

The Pass-Through of Global Crude Oil Prices to Inflation in India: Institutional Filters, Transmission Channels and Evidence from Published Research

Aakash

Ph.D. Research Scholar, Department of Economic, Kurukshetra University Kurukshetra, Haryana

Abstract

India's structural dependence on imported petroleum at an all-time high of 88.2% of domestic consumption in FY 2024-25, makes the country's domestic pricing level currently vulnerable to shifts in the international energy markets. However, the magnitude, speed and mechanisms of oil-price pass-through are still a matter of empirical debate and are also institutionally dependent. In this article, we synthesize the existing empirical evidence under a cohesive conceptual framework combining direct, indirect, exchange-rate, fiscal and expectations channels to investigate the relationship between international crude oil prices and inflation in India. We particularly focus on the interrelation of both indicators. Secondary data from the Reserve Bank of India (RBI), Ministry of Statistics and Program Implementation (MoSPI), Petroleum Planning and Analysis Cell (PPAC) and World Bank has been used to trace the changes in pass-through elasticity over time. These changes are due to reforms in the price of petroleum, changes in tax policy and currency fluctuations. Previous studies have shown the absence of transmission under pricing schemes. A recent study estimates a 10% increase in the price of international crude oil would push headline consumer inflation up by about 20 basis points, depending on the degree of government intervention and exchange rate movements. The analysis reveals that the pass-through is neither immediate nor total. Instead, it is channeled through excise charges, which made up \$3.08 trillion of central income in the 2025-26 period. The pass-through also contains subsidy allocations and the changing stance of monetary policy under flexible inflation targeting. The results suggest that crude oil remains an important external factor contributing to inflationary pressures even when the effects of crude oil abroad are dampened by policy buffers in the United States. The final section of the article deals with the implications for energy diversification, management of strategic reserves, and calibration of macroeconomic stabilization measures. India's installed renewable energy capacity reached 274.68 GW.

Keywords: Crude Oil Prices, Inflation Pass-Through, Consumer Price Index, Wholesale Price Index, Energy Policy, Monetary Policy, Exchange Rate, Fiscal Buffer

1. Introduction

The gyrations in global petroleum prices are more than a terms-of-trade shock for an emerging market economy that imported 88.2% of its crude oil requirements in the fiscal year 2024-25. This compares to 87.8% in 2023-24 and 83.8% in 2018-19. These fluctuations are a structural vulnerability which is always

there and have immediate implications for price stability, fiscal balances, external sustainability and the credibility of the monetary policy (Petroleum Planning and Analysis Cell, 2000). India is the third largest consumer of crude oil in the world and even small changes in the international price of Brent crude can have ripple effects across the country's transportation networks, agricultural supply chains, input costs for manufacturing and ultimately, the baskets of goods that households buy. A rise of ten dollars in crude prices results in an increase of about thirteen to fourteen billion dollars in India's yearly import bill, which at the same time puts pressure on the country's current account deficit, fiscal condition and exchange rate (Canara Bank, 2025).

The link has become more important from a macroeconomic point of view since the adoption of flexible inflation targeting (FIT) in August 2016. This is because Reserve Bank of India is mandated to keep inflation rate of consumer price index (CPI) within a symmetric band of $4\% \pm 2\%$. In this framework, supply-side shocks originating from energy markets may be a challenge for monetary policy. This is especially true where second round effects entrench higher fuel prices in wage settlements, transport charges and core inflation. Empirical estimates of the Reserve Bank of India suggest that a 10 per cent rise in the international price of crude oil would increase the headline consumer price index (CPI) by about twenty basis points. However, note that this coefficient is neither time invariant nor commodity invariant (Kundu, Tewari, & Bhattacharyya, 2030). One example of conditional pass-through raises a number of concerns which are the driving force for the current investigation: how can shocks in the global oil price reach domestic consumers? How have the pace and magnitude of this transmission been affected by the exchange rate depreciation, tax measures, and pricing reforms in this transmission? And what policy choices are left to counter inflationary forces while also maintaining fiscal sustainability and energy security in the process?

Four contributions of this study are as follows. First, it builds an integrated conceptual framework and maps the transmission of oil price shocks through five distinct channels that are interconnected. This is more than the simple cost-push story that dominates the policy literature. Second, it is able to disentangle the estimates obtained under administered pricing regimes from those obtained during the post deregulation and inflation targeting periods. This is achieved by integrating existing empirical work on India with a comparative emerging-market perspective. It argues that the gap between domestic and international petroleum prices is not simply a friction in market adjustment, but is endogenously determined by fiscal policy, especially changes in excise duty. Third, it is a broad analysis of the reasons why the pass-through still remains far below unity. Fourthly, it considers the latest data on India's energy transition, such as reaching a non-fossil fuel capacity of fifty percent by June 2025 and penetration of eighty-five percent of electric vehicles by 2025-26, to analyze the structural factors that determine long-term oil price sensitivity. Thus, the article bridges the gap between energy economics, international macroeconomics and monetary policy research. It also offers a nuanced assessment of how an external supply shock is domesticated through Indian institutional architecture.

2. Institutional Background: Petroleum Pricing, Inflation Measurement and Policy Regimes

2.1 Evolution of Petroleum Pricing in India

Any analysis of oil-price pass-through in India needs to start from an understanding of the institutional arrangements that mediate the link between global commodities markets and domestic retail prices, without which it is impossible to understand them. The Indian government had a significant control over the domestic pricing of petroleum products through the use of administered price mechanisms (APMs)

until the gradual deregulation of petrol prices in June 2010 and diesel prices in October 2014. Under the scheme, oil marketing corporations (OMCs) were compensated for selling petroleum products at rates lower than the import-parity price through issuance of oil bonds and provision of budgetary subsidies. Thus, international prices began to rise earlier than the domestic prices, but the rise was reflected in retail fuel prices only with a lag which led to divergence between domestic inflation and global oil market during times of intense volatility (Bhattacharya & Bhattacharyya, 2001).

The transition to market-determined prices, which is not yet finalized for some items like liquefied petroleum gas (LPG) and kerosene, has changed the pass-through dynamics. According to Mandal, Bhattacharyya and Bhoi (2012), the impact of international oil prices on domestic inflation began to grow significantly from the year 2002. This they attributed to the increasing frequency with which prices of petroleum products were revised to levels equivalent to import-parity levels. Deregulation did not, however, eliminate policy intervention altogether; it changed the way in which it was conducted. Currently, the primary shock absorber is the excise levies and value added taxes (VAT) on petroleum products. When there are constraints on the budget, the government can pass through increases but it can also take some of the shocks that are caused by international price fluctuations by lowering taxes.

The size of this fiscal buffer is significant. As of April 2025, the total central excise duty on petrol and diesel was ₹34.90 per liter and ₹33.80 per liter respectively, which includes basic excise duty, additional excise duty, special additional excise duty (SAED), and road and infrastructure cess (Factly, 2025). In March 2026, as West Asia faced a crisis with Brent crude prices exceeding \$100 a barrel following the near-closure of the Strait of Hormuz, which accounts for 40% of India's crude imports, the government reduced the special excise duty on petrol from ₹13 to ₹3 a liter and on diesel from ₹10 to zero, while levying export duties on diesel and aviation turbine fuel to ensure domestic supply (Gulf Business, 2026). This episode illustrates the role of excise taxation as shock absorber in a countercyclical way.

The fiscal importance of the taxation of petroleum is large. The petroleum sector generated tax receipts of more than ₹7.5 trillion for central and state governments in 2023-24, of which excise duty constituted about 60% of the central government's receipts from the sector (Factly, 2025). Central excise duty collections from petroleum products in 2025-26 were ₹3.08 trillion, despite cuts in duties during the year (Dataful, 2026). This revenue dimension implies that tax-based pass-through attenuation involves an explicit fiscal trade-off: lower excise duties cushion consumers, but erode the revenue base, potentially widening the fiscal deficit or crowding out other expenditures.

2.2 Measuring inflation: CPI and WPI

Then the measurement of inflation itself is relevant for the perception of oil-price transmission and the monetary policy response. The 'fuel and light' category (weighted around 6.84%) is put together by the Ministry of Statistics and Program Implementation and is directly sensitive to the prices of petroleum (Canara Bank, 2025). CPI measures the cost of household expenditure at the retail level and includes services; therefore, it is a better measure of the cost-of-living effects of oil shocks than the WPI.

The WPI (based 2011-12) is compiled by the Office of the Economic Adviser and measures price movements at the wholesale level. It has traditionally been more sensitive to price changes in commodities and fuels because of its focus on manufactured products and raw materials. Within the FIT framework CPI has become the main operational target, however, suggesting that the relevant monetary policy pass-through is the one observed in consumer prices and not in producer prices. As the Reserve Bank of India (2019) points out, the varying weighting schemes of these indices mean that the same oil shock can lead

to quantitatively different responses in CPI and WPI, making it difficult to gauge inflation and set monetary policy in real time.

3. Theoretical Framework: Charting the Transmission Channels

The transmission of international crude oil prices to local inflation is transmitted through a complex web of direct and indirect channels that operate over various time horizons and interact with monetary and fiscal policy. Rather than treating oil as a homogeneous input whose price increase translates linearly into the general price level, the framework developed here identifies five channels, each with different lags, policy sensitivities and sectoral incidence. These channels are embedded in a New Keynesian Phillips Curve (NKPC) framework.

3.1 Direct Pricing Effects

The simple answer is that petroleum products such as petrol, diesel, liquefied petroleum gas (LPG) and kerosene are part of the home consumption basket that directly impacts prices. With the increase in price of crude oil in the world market, the import costs of Indian refineries in terms of cost, insurance and freight (CIF) also go up. The immediate effect of this is to push up the fuel and light component of the consumer price index (CPI), and during the process of passing through to retail prices, exerting upward pressure on headline inflation. The magnitude of this impact is a function of the share of petroleum products in consumer expenditure (around 6.84% as per CPI weighting methodology), the structure of taxes prevailing at the center and state levels and the extent of margin absorption by OMCs.

These are the formal statements of the direct effect:

as well as the change in retail petrol prices, itself a function of international crude prices, the currency rate and the tax wedge; What is the change in retail petroleum prices? Where is the weight of fuel in the CPI basket?

3.2 The Impact on the Indirect Costs

Costs are transmitted indirectly through the economy by means of the input-output linkages. The trucks which ferry agricultural produce from mandis to urban markets need diesel fuel to do so. Both furnace oil and natural gas are used as resources to produce cement, fertilizer and power. The derivatives of petrochemicals are used in industries such as packaging, textiles and medicines. So higher fuel prices will boost marginal costs in many non-energy-related businesses. But these cost-push pressures do not develop instantaneously but are transmitted through supply chains with lags that are determined by contractual arrangements, inventory cycles and the competitive pressure of downstream markets.

In concentrated industries where a few firms have considerable power over prices, cost increases are passed on to consumers faster than in fragmented industries where firms give up profits to maintain their position in the market. This channel is consistent with the NKPC prediction that firms with greater market power and stickier prices will respond less quickly but will pass through a larger share of cost shocks in the long run. This forecast is consistent with the way this channel operates.

3.3 Exchange Rate Channel

The exchange rate channel produces an amplification of the initial shock through a feedback loop. The price of crude oil is paid for in United States dollars. The rise in the price of crude oil throughout the world also pushes up India's import bill and the need for foreign cash in the economy. If the pressure exerted on the rupee therefore is not fully offset by capital inflows or central bank intervention, the nominal depreciation will lead to a rise in the domestic currency cost of imported oil that is greater than the initial rise in the price of the dollar. Thus, a 10% increase in crude prices and a 3% depreciation of the rupee

together would generate a larger inflationary impulse than either shock alone. This is because the currency pass-through interacts with the oil-price stock in a multiplicative fashion.

This channel has gained empirical importance in recent years, as India's current account deficit has become increasingly sensitive to oil imports. In March 2026, during the geopolitical crisis, the Indian Rupee depreciated by ~4% against the Dollar to the ~95 INR/USD level. Moreover, foreign portfolio investors withdrew more than \$13 billion from domestic markets in March alone (RSM US, 2026). The depreciation of the national currency made the oil imports more expensive in the domestic currency and the costs of foreign dollars skyrocketed.

3.4 The Fiscal Channel

The fiscal channel is a channel that considers the role of the government as a conduit between domestic consumers and international markets. In terms of excise charges and subsidies, the state has the power to make changes that can either widen or narrow the gap between international and retail pricing. Lower excise taxes lessen the impact of higher oil prices on the consumer price index (CPI) but shift the fiscal burden to the budget, potentially crowding out other programs or increasing the deficit. But if prices continue to rise and taxes remain high, this is going to have a larger impact on inflation, but it's not going to impact revenues.

The expected pass-through coefficient is not a structural feature of the economy but rather a contingent outcome of political economy choices. This is because this is a fiscal trade-off and as such implies that financial decisions are being made. The retail prices of gasoline and diesel in India are often less linked to the global prices of crude than a simple import-parity model would suggest. This is because of the tax wedge.

3.5 Role of Expectations in the Channel

The final mechanism is the expectations channel which operates via the forward-looking behavior of economic agents. If the central bank is judged to be poor in credibility to anchor the long-run inflation, administered continuous increases in the costs of gasoline may lead to an increase in the inflation expectations of individuals and businesses, especially in the long run. Once expectations have been de-anchored, workers will demand higher nominal pay to preserve their real purchasing power, and businesses will raise prices pre-emptively in anticipation of possible higher costs. The second-round effect can transform a relative price shock into persistent inflation.

The importance of this channel depends on the degree of indexation in pay contracts, the degree of transparency of the transmission of monetary policy and the historical volatility of inflation. To prevent such de-anchoring, the Reserve Bank of India (RBI) has introduced a clear target band and forward guidance. But when supply shocks last over a long period of time, the credibility of this anchor is challenged.

4. Review of Empirical Evidence

4.1 Perspectives from Abroad

Ever since the supply shocks of the 1970s, the link between the price of oil and inflation has been a major talking point of macroeconomics. Hamilton (1983) finds strong evidence that energy shocks are associated with aggregate economic activity. He showed that most recessions in the post-war US were preceded by hikes in the price of oil. However, further investigation revealed that the association had weakened by the late 1990s. Hooker (2002) found that after 1980, oil prices ceased to be a reliable predictor of inflation in

the United States. He ascribed this to higher credibility of monetary policy, lower energy intensity and the removal of price restrictions.

Blanchard and Gali (2007) have taken this argument a step further by showing that the macroeconomic effects of the oil shocks that took place in the 2000s were much less severe than those that took place in the 1970s. This was because labor markets were more flexible, inflation expectations were better anchored and the share of oil in output was lower. These findings suggest the pass-through coefficient is dependent not only on import dependency, but also to a large extent on institutional and structural variables.

The data are more mixed for developing and emerging economies. The study by Cunado and de Gracia (2005) is based on a number of Asian nations and they found strong long-run correlations between oil prices and inflation. They also found that these relationships often had higher pass-through elasticities than industrialized economies. The authors attributed this gap to a higher energy intensity, less credible frameworks for monetary policy, and a greater dependence on oil imports. Based on our results, it seems that the size of the pass-through is mainly determined by the institutional characteristics specific to the country. These factors include the exchange rate regime, the independence of the central bank and the structure of the domestic energy markets.

4.2 India Specific Studies

The initial research on India was about the slow and incomplete transmission of oil prices within the framework of administered pricing. This was a major focus of the research.” The authors Bhattacharya and Bhattacharyya (2001) used a vector autoregression (VAR) methodology to analyze the monthly data from April 1994 to December 2000 in an effort to examine the interaction between oil inflation, non-oil inflation, money supply and industrial production. Their research found immediate and lagged effects of changes in the price of petroleum on the general price level and feedback effects of oil to non-oil inflation. Note that they found the transmission to be asymmetric. They find that price increases have larger inflationary responses than similar decreases, a pattern consistent with downward rigidity in administered prices.

The early twenty-first century partial deregulation of petroleum prices provided a natural experiment for assessing regime-dependent pass-through. They estimated Phillip’s curve and VAR parameters for periods before and after 2002, and found a structural break in oil-price coefficient. Mandal et al. (2012) recognized this division of the two time periods. They discovered that the transmission to domestic inflation had increased as local prices began to react more often to international benchmarks. But warned that deregulation, immediate and complete, could stoke disruptive inflationary booms. They, in contrast, advocated a gradual adjustment process that would strike a balance between price stability and budgetary sustainability.

Bhanumurthy, Das and Bose (2012) applied monetary economic simulation to solve the problem. They investigated the transmission of oil price shocks via import, fiscal and pricing channels in a 12th Plan scenario framework. The increase in the price of oil increased inflation, exacerbated the current account deficit and increased the fiscal burden of subsidies. This gave rise to a trilemma for policymakers wishing to stabilize prices, external balances, and public debt simultaneously. They showed that the analysis is of general equilibrium nature.

From data collected during the period of inflation targeting, more accurate projections have been made in the future. Ghosh and Tomar (2019) investigated the impact of a ten dollar per barrel increase in oil prices on India’s macroeconomic aggregates. The findings were published in a Mint Street Memo of the Reserve Bank of India. The starting assumption in the scenario was that such a shock would raise inflation by about

49 basis points and worsen the current account and budget deficits. In their scenario analysis, they found these estimates to be highly sensitive to the response of the exchange rate, and to the estimated degree of pass through of changes in taxation .

Kundu et al. (2025) revisited the oil prices-inflation nexus using data from 2009-2010 to 2023-2024. This is the latest evidence. In a variety of different econometric specifications, including autoregressive distributed lag (ARDL) models, structural vector autoregression (SVAR) models and nonlinear threshold models, they found that a 10% increase in the global price of crude oil would lead to a 20 basis point increase in India's headline consumer price index (CPI). In a major result they found that government intervention, especially in the form of changes in excise taxes, was significant in reducing the spread of this disease. Their results show the pass-through to be statistically significant but limited in terms of economic impact. This is reflective of the buffering capacity of India's monetary and fiscal institutions.

5. Synthesis and Quantitative Evaluation

5.1 Summary of Empirical Estimates

Table 1 provides a comparative summary of the main India-specific studies based on the sample period, methodology and the magnitude of the estimated pass-through. One striking feature of this body of evidence is the temporal instability of the oil-price coefficient. Estimates based on the administered pricing era (Bhattacharya & Bhattacharyya, 2001) suggest relatively weak contemporaneous passthrough but stronger lagged effects as government intervention delayed the adjustment of retail prices. Conversely, studies for the post-2002 and post-2014 periods (Mandal et al., 2012; Kundu et al., 2025) find a higher immediate pass-through, consistent with the higher frequency of price adjustments in deregulated petrol and diesel markets.

Table 1; Published Estimates of Oil-Price Pass-Through to Indian Inflation

Study	Period	Methodology	Key Finding
Bhattacharya & Bhattacharyya (2001)	1994-2000	VAR	Oil-price increases transmit to non-oil inflation with significant lags; evidence of feedback effects; asymmetric transmission
Mandal et al. (2012)	Pre- and post-2002	Phillip's curve, VAR	Pass-through strengthened after pricing reforms; structural break in oil-price coefficient; gradual adjustment preferred
Bhanumurthy et al. (2012)	12th Plan scenario	Macroeconomic simulation	Oil shocks affect inflation, growth, fiscal balances, and external balances simultaneously; policy trilemma identified
Ghosh & Tomar (2019)	Shock analysis	Macroeconomic simulation	\$10/barrel increase associated with ~49 bps inflation rise under baseline conditions; sensitive to exchange-rate response
Kundu et al. (2025)	2009-10 to 2023-24	ARDL, SVAR, threshold models	10% oil-price increase → ~20 bps rise in headline CPI; excise duties significantly moderate transmission

Note. Compiled from cited studies. Estimates are not directly comparable due to differences in specification, frequency, shock definition, and control variables. CPI = Consumer Price Index; VAR = vector autoregression; ARDL = autoregressive distributed lag; SVAR = structural vector autoregression.

5.2 Magnitude and Policy Interpretation

The most policy relevant benchmark is the Kundu et al. (2025) estimate of around 0.02 percentage points of CPI inflation per 1% increase in international crude prices. A linear extrapolation suggests a 20% oil price shock (of the magnitude in the early days of the Russia-Ukraine conflict in 2022 or the West Asia crisis in March 2026) would add 40 bps to headline inflation, all else equal. For a central bank with a 4% inflation target and a +/- 2 percentage point tolerance band this is non-trivial but is much less than the one-for-one pass-through that the naive import-parity calculation would suggest.

There are several reasons for this attenuation. First, fuel and light in the CPI account for around 6.84% in combination and transport makes up another share, so even a large increase in these components is spread across the broader consumption basket. Second, the government's capacity to adjust excise duties offers a fiscal buffer that narrows the wedge between international and retail prices. Third, the functioning of the exchange rate does not always reflect the oil shock one-to-one; phases of strong capital inflows or RBI intervention can stabilize the rupee, thereby dampening the currency amplification channel. Fourth, the monetary policy under inflation targeting can increase interest rates in anticipation of second-round effects and thus reduce demand-pull pressures that would otherwise amplify the supply shock.

The sensitivity analysis of Canara Bank (2025) quantitatively showed these interactions. Assuming a 40% pass-through rate, an increase in oil prices of 11.16% (from \$69.36 to \$77.10 a barrel) would generate a direct CPI effect of 0.31 percentage points through the fuel channel alone. The total CPI inflation effect is 0.55 percentage points, using a multiplier of 0.8 to consider indirect effects. However, this estimate assumes no fiscal or monetary policy response and the realized pass-through is considerably lower than this estimate in practice due to the buffering mechanisms described above.

6. Institutional Background and the Measurement Framework

6.1 Petroleum Pricing Regime

Understanding of India's oil price transmission mechanism requires an understanding of the evolution of domestic petroleum pricing. The administered pricing mechanism was dismantled with effect from 1 April 2002, MoPNG says, though sensitive products continued to have varying degrees of insulation from international prices. Petrol prices were market determined from 26 June 2010, and diesel prices were market determined from 19 October 2014. From 16 June 2017 retail prices of petrol and diesel were revised daily across the country. This institutional shift matters because empirical pass-through estimates from the administered-price era are not directly comparable with estimates from the post-deregulation era.

Table 2. Major institutional changes affecting petroleum-price transmission in India

Period	Policy development	Expected implication
2002	Administered Pricing Mechanism dismantled	Greater scope for market-linked pricing, with continued intervention in sensitive products
2010	Petrol decontrolled	Greater responsiveness of petrol prices to international conditions
2014	Diesel decontrolled	Stronger potential transmission through transport and logistics
2017	Daily petrol/diesel price revision	More frequent domestic adjustment

2016 onward	Flexible inflation targeting	Greater importance of CPI inflation and second-round effects
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Note. Source: Ministry of Petroleum and Natural Gas; Reserve Bank of India.

6.2 CPI and WPI as Inflation Measures

The CPI is the most important indicator relevant for India's inflation-targeting regime. In the CPI series with 2012=100, Fuel and Light have a combined weight of 6.84 percent and Transport and Communication have a combined weight of 8.59 percent. The fuel component has a direct mechanical impact on headline CPI, but it is contained, while the wider transport category accounts for some of the indirect impact. WPI, meanwhile, puts greater weight on manufactured inputs and fuel and power. Therefore, the same crude oil shock can show different reactions in CPI and WPI.

Table 3. Selected CPI weights relevant to oil-price transmission

CPI group	Combined weight (%)	Transmission relevance
Fuel and Light	6.84	Direct household fuel-price effect
Transport and Communication	8.59	Transport and mobility cost effects
Food and Beverages	45.86	Indirect effects through transport, storage and supply chains
All groups	100.00	Headline CPI

Note. Source: MoSPI, Consumer Price Index, base 2012=100.

7. Theoretical framework

Oil-price pass-through is probably best thought of as a multi-stage process rather than a single price equation. We denote the international crude price as P^* , the exchange rate as E (rupees per US dollar), the domestic tax wedge as T and domestic retail petroleum prices as P_r . A simplified version is:

$P_r = f(P^*, E, T, \text{refining/marketing margins, administered interventions})$

The movement in headline inflation that results can be seen as the combination of direct effects on fuel prices, indirect effects through production and transport costs, exchange rate effects, fiscal interventions and expectations.

7.1 Kanał bezpośredni

The direct channel works when higher international prices of crude oil raise domestic prices of petrol, diesel, LPG or other petroleum products. The direct contribution to headline inflation is bounded by the basket weight (6.84 percent) of Fuel and Light, but the welfare impact on households and firms can be larger.

7.2 Indirect channel cost

Diesel and other energy inputs impact freight, agriculture, manufacturing, construction, storage and distribution. Firms could initially offset higher input costs by reducing their margins, but persistent shocks may be transmitted to output prices, with delayed transmission to non-energy inflation.

7.3 Channel of Exchange Rates

Because crude is traded internationally in US dollars, a depreciation in the rupee magnifies the domestic-currency effect of a global oil-price increase. A stable or appreciating rupee, however, can partially

neutralize the external shock. Thus, the same dollar-denominated oil shock can have different domestic effects across episodes.

7.4 Fiscal Channel

The difference in international prices of petroleum and prices paid by consumers is further increased by Central Excise duties and state taxes. Tax cuts can blunt short-run inflation but cut public revenue. Keeping taxes keeps revenue but allows more of the external shock to hit consumers.

7.5 Expectations and the Monetary-Policy Channel

Sustained increases in fuel prices can influence inflation expectations and wage- and price-setting behavior. Under flexible inflation targeting, the RBI tries to ensure that temporary relative-price shocks do not become persistent, generalized inflation. Monetary policy influences demand and expectations indirectly and with lags.

8. Materials and Methods

The design of this paper is a structured secondary data and literature synthesis design. No claim is made of a new econometric estimate. Rather it re-organises and critically compares published estimates specific to India and combines them with primary institutional data to explain differences in measured pass-through. The evidence base includes the administered-pricing period, the transition to market-linked pricing, the inflation-targeting period and the most recent institutional data available at the time of revision.

Table 4. Primary data and original research sources

Evidence domain	Original source	Variables/evidence	Purpose
International crude prices	World Bank Commodity Markets / Pink Sheet	Brent and benchmark crude prices	External oil shock
Indian crude dependence	PPAC	Imports, consumption, import dependence	Structural exposure
Domestic pricing	MoPNG / PPAC	Pricing regime, retail prices, taxes	Institutional filter
Consumer inflation	MoSPI / RBI DBIE	Headline and group CPI	Inflation outcome
Monetary policy	RBI	Inflation target and policy framework	Policy response
Strategic reserves	ISPRL	Storage capacity and locations	Supply-risk buffer
Published econometric evidence	Original journal/RBI/NIPFP studies	Oil-price coefficients and simulations	Comparative synthesis

Note. Primary institutional sources are preferred for administrative/statistical variables; original research studies are retained for their econometric and simulation evidence.

Published estimates were compared in four dimensions: sample period, modeling or identification strategy, definition of oil shock and assumptions about exchange rates and government intervention. Thus, numerical coefficients from different studies are not pooled as if they had measured the same parameter.

9. Results

9.1 Indian-Specific Studies – Evidence

Early Indian evidence found that oil-price increases could transmit to non-oil inflation with lags and that the response was asymmetric. Bhattacharya and Bhattacharyya (2001) documented the interactions among oil inflation, non-oil inflation, money supply and industrial output using a VAR framework and monthly data. Their results are particularly important to understand delayed pass-through under administered pricing.

Mandal, Bhattacharyya and Bhoi (2012) studied the oil-price pass-through before and after the changes in domestic pricing arrangements and found a structural change in the relationship. Their evidence is consistent with the proposition that pass through depends on domestic pricing institutions, and is not a fixed feature of the Indian economy.

Bhanumurthy, Das and Bose (2012) used a macroeconomic simulation model and showed that oil shocks can affect inflation, growth, fiscal balances and external balances simultaneously. This general equilibrium perspective is important because retail price increases reductions can reduce measured inflation and at the same time increase the fiscal burden.

Ghosh and Tomar (2019) in an RBI Mint Street Memo had estimated that an increase in crude prices by US\$10 per barrel could result in inflation rising by around 49 basis points under their specified baseline conditions. The study also found effects on the current account and fiscal position. This is to be understood as a consequence of a scenario and not as a general elasticity.

The latest major RBI evidence is in the source paper Kundu, Tewari and Bhattacharyya (2025). They find that a 10 percent increase in global crude prices could lift headline inflation by around 20 basis points, using data from 2009-10 to 2023-24 and a variety of econometric approaches. They also serve to demonstrate the role of active government intervention in restraining retail price pass-through.

Table 5. Comparison of major India-specific estimates

Study	Period/design	Main finding	Interpretation
Bhattacharya & Bhattacharyya (2001)	Monthly VAR; 1994-2000	Oil-price increases transmit to non-oil inflation with lags; asymmetric effects	Administrative pricing delayed transmission
Mandal, Bhattacharyya & Bhoi (2012)	Pre/post pricing-regime comparison	Pass-through strengthened after pricing reforms	Institutions alter the coefficient
Bhanumurthy, Das & Bose (2012)	Macroeconomic simulation	Oil shocks affect inflation, growth, fiscal and external balances	Pass-through is part of a wider macroeconomic trade-off
Ghosh & Tomar (2019)	RBI scenario analysis	US\$10/barrel shock associated with about 49 bps inflation rise under baseline assumptions	Magnitude depends on policy/exchange-rate assumptions
Kundu, Tewari & Bhattacharyya (2025)	2009-10 to 2023-24; ARDL/SVAR/nonlinear models	10% crude-price increase could raise inflation by around 20 bps	Recent pass-through is positive but moderate and policy-contingent

Note. Sources: original studies listed in References. Estimates are not directly comparable because sample periods, shock definitions, specifications and assumptions differ.

10.2 Magnitude and Interpretation

The main result of the synthesis is that the relationship is positive but incomplete. A recent estimate by the RBI of about 20 basis points for a 10 per cent increase in crude prices implies a fairly modest average response of headline inflation. The previous estimate of a 49 basis points impact for a US\$10 per barrel shock is larger, but the two estimates use different definitions of shock and modeling assumptions.

But the evidence points to three conclusions: (i) oil shocks matter for Indian inflation, (ii) the transmission is spread over time and not completely contemporaneous and (iii) policy intervention and the exchange rate can affect the observed pass-through significantly.

10.3 Structural Exposure and the Energy Transition

PPAC data shows India's dependence on crude oil imports at 88.2 per cent of consumption in 2024-25. High dependence means that external oil shocks continue to be a structural vulnerability, although the immediate impact on retail prices may be mitigated by domestic policy. India's energy structure is changing at the same time. Government data shows that renewable-energy capacity stood at 274.68 GW at the end of March 2026, with solar at 150.26 GW and wind at 56.09 GW. India also reached 50 per cent of cumulative electric-power capacity installed from non-fossil sources in June 2025. While electricity sector decarbonization does not immediately eliminate petroleum demand in transport and industry, these developments are of importance for long-run oil vulnerability.

Table 6. Structural indicators relevant to long-run oil-price vulnerability

Indicator	Latest evidence	Implication
Crude-oil import dependence	88.2% of consumption, 2024-25	High exposure to international oil and exchange-rate shocks
Renewable-energy capacity	274.68 GW, March 2026	Expands non-oil energy supply
Solar capacity	150.26 GW, March 2026	Strengthens electricity diversification
Wind capacity	56.09 GW, March 2026	Adds non-fossil generation
Non-fossil installed-power share	50% reached June 2025	Major structural transition in electricity

Note. Sources: PPAC and Government of India/PIB.

11. Discussion

11.1 Why Pass-Through Is Incomplete

Incomplete pass-through does not show that oil prices don't matter. It is an institutional filter between the international benchmark and domestic prices. Taxes can cushion part of the blow, firms can cut their margins, exchange-rate movements can either mitigate or magnify the change in dollar prices, and firms can spread higher costs over time. The estimated coefficient is thus a reduced form result of market conditions and policy.

11.2 Fiscal stabilization and revenue stability

Fuel taxation is an immediately available stabilization instrument, but it is not costless. Cutting taxes can help households and limit headline inflation, even if it cuts public revenue, countering a surge in oil prices.

High taxes maintain revenue but increase domestic price pressure. The policy problem is therefore an intertemporal trade-off, rather than a simple choice between intervention and non-intervention.

11.3 The Exchange Rate as an Amplifier

The rupee can amplify or cushion an oil shock. A 10 per cent increase in dollar price of crude is more inflationary if it occurs when the rupee is depreciating than if the exchange rate remains stable. Oil-price surveillance should therefore be complemented by external-sector monitoring, including current account conditions, capital flows and global financial conditions

11.4 Second-Round Effects and Monetary Policy

The monetary policy should treat a short-lived first-round energy shock and persistent second-round inflation differently. Reacting to every move in the oil price could unduly weaken output, while not dealing with persistent transmission could allow inflation expectations and core inflation to become entrenched. The right response depends on how persistent the shock is, the demand conditions, inflation expectations and the credibility of the inflation target.

Table 7. Transmission channels and policy responses

Channel	Main mechanism	Typical timing	Relevant policy lever
Direct	Retail petrol/diesel/LPG prices	Short	Fuel-tax and pricing policy
Indirect	Transport and production costs	Short-medium	Supply-side and logistics measures
Exchange rate	Rupee depreciation raises rupee oil cost	Short	FX-market stabilisation
Fiscal	Excise/VAT/subsidies alter domestic price wedge	Immediate-short	Counter-cyclical taxation
Expectations	Persistent fuel shocks affect wage/price setting	Medium	Credible monetary communication
Monetary policy	Demand and expectations response	Medium-long	Policy rate/liquidity

Note. Framework derived from the literature reviewed in this paper; actual lags vary by episode.

11.5 Strategic Petroleum Reserve

Strategic petroleum reserves are a quantity buffer against physical supply disruptions, not a permanent solution to high prices. ISPRIL informs about Phase-I strategic crude storage at Visakhapatnam, Mangalore and Padur with aggregate capacity of about 5.33 million metric tons. Reserve policy can help secure energy supplies against major disruptions, though releases require careful design, as they can smooth availability but cannot permanently fix international prices.

12. Policy Implications

12.1 Transparent counter-cyclical fuel taxes

Fuel-tax policy should be made more predictable by linking temporary relief to well defined international-price stress conditions. Such a rule can reduce uncertainty and make the fiscal cost of stabilization more visible.

12.2 Variety of Energy Sources

The long-run solution to oil price vulnerability is lower oil intensity. Renewable electricity, public transport, electric mobility, energy efficiency and alternative fuels can reduce the demand for petroleum, especially in the transport sector.

12.3 Management of the Strategic Reserve

Strategic reserves should be part of a broader energy security strategy. Priority should be given to decisions to release based on physical supply disruptions and extreme market stress and procurement can take advantage of lower price periods where possible.

12.4 Transmission of Monetary Policy

“The communication should make clear how RBI distinguishes between first round oil shocks and persistent inflation. Scenario-based communication can help set expectations during energy-price volatility.

12.5 Macro Surveillance Integrated

The risk of oil price should be evaluated together with the exchange rate, current account, fiscal revenue, inflation expectations and output conditions. A multi-indicator framework is more informative than a single oil-price threshold.

13. Limitations and Directions for Future Research

This paper is a systematic synthesis, not a new econometric estimation. Main limitation is that published estimates vary in sample periods, variables, models and shock identification. So the coefficients are not statistically pooled. Future studies should attempt to estimate time-varying pass-through with local projections or time-varying parameter VARs, differentiate between positive and negative shocks with nonlinear models, investigate state-level VAT heterogeneity, and explicitly model the tax wedge between international benchmark prices and retail prices.

14. Conclusion

Evidence suggests that there is a consistent but qualified relationship between Indian inflation and international crude prices. Higher oil prices contribute to inflation through their direct impact on fuel costs, production and transport costs, the exchange rate and expectations. But the transmission is not uniform in extent and is not complete. Changes in petroleum pricing arrangements, taxation and macroeconomic policy have modified the composition of the external oil shocks faced by Indian consumers.

Latest RBI evidence suggests that a 10 percent rise in global crude prices could push headline inflation up by about 20 basis points, although earlier RBI analysis found a higher response under a different shock and set of assumptions. These estimates should be considered as regime- and specification-dependent evidence rather than competing universal elasticities.

India's heavy dependence on imports of crude oil means that external shocks to oil will remain a concern even as renewable-energy capacity expands. The most resilient policy architecture combines transparent counter-cyclical taxation, credible inflation targeting, exchange rate resilience, strategic petroleum reserves and accelerated reduction of oil intensity. This combination can help reduce short-run volatility of inflation and address the underlying structural vulnerability in the long run.

References

1. Bhattacharya, K., & Bhattacharyya, I. (2001). Impact of increase in oil prices on inflation and output

- in India. *Economic and Political Weekly*, 36(51), 4735-4741.
2. Bhanumurthy, N. R., Das, S., & Bose, S. (2012). Oil price shock, pass-through policy and its impact on India (NIPFP Working Paper No. 2012-99). National Institute of Public Finance and Policy.
 3. Blanchard, O. J., & Galí, J. (2007). The macroeconomic effects of oil shocks: Why are the 2000s so different from the 1970s? In *International dimensions of monetary policy*. University of Chicago Press.
 4. Cunado, J., & de Gracia, F. P. (2005). Oil prices, economic activity and inflation: Evidence for some Asian countries. *The Quarterly Review of Economics and Finance*, 45(1), 65-83. <https://doi.org/10.1016/j.qref.2004.02.003>
 5. Ghosh, S., & Tomar, S. (2019). The impact of crude price shock on India's current account deficit, inflation and fiscal deficit (Mint Street Memo No. 17). Reserve Bank of India.
 6. Hamilton, J. D. (1983). Oil and the macroeconomy since World War II. *Journal of Political Economy*, 91(2), 228-248. <https://doi.org/10.1086/261140>
 7. Hooker, M. A. (2002). Are oil shocks inflationary? Asymmetric and nonlinear specifications versus changes in regime. *Journal of Money, Credit and Banking*, 34(2), 540-561. <https://doi.org/10.1353/mcb.2002.0066>
 8. Indian Strategic Petroleum Reserves Limited. (2026). About us. Government of India.
 9. Kundu, S., Tewari, S., & Bhattacharyya, I. (2025). Revisiting the oil price and inflation nexus in India. *Reserve Bank of India Bulletin*, July 2025.
 10. Mandal, K., Bhattacharyya, I., & Bhoi, B. B. (2012). Is the oil price pass-through in India any different? *Journal of Policy Modeling*, 34(6), 832-848. <https://doi.org/10.1016/j.jpolmod.2012.06.001>
 11. Ministry of Petroleum and Natural Gas. (2026). Marketing: Product pricing. Government of India.
 12. Ministry of Statistics and Programme Implementation. (2016). Consumer Price Index: Base 2012=100. Government of India.
 13. Petroleum Planning and Analysis Cell. (2024). India's Oil & Gas: Ready Reckoner. Ministry of Petroleum and Natural Gas, Government of India.
 14. Press Information Bureau. (2026). Government of India releases on renewable-energy and non-fossil installed capacity.
 15. Reserve Bank of India. (2019). The impact of crude price shock on India's current account deficit, inflation and fiscal deficit (Mint Street Memo No. 17).
 16. World Bank. (2026). World Bank commodity price data (The Pink Sheet). World Bank Prospects Group.
 17. Source and restructuring note