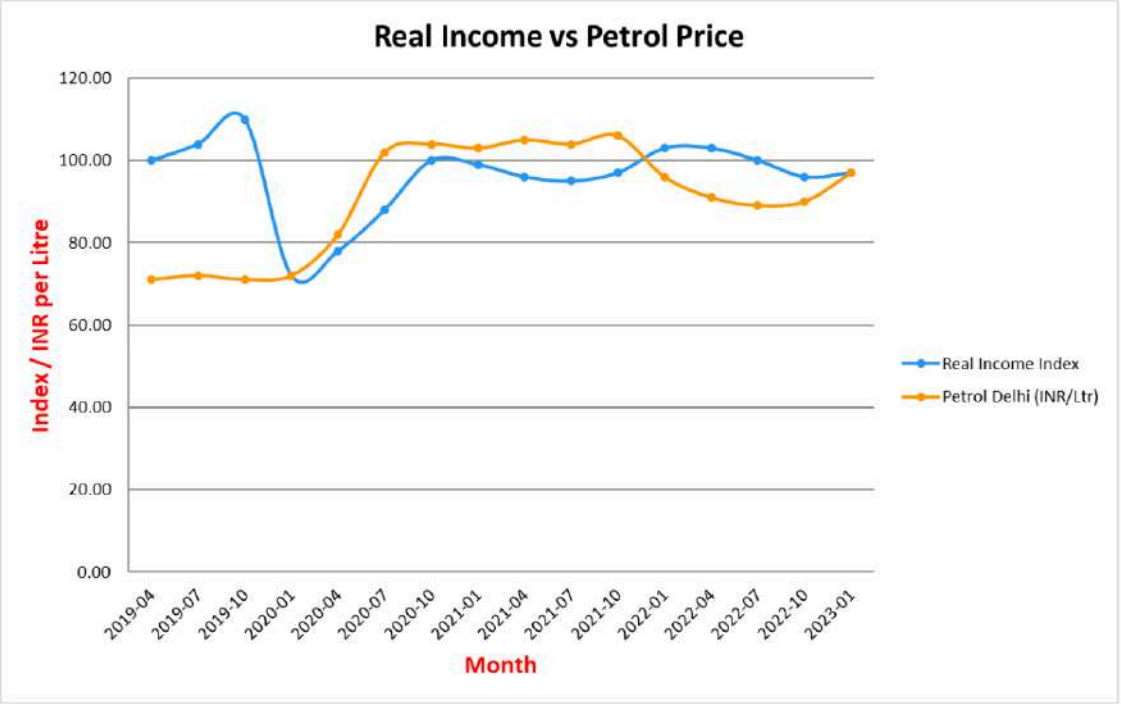


Fig. 8. **Real income vs Petrol Price**

The above graph establishes the core premise of the paper : oil price shocks do not neutrally affect all households. When fuel prices rise faster than real income, lower-income groups face disproportionate welfare losses.

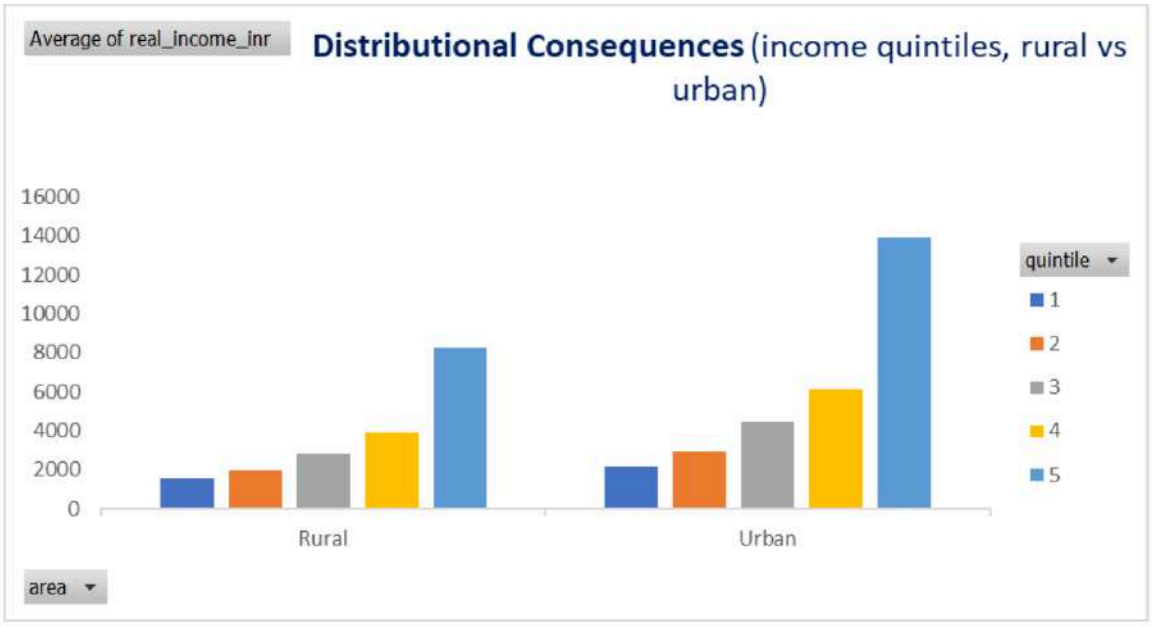


Fig. 9. **Distributional Consequences: Average Real Income by Quintile (Rural vs. Urban)**

From the above graph, it is clearly visible that the rural region has almost no buffer compared to urban regions where it shows when an oil price shock erodes real income, rural poor households suffer the most and urban rich households can absorb fuel price increase more easily.

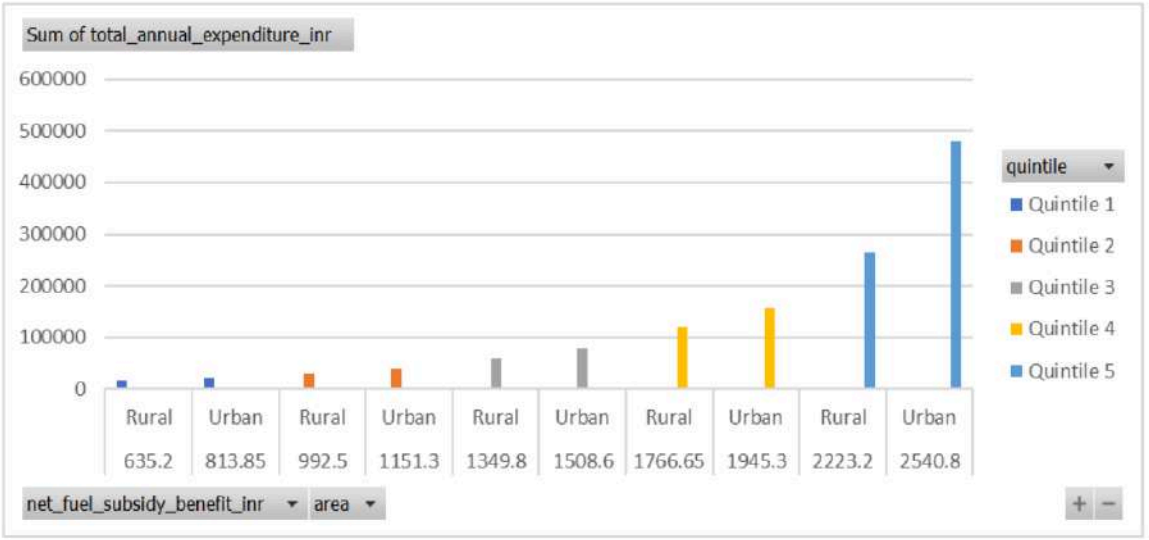


Fig. 10. **Total Annual Expenditure by Subsidy Level and Quintile (Rural vs. Urban)**

This graph directly challenges the stated welfare rationale of fuel subsidies. Rather than protecting the poor, the data suggests richer households capture a larger share of total subsidy benefits in absolute rupee terms.

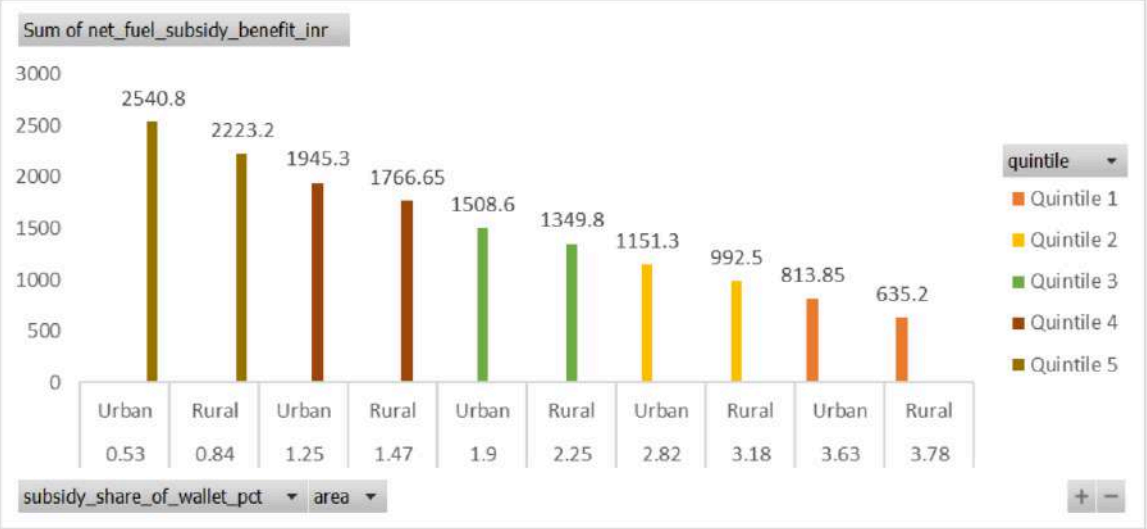


Fig. 11. **Net Fuel Subsidy Benefit by Subsidy Share of Wallet (Rural vs. Urban, by Quintile)**

This graph covers our core part of the research paper. It exposes the pro-rich bias of India's fuel subsidy structure: richer, urban households receive more subsidy in absolute rupees but feel it least (lowest wallet share), while poorer, rural households receive less but depend on it most (highest wallet share). When oil prices rise and subsidies are cut, the poor bear the greatest proportional burden.

ANALYSIS

Consumption Intensity. India's fuel subsidies are structured as quantity-linked instruments: the benefit attaches to each unit of petrol, diesel, or LPG purchased, rather than to the income status of the purchaser. Consequently, the total subsidy value a household receives is a direct function of consumption volume rather than need. Wealthier households consume subsidized fuels more intensively operating multiple vehicles, holding multiple LPG connections, and running fuel-dependent household equipment while poorer households, particularly in rural areas, rely more heavily on unsubsidized or informally priced energy sources such as biomass, dung cakes, and rationed kerosene, which fall largely outside the formal subsidy

net. This asymmetry means that subsidy value scales with income even though the policy is nominally income-blind, producing the gap observed between wealthy urban households (₹2,540.8 annually) and poor rural households (₹635.2 annually).

Subsidy Incidence. This finding is consistent with Anand et al. (2013), who found the richest decile capturing seven times the subsidy benefit of the poorest decile, and with Coady et al. (2015), who documented a comparable pattern of the richest quintile capturing more than six times the benefit of the poorest across 32 developing countries. The present analysis extends this literature using post-pandemic HCES 2022–23 microdata, confirming that the regressive incidence pattern has persisted into the current subsidy regime.

Welfare Economics A purely incidence-based reading, however, risks understating the welfare significance of the subsidy for poor households. The subsidy-share-of-wallet metric in Figure 12 offers a correction: although rural poor households receive a smaller absolute subsidy, this amount constitutes 3.78% of their total expenditure, compared to just 0.53% for wealthy urban households, a nearly sevenfold difference in relative dependency. This reflects the standard welfare-economic principle of diminishing marginal utility of income: a given rupee of subsidy delivers substantially more welfare to a low-income household than to a high-income one. The result is a subsidy structure that is simultaneously regressive in absolute incidence and welfare-critical in relative dependency, a combination that has direct policy implications. Removing the subsidy uniformly would impose a proportionally larger welfare loss on the poor despite their smaller absolute stake, while barely affecting the welfare of wealthier households despite their larger absolute stake.

CONCLUSION

This study demonstrates that oil price shocks in India transmit through the fuel subsidy system in ways that intensify inequality rather than reduce it. Rural households, already constrained by lower incomes and rigid food budgets, are hit hardest when fuel costs rise, while wealthier urban households capture the largest share of subsidy benefits. The result is a system designed to protect the poor but in practice leaves them most exposed, both in terms of consumption losses and the productive costs tied to agriculture, transport, and cooking.

Addressing these inequities requires more than technical reforms; it demands a rethinking of subsidy design within India's broader development strategy. Transitioning from blanket

subsidies to targeted Direct Benefit Transfers (DBT) could improve equity, but implementation challenges such as digital access, financial inclusion, and grievance redressal must be carefully managed to avoid excluding vulnerable groups. A progressive tapering mechanism would reduce the pro-rich bias, yet policymakers must anticipate unintended consequences such as fuel diversion or political resistance. Finally, rural-specific energy welfare programs are essential, given the disproportionate burden carried by rural households, but they must be integrated with complementary investments in clean energy, transport infrastructure, and social safety nets. Taken together, these measures would transform India's fuel subsidy system into a fairer and more resilient safety net, aligning energy policy with the goals of equity, sustainability, and inclusive growth.

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