

Dynamic Association of Indian Merchandise Imports, Foreign Investments and other Macroeconomic Variables using the ARDL Modelling Approach

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Abstract

India, as one of the world's fastest-growing economies, has experienced profound changes in its trade dynamics in recent decades. This paper examines the trajectory and drivers of India's merchandise imports by sheds light on the evolving nature of India's import dynamics, which are shaped by a combination of domestic and global factors. The inter-plays of energy needs, domestic stock return, consumption expenditure, foreign investments, and exchange rate can significantly drive the dynamism of India's merchandise import on the global stage. Quarterly data ranging from 2000-01 to 2021-22 are considered as the study period. The researcher employed ARDL (Autoregressive Distributed Lag) ECM (error correction model), and a pair-wise Granger causality test was used in the study. The study shows that Foreign Exchange Reserves, Oil Imports, Real Effective Exchange rates, and Manufactured Exports show long-run positive effects on merchandise imports, indicating that higher foreign reserves, oil imports, a competitive real exchange rate, and increased manufactured exports stimulate import demand.

Keywords: ARDL, Granger Causality, Error correction model, Merchandise imports.

1. Introduction

India, one of the world's fastest-growing economies, has significantly transformed its trade dynamics over the past few decades. As a pivotal player in the global market, India's merchandise imports have garnered considerable attention due to their impact on the domestic economy, international trade relations, and policy formulation. In recent years, notable shifts have been witnessed in India's import dynamics, which have been influenced by domestic and global factors (Dabas, 2018). The emergence of new trade partners, advancements in technology, evolving consumer preferences, and changes in regulatory frameworks have all contributed to reshaping India's import landscape. Additionally, geopolitical tensions, fluctuations in global commodity prices, and the ongoing COVID-19 pandemic have introduced unprecedented challenges and uncertainties, further impacting India's import behavior (Mishra, 2021). Understanding these latest trends is crucial for devising effective strategies to navigate the evolving trade environment and harnessing opportunities for sustainable growth.

1.1 India's merchandise imports

India's merchandise imports have undergone significant transformations in recent years, mirroring the evolving economic landscape and global trade trends. Notably, there has been a discernible shift in the composition of imports characterized by a growing diversification beyond traditional sectors. While imports of essential commodities such as crude oil, machinery, and electronics remain substantial, there has been a noticeable emphasis on high-value-added goods like pharmaceuticals, chemicals, and advanced technology products (Sajeev and Akhila, 2021). Concurrently, India's trade relationships have transformed, marked by strategic diversification in trading partners. Historically reliant on imports from countries like China and the Middle East, India has actively sought to broaden import sources by strengthening ties with regions such as Southeast Asia, Africa, and Latin America. This strategic shift aims to mitigate risks associated with over-reliance on specific trading partners and enhance overall trade resilience (Gupta, 2019). Furthermore, in response to global uncertainties and disruptions, a renewed focus has been on bolstering domestic manufacturing and reducing dependency on imports for critical goods. Initiatives like the "Make in India" campaign aim to enhance domestic production capabilities across various sectors, fostering self-sufficiency and reducing reliance on imported goods (Behera and Yadav, 2019). Moreover, India's participation in regional and bilateral trade agreements, such

as the Regional Comprehensive Economic Partnership (RCEP) and Comprehensive Economic Cooperation Agreement (CECA), has influenced import dynamics by facilitating trade with partner countries and influencing tariff structures. Rapid technological advancements have also played a pivotal role in reshaping import patterns, particularly in sectors like telecommunications, electronics, and digital technologies. These advancements have fueled increased demand for advanced equipment, software, and IT services, altering import composition and expenditure (Hafnida et al., 2021). Additionally, implementing economic policies and structural reforms aimed at improving the ease of doing business, streamlining trade procedures, and enhancing infrastructure has further influenced import patterns. Lastly, global events such as the COVID-19 pandemic have profoundly affected India's merchandise imports, leading to disruptions in global supply chains, changes in consumer preferences, and shifts in demand patterns, necessitating adjustments in import strategies and priorities (P. et al., 2020). These changes underscore the dynamic nature of India's merchandise imports and highlight the importance of adaptive policies to navigate evolving global trade dynamics while ensuring economic resilience and competitiveness.

1.2 Impact on the Indian Economy

The performance of India's merchandise imports has profound implications for the broader economy across various sectors and macroeconomic indicators. The import trends significantly influence India's balance of payments position, thereby impacting its current account deficit or surplus (Gujrati, 2015; Makhmutova and Mustafin, 2017; Singh and Kumar, 2020). Additionally, the import volumes and prices play a crucial role in shaping domestic inflation dynamics, particularly for essential commodities and inputs, thus affecting overall price stability (Kolte et al., 2019). The imports of capital goods, raw materials, and intermediate goods have a direct bearing on industrial output and productivity levels, influencing the growth trajectory of the manufacturing and production sectors (Jana et al., 2020; Subhan et al., 2021; Suriaganth and Abdullah, 2020; Wani and Mir, 2021). Additionally, import dynamics affect employment patterns, especially in sectors vulnerable to import competition or substitution, thereby impacting labor markets and livelihoods (Fayaz and Kaur, 2022). Finally, import trends also affect fiscal policy, shaping government revenue through tariffs and customs duties, consequently influencing fiscal policy decisions and overall economic stability (Ciuriak et al., 2022). Understanding these multifaceted impacts is

essential for policymakers to devise effective sustainable economic growth and development strategies.

1.3 Key Determinants of India's Merchandise Imports

India's merchandise imports are influenced by many factors, encompassing both macroeconomic indicators and structural dynamics. These determinants are pivotal in shaping the import landscape and guiding policy interventions. Firstly, the trajectory of India's import demand closely mirrors its economic growth patterns, wherein fluctuations in GDP growth rates often correspond to shifts in import patterns, indicating the intimate relationship between economic expansion and import dynamics (Jijin et al., 2022). Secondly, exchange rate dynamics significantly influence import decisions, as currency movements impact the cost competitiveness of imported goods, thereby affecting the overall volume and composition of imports (Chakraborty and Maitra, 2022). Additionally, government trade policies, including tariffs, quotas, and trade agreements, wield considerable influence over import flows, shaping both the structure and volume of imported goods. Moreover, fluctuations in global commodity prices, particularly for essential commodities like crude oil, metals, and agricultural products, play a crucial role in determining the cost of imports, thereby impacting import volumes and expenditure patterns (Kaushal, 2022a). Furthermore, the availability and competitiveness of domestic production significantly influence import demand, with import substitution strategies particularly affecting certain sectors (Kumar et al., 2022; D. K. Sahoo and Sahoo, 2022; Tyagi, 2004). Additionally, technological advancements drive changes in import patterns, especially in high-tech industries and capital goods sectors, where innovations alter the nature and composition of imports (Chattopadhyay et al., 2022; Kaushal, 2022). Lastly, geopolitical factors such as developments and international relations shape trade dynamics, influencing import sources and trade routes, thereby adding another layer of complexity to the determinants driving India's merchandise imports (Aggarwal and Chakraborty, 2022; P. K. Sahoo et al., 2022). Understanding these key determinants is essential for formulating effective policies aimed at promoting sustainable economic growth and enhancing trade competitiveness.

1.4 Research Gap

Merchandise import play a pivotal role in shaping a country's economic landscape, influencing various macroeconomic indicators such as balance of payments, foreign

exchange reserves, and industrial growth. A nuanced understanding of the factors driving import patterns is essential for forecasting future trends, designing trade policies, and fostering sustainable economic development. While various studies have explored aspects of India's merchandise exports and imports, a gap exists in comprehensively analyzing the multifaceted determinants driving import trends. Existing literature often focuses on specific factors in isolation, overlooking the interplay and synergies among different determinants. This research aims to address this gap by providing a holistic understanding of the diverse factors shaping India's import dynamics by exploring the shift in the composition of India's imports and the determinants responsible. Understanding the intricate relationship between India's merchandise imports and its economy is crucial for devising effective policy interventions to promote sustainable growth, industrial development, and trade competitiveness. This research aims to contribute to this understanding by identifying and analyzing the determinants driving India's import dynamics, and informing policymakers and stakeholders for evidence-based decision-making.

2 Research Methodology

The present study aims to explore the determinants of India's merchandise imports. The research investigates the dynamic composition of India's merchandise imports and explores the determinants responsible for using various econometric tests. The study uses quarterly data from 2000-01 to 2021-22. Firstly, the Chow break-point test is employed to identify potential structural breaks in the data series, indicating shifts in the underlying relationships over time. Subsequently, the Zivot and Andrews unit root test is conducted to ascertain the stationarity properties of the variables under consideration, which is crucial for modelling long-term relationships. To explore the existence of co-integration, the study employs the long-run form and bound test, offering insights into the equilibrium relationships among the variables.

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 X_1 + \dots + \alpha_n X_n + \sum_{i=1}^n \beta_i \Delta y_{t-i} + \sum_{i=0}^n \beta_{1i} \Delta X_{1t-i} + \dots + \sum_{i=0}^n \beta_{ni} \Delta X_{nt-i} + e_t$$

Additionally, the (ARDL) approach is utilized to analyze short-run dynamics, allowing for the examination of dynamic adjustments toward equilibrium. Finally, an error correction

model is constructed to capture the speed of adjustment towards long-term equilibrium, providing a comprehensive framework for understanding the inter-dependencies among the variables of interest. The researcher also employed a pairwise Granger causality test to check the causal relationship between the variables.

Table 1: Variable of the study

Sr. no.	Variable	Measures	Definition	Source
1.	BSE	The financial strength of a country's stock market	BSE Sensex at the end of every quarter (Million \$)	BSE
2.	CPI	Inflation and purchasing power	Quarterly data of Consumer price index (in %)	Federal Reserve economic data.
3.	FCE	Final consumption expenditure	Quarterly data of Final consumption expenditure	RBI
4.	FDI	Foreign investment attractiveness	Quarterly data of foreign direct investment (million \$)	RBI
5.	FOREX	Foreign exchange reserve	Quarterly data of forex reserve	RBI
6.	IIP	Index of Industrial Production	Quarterly data of Industrial production	CMIE
7.	MXPORT	Merchandise exports	Quarterly data of merchandise imports	Ministry of Science and Technology
8.	OILIMP	Oil imports	Quarterly data of oil imports	Petroleum Planning and analysis cell
9.	REER	Exchange rate	Quarterly data of Real effective exchange rate	Bruegel
10.	MIMPORT	Merchandise imports	Quarterly data on merchandise import	RBI

$$\begin{aligned}
MIMPORT_t = & \alpha_0 + \alpha_1 MIMPORT_{t-1} + \alpha_2 BSE_{t-1} + \alpha_3 CPI_{t-1} + \alpha_4 FCE_{t-1} + \alpha_5 FDI_{t-1} \\
& + \alpha_6 FOREX_{t-1} + \alpha_7 IIP_{t-1} + \alpha_8 MXPOR_{t-1} + \alpha_9 OILIMP_{t-1} \\
& + \alpha_{10} REER_{t-1} + \alpha_{11} DUMMY2_t + \sum_{i=1}^n \beta_{1i} \Delta MIMPORT_{t-i} + \sum_{i=1}^n \beta_{2i} \Delta BSE_{t-i} \\
& + \sum_{i=1}^n \beta_{3i} \Delta CPI_{t-i} + \sum_{i=1}^n \beta_{4i} \Delta FCE_{t-i} \\
& + \sum_{i=1}^n \beta_{5i} \Delta FDI_{t-i} + \sum_{i=1}^n \beta_{6i} \Delta FOREX_{t-i} + \sum_{i=1}^n \beta_{7i} \Delta IIP_{t-i} \\
& + \sum_{i=1}^n \beta_{8i} \Delta MXPOR_{t-i} + \sum_{i=1}^n \beta_{9i} \Delta OILIMP_{t-i} + \sum_{i=1}^n \beta_{10i} \Delta REER_{t-i} \\
& + \sum_{i=1}^n \beta_{11i} \Delta DUMMY2_{t-i} + e_t
\end{aligned}$$

3 Empirical Results

There is a wide range of variables that influence the country's merchandise import dynamics, reflecting the delicate interaction of economic, financial, and developmental pressures. Understanding the causes of merchandise import becomes critical for policymakers, economists, and market participants alike in the case of India, a fast-growing economy with a broad set of factors. This section, concerned with the analytical investigation, explores the major elements that substantially influence India's merchandise imports, offering a thorough understanding of the complicated web that determines the country's trading environment. Various variables influence the country's merchandise import dynamics, reflecting the delicate interaction of economic, financial, and developmental pressures. Understanding the causes of merchandise import becomes critical for policymakers, economists, and market participants alike in the case of India, a fast-growing economy with a broad set of factors. This section, concerned with the analytical investigation, explores the major elements that substantially influence India's merchandise imports, offering a thorough understanding of the complicated web that determines the country's trading environment.

3.1.1 Chow Breakpoint Test

The test involves splitting the data into two or more groups based on the potential breakpoints and estimating separate regression models for each group. The test's null hypothesis is that

there is no structural break, meaning that the coefficients are the same across all groups. The alternative hypothesis is that there is at least one structural break, meaning that the coefficients differ across some groups.

Table 2: Chow Breakpoint Test

Null Hypothesis: No breaks at specified breakpoints

Year	F-Stat	Prob.	Remarks
2008 (Mid)	1.8654	0.06	Fail to reject H ₀ ; Structural Break does not exist
2020 (Beginning)	4.3332	0.001	Reject H ₀ ; Structural Break exists

In conclusion, the Chow Break-point Test results indicate no structural break in the data in mid-2008, as the null hypothesis could not be rejected at a 5% significance level (p-value = 0.06). This suggests that the parameters of the model are stable over this period. However, at the beginning of 2020, the null hypothesis is rejected (p-value = 0.001), indicating the presence of a structural break. This suggests that the model's parameters are unstable over this period, and the model's predictive power may be compromised. As the Chow Break-point test suggests, there is a break-point in 2020 (Beginning); hence, dummy 2 variables stabilize the result.

3.1.2 Test of Unit Root with Breakpoints

The Zivot and Andrews unit root test is a statistical method used to determine if a time series is stationary or not. A stationary time series is one whose properties do not depend on the time at which the series is observed. In other words, it does not have any trend or seasonal effects and the variances over different intervals are constant over time. Zivot and Andrews (1992)

$$y_t = \alpha_t + \beta_t t + \gamma_t y_{t-1} + \sum_{i=1}^k \delta_i D_{it} + \epsilon_t$$

- γ_t is the coefficient of the lagged dependent variable.
- D_{it} is the dummy variable for the structural break.
- δ_i is the coefficient of the dummy variable.

Table 3: Test of unit root with Breakpoints

Variable	I(0)	I(1)	Interpretation
BSE	-5.39811*		Stationary at level

CPI	-2.55676	-9.50619*	Stationary at first difference
FCE	-5.53687*		Stationary at level
FDI	-7.83631*		Stationary at level
Forex	-4.09801	-6.08945*	Stationary at first difference
IIP	-8.68327*		Stationary at level
MIMPORT	-2.65817	-8.64801*	Stationary at first difference
MXPORT	-2.97507	-10.3778*	Stationary at first difference
OILIMP	-2.6236	-9.09505*	Stationary at first difference
REER	-3.3878	-8.15146*	Stationary at first difference

The test provides two statistics, $I(0)$ and $I(1)$, representing the test statistic values for level stationarity and first difference stationarity, respectively. If the absolute value of the test statistic is greater than the critical value, the null hypothesis of a unit root is rejected, indicating stationarity. The test shows mixed results as some variables are stationary at a level while some are stationary at first difference.

3.1.3 Result of OLS with the Dummy Variable

Dependent Variable:
MIMPORT Method: Least
Squares

Table 4: Results of OLS with the dummy variable

Variable	Coefficient	P-Value
BSE	0.364068	0.13
CPI	81.06010	0.81
FCE	-0.033453	0.21
FDI	-0.406216	0.09
FOREX	0.045027	0.05
IIP	-38.82126	0.64
MXPORT	0.733820*	0.00
OILIMP	3.806972*	0.00
REER	322.1388	0.05
DUMMY2*	-8572.152*	0.02
C	-28705.30*	0.04

The variables marked with an asterisk (*) are statistically significant at the 5% level, meaning their p-values are less than 0.05. These variables are MXPORT, OILIMP, DUMMY2, and the constant term C. As the value of the dummy2 variable is significant, we proceed for ARDL with a dummy variable.

3.1.4 ARDL Bounds Test: Long Run Form and Bounds Test

The long-run form and bounds test is used to test for the existence of a long-run relationship (cointegration) among variables in a time series. The test uses an F-statistic to compare the observed value against critical values at different significance levels.

Table 5: Long run and bounds test

Null Hypothesis: No level of relationship

F statistics	Significance level	Lower bond value	Upper bound value	Decision
10.88121	10%	1.8	2.8	Long-run relationship and cointegration exists
	5%	2.04	2.08	Long-run relationship and cointegration exists
	2.5%	2.24	3.35	Long-run relationship and cointegration exists
	1%	2.5	3.68	Long-run relationship and cointegration exists

The ARDL Bounds test results indicate the presence of a long-run relationship and cointegration among the variables in the model. The F-statistic value is 10.88121, which is higher than the upper bound value at all significance levels (10%, 5%, 2.5%, and 1%). Specifically, at the 10% significance level, the F-statistic is greater than the upper bound value of 2.8. Similarly, at the 5% significance level, the F-statistic exceeds the upper bound value of 2.08. This pattern continues at the 2.5% and 1% significance levels, where the F-statistic surpasses the upper bound values of 3.35 and 3.68, respectively. Therefore, we can conclude that there is strong evidence of a long-run relationship and cointegration among the variables in the model at all considered significance levels. This suggests that the variables move together over the long term, maintaining a statistically significant equilibrium relationship. In conclusion, the test results suggest that a long-run cointegration exists among the variables under consideration at all tested significance levels. This implies that the variables move together in the long run, maintaining a stable, long-term equilibrium relationship. As the long-run relationship and cointegration exists between the variables, we will estimate the (ECM)

3.1.5 Results of Long run estimates of ARDL: Error correction model

Table 6: Error correction model results

Dependent Variable: MIMPORT

Variable	Coefficient	Prob.	Decision
BSE	-0.052191	0.8710	No long-run effect exists
CPI	-1077.776*	0.0129	The long-run effect exists
FCE	-0.190778*	0.0005	The long-run effect exists
FDI	-0.565752*	0.0439	The long-run effect exists
FOREX	0.175530*	0.0000	The long-run effect exists
IIP	-166.5476	0.0982	No long-run effect exists
MXPORT	0.465130*	0.0106	The long-run effect exists
OILIMP	5.055809*	0.0000	The long-run effect exists
REER	1036.079*	0.0000	The long-run effect exists
DUMMY2	-946.7339	0.8466	No long-run effect exists
C	-78633.02*	0.0000	The long-run effect exists

The asterisks (*) denote that the coefficients are statistically significant at the 5% level, indicating that a long-run effect exists. Variables such as the inflation index, consumption expenditure, foreign direct investment, foreign exchange reserve, merchandise exports, oil imports, and exchange rate are statistically significant in impacting the merchandise imports, as the p-value is less than 0.05. Meanwhile, the domestic stock market performance, Industrial Production, and the COVID-19 pandemic do not show a significant long-run effect on the value of merchandise imports. These results provide valuable insights into the factors influencing India's merchandise imports in the long run. Inflation index, Consumption expenditure, Foreign direct investment, merchandise exports, energy imports, and exchange rate have long-term effects on estimating the value of merchandise imports. The inflation index, Industrial production, and exchange rate have much higher values of their respective coefficient, showing the relationship's direction and magnitude.

3.1.6 Pairwise Granger Causality Test

The granger causality tests provide strong evidence of causal relationships between several pairs of variables. This information can be valuable in understanding the dynamics and interrelationships between these economic indicators. The null hypothesis is X does not Granger Cause Y.

Table 7: Pairwise Granger Causality Test

Null Hypothesis	T-statistics	P-Value	Decision
BSE does not Granger Cause MIMPORT*	6.25185	0.0029	Reject H0
FDI does not Granger Cause MIMPORT*	3.53869	0.0334	Reject H0
MIMPORT does not Granger Cause FDI*	4.68593	0.0117	Reject H0
FOREX does not Granger Cause MIMPORT*	9.02195	0.0003	Reject H0
MIMPORT does not Granger Cause IIP*	4.20334	0.0182	Reject H0
MXPORT does not Granger Cause MIMPORT*	9.94974	0.0001	Reject H0
MIMPORT does not Granger Cause OILIMP*	4.37229	0.0156	Reject H0

The results of the pairwise Granger causality tests suggest significant causal relationships between several variables. This suggests that changes in domestic stock performance, foreign direct investment, forex reserve, and merchandise export predict changes in merchandise imports. While merchandise imports granger causes foreign direct investment, industrial production, and energy imports. There is a bi-directional relationship between foreign direct investment and merchandise imports. Meanwhile, domestic stock performance, forex reserve, and merchandise export have a unidirectional causal relationship with merchandise imports.

3.1.7 Residual diagnostic test

The section consists of the residual diagnostic tests that provide essential checks for the regression model's assumptions. The null hypothesis for each test is “Residuals are normally distributed.”

Table 8: Residual diagnostic test

Type	Test	Value	P-value	Decision
Histogram-Normality Test	Jarque-Bera	7.1731	0.02	Reject H0; Residuals are not normally distributed
Serial Correlation LM Test	Breusch-Godfrey Serial Correlation LM test	0.969761	0.3841	Fails to reject H0; There is no serial correlation among residuals
Heteroskedasticity Test	Breusch-Pagan-Godfrey	2.164175	0.0136	Reject H0; Residuals are Heteroskedastic

The results indicate that the residuals are not normally distributed as the null hypothesis is rejected in the Histogram-Normality Test (Jarque-Bera test p-value = 0.02). This suggests a

violation of the assumption of normality. However, the Serial Correlation LM Test (Breusch-Godfrey test p-value = 0.3841) fails to reject the null hypothesis, indicating no evidence of serial correlation among residuals. Lastly, the Heteroskedasticity Test (Breusch-Pagan-Godfrey test p-value = 0.0136) rejects the null hypothesis, suggesting that the residuals are heteroskedastic, i.e., they do not have constant variance.

3.1.8 Short-run ARDL Results

As the previous results suggest, the residuals are not normally distributed, and there is also the presence of heteroskedasticity as there are outliers in the data series. The researcher employed the ARDL test with HAC.

Dependent Variable: MIMPORT

HAC standard errors and covariance

(Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Table 9: ARDL short-run results

Variable	Coefficient	Prob.*
MIMPORT(-1)	0.469972*	0
BSE	0.502368	0.0874
BSE(-1)	-0.530031	0.0605
CPI	-571.2510*	0.0092
FCE	-0.069834*	0.0008
FCE(-1)	-0.031284	0.0785
FDI	-0.299864*	0.0354
FOREX	-0.074644*	0.042
FOREX(-1)	0.167680*	0
IIP	-88.27481	0.1562
MXPORT	0.246531	0.0733
OILIMP	3.730499*	0
OILIMP(-1)	-1.050781*	0.0247
REER	549.1502*	0.0003
DUMMY2	-27100.91*	0.0001
DUMMY2(-1)	26599.11*	0
C	-41677.67	0.0006

R-squared	0.996333	Adjusted squared	R- 0.99554
F-statistic	1256.592	Durbin-Watson stat	1.918423
Prob(F-statistic)	0		

The ARDL short-run results indicate a strong model fit and significant relationships between several variables and the dependent variable, merchandise imports. The Durbin-Watson statistic of 1.918423 is close to 2, suggesting no significant autocorrelation exists in the residuals. The results show a similar trend of the error correction model; Several variables are statistically significant at the 5% level (p -value < 0.05), including own leg of merchandise imports, inflation index, foreign investments, consumption expenditure, forex reserve, energy imports, exchange rate, and covid 19 pandemic. The lag of forex reserve and energy imports was also significant in estimating the value of merchandise imports in the short run. In conclusion, the ARDL short-run results provide strong evidence of both the model's significance and robustness. The variables in the model collectively explain a large proportion of the variation in MIMPORT, and several variables have a significant short-run impact on MIMPORT. However, it's important to note that these results should be interpreted in the context of the specific research question and the data used. Further research may be needed to establish true causal relationships.

3.1.9 Stability test: CUSUM

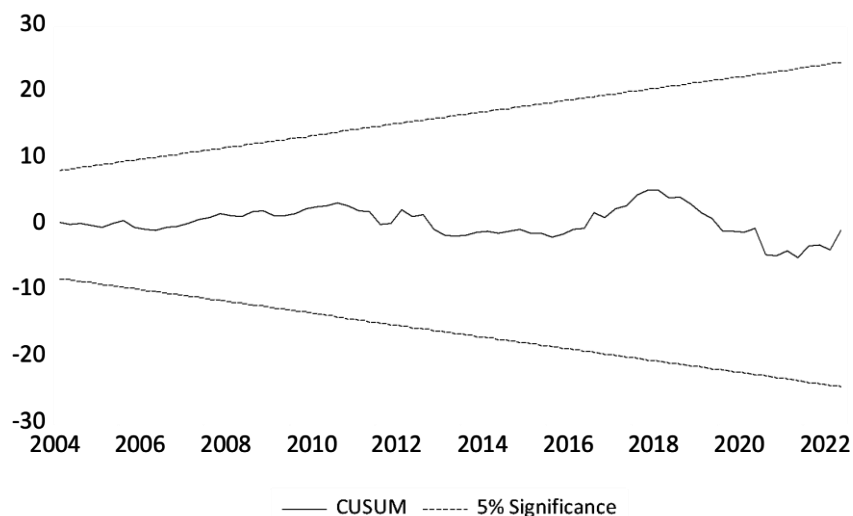


Figure 1: CUSUM test

In this specific chart, the CUSUM line does not consistently cross the 5% significance line, suggesting that no significant shifts are detected at the 5% significance level. This means the monitored process is likely under control and not drifting away from its mean.

4 Discussion

The evolution of India's merchandise imports reveals a substantial transformation in its composition. Notably, there has been a consistent surge across various categories, indicative of shifting economic priorities and evolving trade dynamics. Significant increases in imports are observed in sectors such as Mineral fuels and Mineral oils and Electronic Machinery and equipment, underlining the country's growing reliance on energy resources and technological advancements (Fayaz & Kaur, 2022b; Misra & Choudhry, 2020; Rahman & Rahman, 2022). Additionally, steady rises in imports of other commodities like animal and vegetable fats and oils and iron and steel signify evolving consumption patterns and industrial demands. Despite occasional fluctuations, the overarching trend reflects India's integration into global markets and its efficient efforts to meet domestic demands (Kaushal, 2022b; Sarma, 2020). This trajectory underscores the resilience and adaptability of India's economy in changing global landscapes. While discussing the study's empirical results, the ARDL model provides valuable insights into the determinants of India's merchandise imports, both in the short and long run. The results highlight several key variables significantly impacting merchandise imports, shedding light on the complex interplay of economic, financial, and policy factors influencing import dynamics. Their study depicts inflation, consumption expenditure, foreign exchange reserve, exchange rates, foreign investments, and oil imports as significant determinants in estimating the value of merchandise imports in the short and long run (Altayligil & Çetrez, 2020; Gurung & Rai, 2020; Jyoti, 2021; Manu et al., 2020; Ray, 2012; Yadav, 2021). Meanwhile, the logged value of merchandise imports, foreign exchange reserve, and COVID-19 were found to be significant determinants in influencing the value of merchandise imports in the short run. The high R-squared value indicates a robust explanatory power of the model. The similar trends exhibited among the variables such as inflation, consumption expenditure, foreign direct investment, Forex reserve, energy import, and exchange rate exhibit significant impacts on merchandise imports in the long run. Consumer Price Index exerts a negative long-run effect, implying that higher inflation levels deter import demand. Similarly, Foreign Currency Exchange and Foreign Direct Investment

exhibit negative long-run effects, suggesting that a stronger domestic currency and increased foreign investment tend to reduce merchandise imports (G & Aswal, 2014; Gondaliya, n.d.; Sinha, 2016; Sut, 2019). Conversely, Foreign Exchange Reserves, Oil Imports, Real Effective Exchange Rate, and Manufactured Exports show positive long-run effects on merchandise imports, indicating that higher foreign reserves, oil imports, a competitive real exchange rate, and increased manufactured exports stimulate import demand. Interestingly, domestic stock performance, Index of Industrial Production, and COVID-19 do not exhibit significant long-run effects on merchandise imports, suggesting that stock market performance, industrial output fluctuations, and specific policy interventions may have limited influence on import dynamics over the long term. Also, a bi-directional relationship exists between foreign direct investment and merchandise imports. Meanwhile, domestic stock performance, forex reserve, and merchandise export have a unidirectional causal relationship with merchandise imports.

5 Conclusion

The findings of the ARDL model underscore the multifaceted nature of determinants shaping India's merchandise imports. While short-run dynamics are influenced by broader economic, financial, and policy variables, long-run trends reveal the sustained impact of key macroeconomic indicators and trade-related variables on import behaviour. Policymakers should consider the significant effects of variables such as inflation, exchange rates, foreign reserves, and oil imports on import dynamics, crafting targeted policies to manage import levels effectively and mitigate potential adverse impacts on trade balances and macroeconomic stability. Furthermore, the results emphasize the importance of fostering a conducive environment for foreign investment and export competitiveness to leverage positive long-run effects on import demand. Strengthening exchange rate management frameworks, enhancing export diversification, and promoting domestic manufacturing capabilities can contribute to sustainable import dynamics aligned with broader economic objectives. Overall, by unravelling the intricate determinants of India's merchandise imports, this research provides valuable insights for policymakers, economists, and stakeholders seeking to navigate the complexities of international trade and foster resilient, inclusive economic growth.

6 Conflict of Interest

All the authors of the study declare that there is no conflict of interest.

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