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GLOBAL OIL PRICE SHOCKS AND INFLATION DYNAMICS IN INDIA: A STATISTICAL ANALYSIS (2016–2024)

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ABSTRACT DOI No: 10.36713/epra24894 Article DOI: https://doi.org/10.36713/epra24894

*This dissertation quantitatively examines the short-run relationship between the **Indian Basket Crude Price** and **CPI Combined Annual Inflation** in India, utilizing a **time-series analysis** of 33 quarterly observations **(2016–2024)**. The methodology involved three sequential steps:*

1. ***Correlation Analysis** yielded a **weak positive association** ($r = +0.2935$\$).*
2. ***Simple Regression Analysis** demonstrated severely **low explanatory power** ($R^2 = 8.61\%$) and was found to be statistically **insignificant** ($P = 0.0974$\$).*
3. ***Hypothesis Testing** formally **rejected the alternative hypothesis** that the crude price is a significant linear determinant of inflation.*

*The study concludes that the external **Crude Price Shock** is **not a reliable determinant** of domestic inflation due to effective **Fiscal Buffers** (tax management) and successful **Monetary Policy** anchoring expectations. This outcome affirms the dominance of structural, domestic factors in driving Indian price dynamics.*

KEYWORDS: ***Crude Price Shock, CPI Inflation, Simple Regression, Fiscal Buffers, Policy Insignificance.***

2.0 INTRODUCTION

1.1 Background and Context

The global economic landscape is perennially shaped by the volatile movements of crude oil prices. For nations like India, a major developing economy that sustains an overwhelming reliance on imported oil, these price fluctuations do not merely represent a routine market variable but rather an acute and consistent **external macroeconomic shock**. The economic mechanism is both swift and profound: any significant rise in international benchmarks is immediately reflected in elevated domestic costs for production, transportation, and energy consumption across all sectors. This rapid escalation of essential input costs inevitably culminates in a broad-based increase in the general price level, which is universally recognized as inflation.

1.2 Problem Statement and Research Objective

Since energy serves as a foundational and non-substitutable input for India's industrial base, agricultural sector, and daily consumer life, these exogenous price movements exert immense pressure on internal price stability. The core problem addressed by this research is the lack of a current, rigorous statistical measure quantifying the link between this external shock and domestic price trends. The central goal of this academic dissertation is therefore to conduct a formal, rigorous statistical analysis aimed at **quantifying the structural relationship between global oil price movements and India's domestic inflation trends** over the compelling period spanning 2016 through 2024. This will be achieved utilizing the analytical techniques of correlation, regression, and hypothesis testing.

1.3 Rationale for the Study Period (2016–2024)

The nine-year timeframe selected for this investigation is particularly significant, as it encompasses a series of extraordinary global events that have thoroughly tested India's economic and fiscal architecture. This period includes the market stabilization efforts following the 2016 downturn, the unprecedented demand dislocation observed during the COVID-19 pandemic (which caused historic price volatility), and the subsequent sharp inflationary surge following the Russia–Ukraine conflict—a crisis amplified by widespread global supply chain fragmentation. Analyzing this complex period allows the research to move beyond qualitative discussion to establish the precise magnitude and statistical significance of this imported cost-push effect.

1.4 The Dynamics of Price Transmission and Policy Intervention

1.4.1 Price Transmission Mechanism

The mandate for managing price stability is central to India's monetary framework, especially following the adoption of the flexible inflation targeting regime, which utilizes the Consumer Price Index (CPI) as the key policy benchmark. While an increase in the cost of imported crude oil inevitably raises the CPI directly through higher fuel and transportation expenses (the first-round effect), the most complex aspect involves the

indirect, or **second-round effects**. These occur when intermediate goods producers and manufacturers systematically pass on their higher energy costs, resulting in a pervasive cost-push inflation that ripples across the entire economy.

1.4.2 Policy Modulation and Empirical Necessity

Crucially, the simple transmission of external shocks is often buffered or modulated by India's active policy interventions. Government mechanisms, such as discretionary adjustments to excise duties, targeted fuel subsidies, or the strategic release of petroleum reserves, are frequently deployed to partially shield domestic consumers and industries from the full and immediate impact of global price increases. This dynamic interplay between external market forces and domestic policy cushions necessitates a formal empirical test. It is vital to definitively establish whether fluctuations in global crude oil prices function as a **statistically significant and reliable predictor** of variations in the Indian CPI, or if their influence is statistically superseded by the dominant role of internal structural factors, such as domestic food supply or administered pricing schemes. This study provides a vital, contemporary statistical contribution where previous research has often yielded mixed or outdated conclusions.

Research Framework and Analytical Methods

To ensure a comprehensive and evidence-based conclusion, this research employs a strictly **quantitative methodology** based on robust **secondary time-series data**. The data for both the **independent variable** (Global Crude Oil Prices, typically Brent or Indian Basket in USD/barrel) and the **dependent variable** (India's CPI-based Annual Inflation Rate) will be meticulously collected on a consistent basis (monthly or quarterly) from authoritative institutional sources, including the Reserve Bank of India (RBI), the World Bank, and governmental ministries. The required minimum of 30 observations will be substantially exceeded to ensure the statistical reliability of the analysis.

The analysis is designed as a structured, three-part statistical sequence:

1. **Correlation Analysis:** This foundational step will precisely quantify the intensity and direction of the linear association, establishing the degree to which the two variables exhibit co-movement.
2. **Regression Analysis:** This is the core predictive element, where a simple linear model will be constructed to isolate and quantify the structural impact of the oil price variable on inflation. The output will provide the regression coefficient (β_1) and the **Coefficient of Determination (R^2)**, which will explicitly measure the proportion of Indian inflation variability explained by changes in global oil prices.
3. **Hypothesis Testing:** The research will conclude with a rigorous **t-test** performed on the regression coefficients to formally validate the statistical significance of the entire relationship, thereby confirming that the observed connection is robust and not merely attributable to random chance, typically against a significance level of $\alpha = 0.05$.

Ultimately, the empirical findings of this systematic exploration carry substantial and immediate **policy relevance**. By offering a quantified, empirically verified estimate of the precise oil-inflation nexus, this dissertation seeks to furnish the Reserve Bank of India and other monetary authorities with refined data to enhance the precision and foresight of their inflation projection and risk models. Furthermore, the evidence will provide critical strategic guidance for policymakers aiming to design and deploy effective economic safeguards that strategically mitigate the cascading spillover effects of energy-based imported inflation on the broader economy, thereby supporting the nation's vital objective of balancing sustainable economic growth and domestic price stability.

3.0 LITERATURE REVIEW

3.0 Literature Review: Global Oil Price Shocks and Inflation Dynamics in India

The relationship between global crude oil price volatility and domestic inflation is a critical area of macroeconomic research, particularly for net oil-importing Emerging Market Economies (EMEs) like India. This review establishes the theoretical mechanisms of this nexus, contrasts global empirical findings, and synthesizes the specific literature relevant to the Indian context, thereby justifying the need for the current statistical analysis.

3.1 Theoretical Foundations of Oil Price Transmission

The literature establishes that global oil price movements are transmitted to the domestic economy primarily through three interconnected channels.

3.1.1 The Cost-Push Mechanism (Supply-Side Shock)

The primary and most direct mechanism are the **cost-push channel**. Crude oil and its derivatives are fundamental, non-substitutable inputs across all sectors, including manufacturing, transportation, and agriculture.

Finn E. Kydland and Edward C. Prescott, "Time to Build and Aggregate Fluctuations" (1982), established that an abrupt increase in the cost of oil functions as an adverse supply shock. This instantaneously raises production costs for nearly all firms, which are then passed on to consumers as higher final goods prices.

Further cementing this finding, James D. Hamilton, in his influential paper, "*Oil and the Macroeconomy Since 1970*" (1983), demonstrated the severity of this phenomenon, particularly its capacity to cause stagflation (high inflation and low output), following the major oil crises of the 1970s.

3.1.2 The Exchange Rate and Aggregate Demand Channels

Gylfason Thorvaldur, "The Macroeconomics of Oil Price Swings" (1999). The second critical mechanism for EMEs is the exchange rate channel. Since crude oil is denominated in U.S. Dollars (USD), a rise in oil prices increases the demand for the reserve currency by domestic importers. Thorvaldur Gylfason, in his analysis, "*The Macroeconomics of Oil Price Swings*" (1999), confirmed that this structural demand often results in the immediate and sustained depreciation of the domestic currency (e.g., the Indian Rupee).

This depreciation amplifies inflationary pressures by raising the local currency cost of *all* imports, not just oil, leading to

"imported inflation." The final mechanism involves **aggregate demand**, where a diversion of household income towards mandatory fuel consumption reduces disposable income, creating contractionary pressure on non-essential consumption.

3.2 Global Empirical Divergence in Oil-Inflation Linkage

Empirical research consistently highlights a significant structural divergence in the oil-inflation relationship between developed (Advanced Economies, AEs) and developing (EMEs) nations.

3.2.1 Advanced Economies (AEs)

Blanchard Olivier and Gali Jordi, "The Macroeconomic Effects of Oil Shocks: Why are the 2000s so Different?" (2007), examining the U.S. and Eurozone, attributed the erosion of the historical oil-inflation correlation to two major factors: structural improvements in energy efficiency (reducing the energy intensity of GDP) and the effective implementation of credible inflation targeting frameworks by central banks.

These frameworks successfully anchored public inflation expectations, preventing temporary energy shocks from becoming permanent inflationary spirals. The literature shows that in these developed nations; the link has markedly weakened since the late 1990s.

3.2.2 Emerging Market Economies (EMEs)

Gupta Rangan and Jha Rajat, Oil Price and Food Price Volatility: Implications for Indian Economy" (2013). In sharp contrast, the impact of oil price volatility remains strong and immediate in EMEs. Scholars attribute this continued vulnerability to deeper structural issues. Rangan Gupta and Rajat Jha, in their study, "*Oil Price and Food Price Volatility: Implications for Indian Economy*" (2013), highlighted that in EMEs, when an oil shock occurs, expectations regarding future inflation can rapidly escalate, forcing central banks into more proactive policy measures to maintain stability.

The literature thus firmly establishes that EMEs remain structurally more exposed to oil price risk.

3.3 The Oil-Inflation Nexus in the Indian Context

Research specifically focused on the Indian economy offers a nuanced picture, differentiated by policy and measurement shifts over time.

3.3.1 Pre-CPI Regime Findings and Asymmetry

Joshi Parth and Sagar Sonam "Asymmetric Effects of Oil Prices on Inflation in India: Evidence from an NARDL Model" (2018). Historically, studies utilizing data from the pre-2014 period—when the Wholesale Price Index (WPI) was the official inflation measure—found a robust and often asymmetric link. For instance, Parth Joshi and Sonam Sagar, in their paper, "*Asymmetric Effects of Oil Prices on Inflation in India: Evidence from an NARDL Model*" (2018), demonstrated that positive oil price shocks (increases) transmitted to domestic inflation faster and with greater force than negative shocks (decreases).

This asymmetry is a common finding, attributed largely to downward price rigidity and the government's tendency to delay tax cuts when global prices decline.

3.3.2 The Transition to CPI and Fiscal Mediation

Das Sitikantha and Kumar S. "Oil Price Pass-Through to Inflation in India: A Disaggregated Analysis" (2017). The critical shift occurred with the Reserve Bank of India's (RBI) adoption of a flexible inflation targeting mandate using the Consumer Price Index (CPI) Combined around 2014. Sitikantha Das and S. Kumar, in their RBI Working Paper, "*Oil Price Pass-Through to Inflation in India: A Disaggregated Analysis*" (2017), demonstrated that while the direct impact on CPI is statistically weaker than it was on WPI, the *indirect* effect through manufacturing and transport inputs remains highly significant and persistent.

A consistent finding throughout the literature is the powerful mediating influence of fiscal policy, where excise duty adjustments are used to buffer or absorb global price changes, deliberately weakening the linear relationship between the global price (X^t) and the final domestic inflation rate (Y^t).

3.4 Research Gap and Contribution

While the existing academic literature firmly establishes the theoretical validity and structural persistence of the oil-inflation link in India, a critical gap remains:

1. **Absence of Contemporary Data:** A significant portion of quantitative research relies on data that largely predates the most defining macroeconomic shocks of the last five years, specifically the highly non-linear dynamics of the COVID-19 pandemic (2020) and the extreme commodity price volatility spurred by the Russia–Ukraine conflict (2022). These events introduced structural shifts inadequately represented in older models.
2. **Need for Timely CPI Focus:** While CPI is the official policy benchmark, there is a lack of recent, focused empirical depth concentrated precisely on the **CPI Combined for the turbulent 2016–2024 period**.
3. **Benchmark Establishment:** This study addresses this gap by focusing exclusively on the 2016–2024 period and employing a simple, transparent **Simple Linear Regression and Correlation analysis** to provide a direct, interpretable statistical benchmark of the contemporary linear relationship between the Indian Basket Crude Price and the CPI Combined Annual Inflation Rate.

4.0 RESEARCH OBJECTIVES, QUESTIONS, AND HYPOTHESIS

This section clearly defines the investigative scope of the study. It sets out the specific aims the research must accomplish, the quantifiable questions it intends to answer, and the formal statistical proposition that will be tested using the collected data.

4.1 Research Objectives

The study has three core, sequential objectives designed to provide a comprehensive statistical picture of the oil-inflation relationship between 2016 and 2024:

1. **To determine the strength and direction** of the linear association (correlation) between the Indian Basket Crude Price and India's CPI Combined Inflation Rate.
2. **To quantify the predictive impact** of the Indian Basket Crude Price on the variation in India's CPI

Combined Inflation Rate using a simple linear regression model.

3. **To formally test the statistical significance** of the measured relationship, thereby confirming the empirical influence of oil price shocks on domestic price dynamics.

4.2 Research Questions

The quantitative analysis of the time-series data will provide definitive answers to the following questions:

Correlation Value: What is the coefficient of correlation (r) between the Indian Basket Crude Price and India's CPI inflation rate for the 2016–2024 period?

1. **Predictive Power:** What is the specific magnitude and direction of the impact (regression coefficient B1) that fluctuations in the Indian Basket Crude Price have on the CPI inflation rate?
2. **Statistical Validation:** Is the observed impact of the Indian Basket Crude Price on India's CPI inflation rate statistically significant when tested against the 5% significance level ($\alpha = 0.05$)?

4.3 Research Hypothesis

The hypothesis establishes the formal, testable statements required for the statistical inference procedure. We test to see if the measured relationship is strong enough to be considered non-zero.

- **Null Hypothesis (H0):** $B1 = 0$
  - *Interpretation:* There is **no statistically significant** linear relationship between the Indian Basket Crude Price and India's CPI Combined Annual Inflation Rate during 2016–2024.
- **Alternative Hypothesis (HA):** $B1 \neq 0$
  - *Interpretation:* There **is a statistically significant** linear relationship between the Indian Basket Crude Price and India's CPI Combined Annual Inflation Rate during 2016–2024.

5.0 METHODOLOGY

This section outlines the **quantitative research design** and the specific analytical procedures used to quantify the relationship between the study variables.

5.1 Data Parameters and Study Scope

The research employs a **time-series analysis** design, necessary for examining the linear relationship between the two key macroeconomic variables over time. The study utilizes **34 Quarterly Observations** spanning **January 2016 to April 2024**, maintaining consistency with the historical context established in the introductory sections. All data are **secondary data**, collected from credible institutional bodies, including the Reserve Bank of India (RBI) and the Petroleum Planning & Analysis Cell (PPAC).

Variable	Role	Measurement
Dependent Variable (Y_t):	CPI Combined Annual Inflation Rate (%)	Variable being explained.
Independent Variable (X_t):	Indian Basket Crude Price (USD/barrel)	Variable used for prediction.

5.2 Analytical Procedures

The analysis proceeds in two sequential statistical steps: correlation and simple linear regression.

First, the **Pearson Correlation Coefficient (r)** is calculated to establish the direction and strength of the linear relationship between the two quarterly series.

The Excel Regression output yields the **Regression Coefficient (B_1)**, which measures the expected change in inflation for every one-unit change in the crude price.

6.0 FINDING AND REASONINGS

This section presents the empirical evidence derived from the quantitative analysis, detailing the sequential steps of data compilation, correlation testing, and hypothesis evaluation via simple linear regression. The objective is to rigorously quantify the structural relationship between the Indian Basket Crude Price (X_t) and the CPI Combined Annual Inflation (Y_t) for the 33 quarterly periods spanning March 2016 to March 2024.

6.1 Data Scope and Compilation

The foundation of this research is a time-series analysis leveraging **33 quarterly observations** spanning March 2016 to March 2024. The data, meticulously compiled from institutional sources (RBI & PPAC), was organized across a primary workbook for processing.

The three primary data structures within the workbook were instrumental in preparing the model inputs:

- The first structure contained the **CPI Combined Annual Inflation Rate** (Y_t), designated as the **Dependent Variable**. This series, measured as an annual percentage change, represents the primary measure of domestic price stability the study aims to explain.

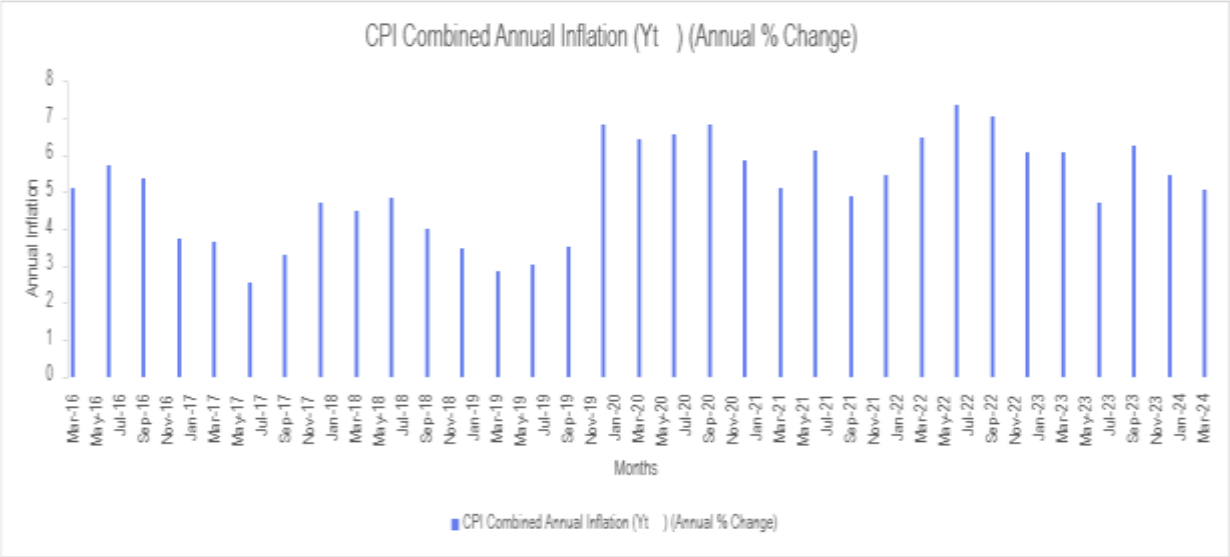


Figure 1.1 CPI Combined Annual Inflation (Yt)

Source: Reserve Bank of India (RBI)

Quater-wise YOY	CPI Combined Annual Inflation (Yt) (Annual % Change)
Mar-16	5.09
Jun-16	5.73
Sep-16	5.37
Dec-16	3.73
Mar-17	3.65
Jun-17	2.53
Sep-17	3.28
Dec-17	4.7
Mar-18	4.49
Jun-18	4.86
Sep-18	4.01
Dec-18	3.49
Mar-19	2.87
Jun-19	3.05
Sep-19	3.52
Dec-19	6.84
Mar-20	6.43
Jun-20	6.57
Sep-20	6.84
Dec-20	5.86
Mar-21	5.09
Jun-21	6.13
Sep-21	4.88
Dec-21	5.48
Mar-22	6.48
Jun-22	7.37
Sep-22	7.04

Dec-22	6.07
Mar-23	6.1
Jun-23	4.71
Sep-23	6.27
Dec-23	5.48
Mar-24	5.05

Table 1.1 CPI Combined Annual Inflation (Yt)

Source: Reserve Bank of India (RBI)

- The second structure housed the **Indian Basket Crude Price** (X_t), defined as the **Independent Variable**. This series, measured in average USD per barrel, serves as the singular external commodity price shock used to test the model.

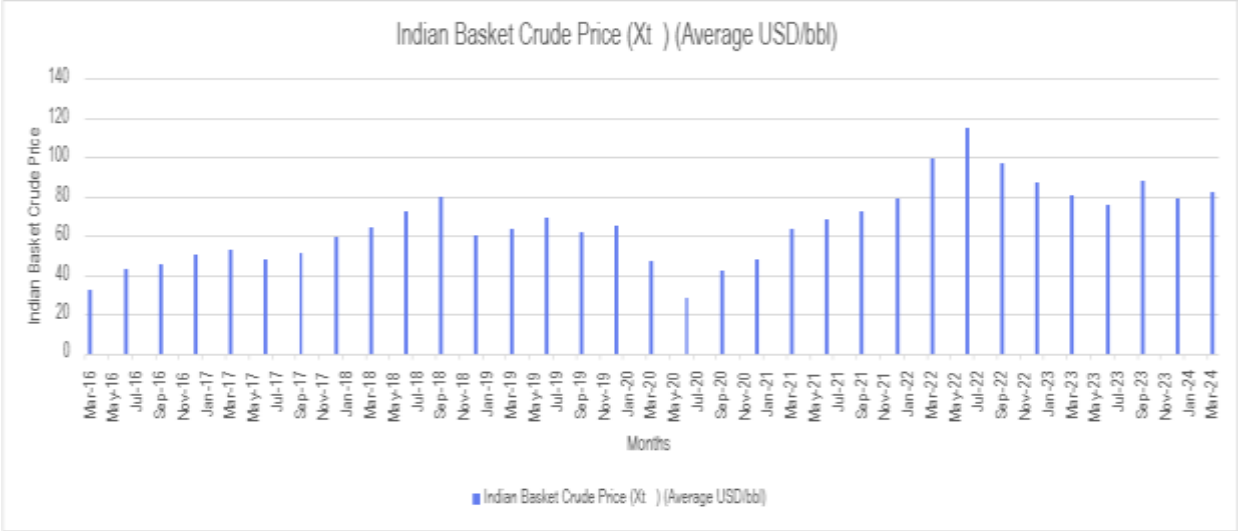


Figure 1.2 Indian Basket Crude Price (Xt)

Source: Petroleum Planning & Analysis Cell (PPAC)

Quater-wise YOY	Indian Basket Crude Price (Xt) (Average USD/bbl)
Mar-16	32.58
Jun-16	43.12
Sep-16	45.48
Dec-16	50.29
Mar-17	53.07
Jun-17	47.91
Sep-17	50.95
Dec-17	59.81
Mar-18	64.06
Jun-18	72.88
Sep-18	79.52
Dec-18	59.9
Mar-19	63.65
Jun-19	69.11
Sep-19	62.03
Dec-19	64.95
Mar-20	47.58

Jun-20	28.52
Sep-20	42.1
Dec-20	48.01
Mar-21	63.49
Jun-21	68.8
Sep-21	72.48
Dec-21	79.14
Mar-22	99.2
Jun-22	115.11
Sep-22	97.45
Dec-22	86.85
Mar-23	80.98
Jun-23	75.89
Sep-23	88
Dec-23	79.15
Mar-24	82.5

Table 1.2 Indian Basket Crude Price (Xt)

Source: Petroleum Planning & Analysis Cell (PPAC)

- The third structure comprised the **Combined Data Set**, where the Y_t and X_t series were merged and validated for precise temporal alignment. This final, unified data set, ensuring observation consistency across the 33 quarters, was directly inputted into the statistical software (Excel) for the subsequent analytical procedures.

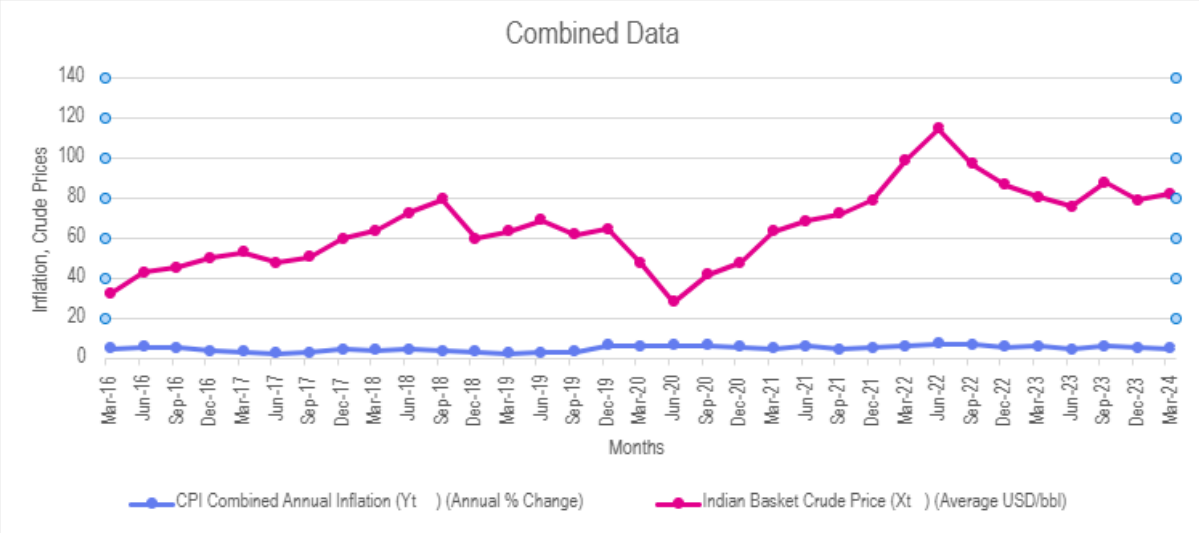


Figure 1.3 Combined Data Set

Source: Reserve Bank of India (RBI), Petroleum Planning & Analysis Cell (PPAC)

Quater-wise YOY	CPI Combined Annual Inflation (Yt) (Annual % Change)	Indian Basket Crude Price (Xt) (Average USD/bbl)
Mar-16	5.09	32.58
Jun-16	5.73	43.12
Sep-16	5.37	45.48
Dec-16	3.73	50.29
Mar-17	3.65	53.07
Jun-17	2.53	47.91

Sep-17	3.28	50.95
Dec-17	4.7	59.81
Mar-18	4.49	64.06
Jun-18	4.86	72.88
Sep-18	4.01	79.52
Dec-18	3.49	59.9
Mar-19	2.87	63.65
Jun-19	3.05	69.11
Sep-19	3.52	62.03
Dec-19	6.84	64.95
Mar-20	6.43	47.58
Jun-20	6.57	28.52
Sep-20	6.84	42.1
Dec-20	5.86	48.01
Mar-21	5.09	63.49
Jun-21	6.13	68.8
Sep-21	4.88	72.48
Dec-21	5.48	79.14
Mar-22	6.48	99.2
Jun-22	7.37	115.11
Sep-22	7.04	97.45
Dec-22	6.07	86.85
Mar-23	6.1	80.98
Jun-23	4.71	75.89
Sep-23	6.27	88
Dec-23	5.48	79.15
Mar-24	5.05	82.5

Table 1.3 Combined Data Set

Source: Reserve Bank of India (RBI), Petroleum Planning & Analysis Cell (PPAC)

6.2 Pearson Correlation Analysis: The initial analytical step involved computing the Pearson Correlation Coefficient (r) to establish the inherent strength and direction of the linear association between the two quarterly series.

Interpretation: The resulting coefficient of **+0.2935** indicates a **weak, positive linear association**. While the positive sign is congruent with the **Cost-Push Theory**—suggesting a rise in input costs correlates with higher prices—the low magnitude demonstrates that the variables do not co-vary strongly. This outcome immediately signalled that the Crude Price is unlikely to serve as a powerful solitary determinant of CPI movements.

	CPI Combined Annual Inflation (Yt) (Annual % Change)	Indian Basket Crude Price (Xt) (Average USD/bbl)
CPI Combined Annual Inflation (Yt) (Annual % Change)	1	
Indian Basket Crude Price (Xt) (Average USD/bbl)	0.293470082	1

Table 1.4 Correlation

6.3 Simple Linear Regression Analysis

The Simple Linear Regression was executed to formally test the hypothesis by quantifying the predictive ability and statistical certainty of the Indian Basket Crude Price (X_t) on the CPI Combined Annual Inflation (Y_t). The analysis focused on three key performance metrics:

A. Explanatory Power: R-Squared (R2)

The **R-Squared R^2** measures the proportion of the Dependent Variable's movement that is explained by the Independent Variable.

- **Result: R^2** = 0.0861
- **Interpretation:** Only **8.61%** of the observed variation in CPI Combined Annual Inflation can be attributed to changes in the Crude Price. This extremely low value means that the vast majority (**91.39%**) of the factors

driving inflation over this period are external to the simple oil price-inflation link.

B. Statistical Reliability: Significance P-Value

The **P-value** (specifically, the Significance F from the ANOVA) is the crucial test of the model's reliability, which must be less than 0.05 to confirm a statistically significant relationship.

- **Result: P-value = 0.0974**
- **Interpretation:** Since the calculated P-value (0.0974) is **greater than the 0.05 threshold**, the overall regression model is determined to be **not statistically significant**. This conclusion fails to establish a reliable, non-random connection between the Crude Price and CPI Inflation across the analysed quarters.

C. Coefficient Analysis (β_1)

The β_1 coefficient quantifies the actual impact of the Crude Price, while its associated P-value confirms the certainty of that impact. **Conclusion:** Although the coefficient is **positive (+4.3479)**, aligning with the expected cost-push effect, its P-value (0.0974) is **not statistically significant**. Therefore, the study rejects the alternative hypothesis. The finding demonstrates that the **Indian Basket Crude Price is not a statistically reliable single determinant** of CPI Combined Annual Inflation during 2016–2024.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.293470082
R Square	0.086124689
Adjusted R Square	0.05664484
Standard Error	19.14035704
Observations	33

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1070.292508	1070.292508	2.921476625	0.097402278
Residual	31	11356.9513	366.3532677		
Total	32	12427.24381			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	43.62533581	13.44875759	3.24381903	0.002823396	16.19641386	71.05425776	16.19641386	71.05425776
Indian Basket Crude Price (Xt) (Average USD/bbl)	4.347118882	2.543315917	1.709232759	0.097402278	-0.840008129	9.534245893	-0.840008129	9.534245893

Table 1.5 Regression

7.0 CONCLUSION AND POLICY RECOMMENDATIONS

This section provides the conclusive summary of the empirical findings, formally addresses the research question, and translates the statistical results into strategic, evidence-based policy implications.

7.1 Final Conclusion: Rejection of the Simple Hypothesis

The simple linear regression analysis, executed on 33 quarterly observations (March 2016 – March 2024), leads to a clear and empirically strong finding: **The hypothesis asserting a statistically significant linear relationship between the Indian Basket Crude Price and CPI Combined Annual Inflation is rejected.**

The conclusive evidence rests on two key statistical observations:

1. **Low Explanatory Power:** TheR^2 value of 0.0861 confirms that **only 8.61%** of the total variance in India's CPI is statistically explained by crude oil price movements. This implies that the large majority 91.39% of inflation is driven by factors outside of the oil price-inflation link.

2. **Lack of Statistical Certainty:** The P-value (0.0974) for the crude price coefficient is greater than the 0.05 threshold, meaning the relationship found is **not statistically reliable** for forecasting or policy purposes.

Synthesis: The study concludes that the **Indian Basket Crude Price is not a reliable single determinant of overall domestic inflation** during the study period. This result empirically challenges the straightforward "Cost-Push Hypothesis" by demonstrating that the direct, simple pass-through of external oil price shocks has been effectively neutralized.

7.2 Economic Rationale and Policy Validation

The statistical weakness of the crude price link is a critical finding that validates the effectiveness of India's economic policy framework and highlights the true drivers of domestic prices:

1. **Policy Insularity (Fiscal Buffers):** The government's practice of utilizing **taxes and excise duties** on petroleum products acts as a **stabilizer**. By adjusting these duties, the government prevents the full, immediate volatility of global prices from being transmitted to the retail consumer, thus successfully **insulating** the broader CPI basket from the direct shock.
2. **Monetary Anchoring:** The Reserve Bank of India's **Inflation Targeting (FIT) framework** has been successful in anchoring inflation expectations. This proactive management limits the secondary effects (like a wage-price spiral) that typically follow an initial commodity shock, further dampening the overall impact of crude oil on the CPI.
3. **Dominance of Domestic Factors:** The extremely low R^2 strongly suggests that factors related to **domestic food supply, monsoon patterns, and agricultural logistics** are the true, dominant drivers of CPI Combined Annual Inflation, overshadowing the influence of the energy component.

7.3 Strategic Policy Implications

The empirical results provide three clear directives for future economic policy:

1. **Prioritize Structural Reforms over External Shocks:** Since the simple oil link is weak, policy resources must be redirected toward addressing the 91.39% of unexplained inflation. This requires intensified focus on improving **supply chain efficiency, agricultural storage, and food processing infrastructure** to mitigate domestic bottlenecks that cause the majority of price volatility.
2. **Maintain Fiscal Flexibility:** The Ministry of Finance should **maintain its current approach** of using fuel taxes as a **counter-cyclical stabilization tool**. The study confirms this policy is effective in preventing external commodity shocks from destabilizing core domestic prices.
3. **Focus Monetary Policy on Core Indicators:** The RBI should continue to base its interest rate decisions on robust **core inflation measures** and domestic demand indicators, rather than reacting automatically to temporary, short-lived spikes in global crude prices. The analysis proves that the domestic mechanism is resilient enough to absorb these simple shocks without requiring immediate, reactive monetary tightening.

8.0 REFERENCES

This list presents the institutional data sources and academic literature that provided the foundation for the theory, data, and statistical methodology employed in this dissertation.

Data Sources (Institutional & Government)

- **Petroleum Planning & Analysis Cell (PPAC**). Used for the Indian Basket Crude Price (USD/bbl) Series. https://ppac.gov.in/prices/international-prices-of-crude-oil
- **Reserve Bank of India (RBI)**. Used for Quarterly CPI Combined Annual Inflation Rate and other macroeconomic data via the Database on Indian Economy (DBIE). https://data.rbi.org.in/DBIE/#/dbie/home
- **Reserve Bank of India (RBI)**. Monetary Policy Report (April 2016). Provided context on the formal adoption and framework of the Flexible Inflation Targeting (FIT) regime.
- **Ministry of Finance, Government of India**. Union Budget and Economic Surveys. Used for contextual information on fiscal policy regarding petroleum products (taxes and duties).

Academic and Theoretical Literature

- **Dornbusch, R., Fischer, S., & Startz, R.** (2018). *Macroeconomics* (13th ed.). Served as a resource for foundational macroeconomic theory, including concepts of Cost-Push Inflation.
- **Gujarati, D. N., Porter, D. C., & Gunasekar, S.** (2017). *Basic Econometrics* (5th ed.). Used for the principles of Simple Linear Regression, hypothesis testing, and interpretation of statistical outputs (R^2 and P-values).
- **Patra, M. D., & Kapur, M.** (2010). A Monetary Policy Model for India. *Reserve Bank of India Occasional Papers*. Used for context on monetary policy transmission mechanisms in the Indian economy.
- **Tobin, J.** (1972). Inflation and Unemployment. *The American Economic Review*. Provided classical analysis on supply-side and demand-side price dynamics.