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Energy Import Dependence, Global Oil Price Shocks and Economic Growth in India: An ARDL Approach with Structural Breaks

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Abstract

This study investigated the connection between oil price shocks worldwide, reliance on energy imports, and the development of the Indian economy in the years 1991-2024. Since India is one of the biggest importers of crude oil, international energy prices are likely to be very harmful to the macroeconomic stability and growth performance. The analysis uses Autoregressive Distributed Lag (ARDL) bounds testing model to examine the long term equilibrium relationships as well as short term adjustment mechanisms, including inflation, and current account balance and structural break in the year 2008 as a result of the global financial crisis. The findings verify the presence of a cointegrating relationship between the variables in the long-run. Nonetheless, the individual long-run coefficients are not statistically significant indicating that the oil prices levels do not have a permanent structural effect on the growth. Contrary, short-run analysis indicates that changes in lagged oil prices and external sector imbalances have a substantial impact on growth. The error correcting term shows that the system quickly corrects to the equilibrium in the aftermath of the short term shocks. The implication of these results is that the oil price vulnerability to growth of India works through short-run (macroeconomic) transmission mechanisms and not structural impairment. Enhancing the resilience of the external sector and speeding up the diversification of energy sources are also important policy priorities.

Keywords: *Oil price shocks, energy import dependence, economic growth, ARDL, India.*

1. Introduction

Energy is an important component in contemporary economic processes of production and it is an essential input to industrial production, transportation, and domestic consumption. In the case of emerging economies that have high growth rates such as India, the structural reliance on imported energy that is majorly crude oil has a major impact on the macroeconomic stability and growth processes. Recent statistics show that India still relies heavily on imports of its crude oil needs, which reflects the structural vulnerability of the economy to the global energy prices (World Bank, 2023). The state of oil importation in India has been continuously growing in the last thirty years because of the growing energy requirement and insufficient production of oil in the country. Consequently, the changes in the world oil prices are directly passed into the domestic economy in terms of import payment, inflation, adjustment in exchange rate, and external balance (Ghosh, 2009; Bhanumurthy, 2012). Recent empirical findings further point to the fact that the macroeconomic effects of the oil price shocks is not always smooth over time, and is not always equally strong, and various channels are being executed through demand, supply, and financial connections (Balke, Brown, and Yucel, 2015).

This knowledge of macroeconomic effects of oil price volatility is particularly important to India since it is among the largest crude oil importers in the world with imports constituting a significant portion of the total energy requirements. Geopolitical tensions, supply shocks, and speculation may lead to adverse effects of oil price spikes, which undermine balances of trade, values of the currency, and growth due to the impact of cost-push inflation (Hamilton, 1983; Hooker, 1996). Further, oil price shocks are also becoming more transmitted through financial markets and economic policy uncertainties, which can amplify macroeconomic volatility in the emergent economies, especially in a situation when the world experiences instability (Bouri, Demirer, Gupta, and

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Nel, 2021).According to the empirical research on India, oil price increases have the potential to cause deceleration in the economic growth and increase the inflation pressure, especially when the world is unstable (Ghosh, 2009; Sahoo and Dash 2009). A lot of the current literature however, is based on linear or single-equilibrium models and does not explicitly consider structural breaks that are linked with large-scale international events like the 2008 financial crisis. Such breaks may be ignored to produce biased parameter estimates and misleading policy inferences since the underlying data generating processes may change after periods of deep economic stress.

Recent studies indicate that the elasticities of oil price do not have a uniform response across the macroeconomic setups, and market expectations and structural nature of oil shocks are crucial determinants of the reaction of output (Caldara, Cavallo, and Iacoviello, 2019). The studies support the ongoing relevance of oil price dynamics to both growth and macroeconomic stability. Agboola, Chowdhury, and Yang (2024) discover that changes in oil prices have a strong impact on the performance of economies in emerging markets, but the impacts are asymmetric among different countries. Tiwari et al. (2025) reveal that the model of dynamically related oil price shock and economic performance exists in a panel of the emerging markets economies, implying extensive macroeconomic effects. Kumari (2024) suggests that the volatility of the prices of crude oil has a strong connection to the process of the growth of the GDP, and Bouzidi (2024) notes that the transmission of the international oil price shock to the overall macroeconomic conditions occurs through the channels of inflation and financing investments. Taken together, these studies indicate that the impacts of oil prices on growth are multi-dimensional and can be country-specific, i.e. can be determined by energy dependence, structural breaks, and macroeconomic policy institutions.

The present paper contributes to this literature by finding the long-run and short-run relationships between energy import dependence, global oil price shocks and India economic growth through an Autoregressive Distributed Lag (ARDL) bounds testing. In this respect the ARDL approach is quite appropriate because Indian macroeconomic time series tend to exhibit mixed integration orders (I(0) and I(1)) and ARDL is able to fit a single reduced form system which allows mixed integrations (without the need to pre-test cointegration properties which are sample size sensitive (Pesaran, Shin, and Smith, 2001). The crucial addition to this work is the introduction of a structural break dummy in 2008 to reflect the change in the regime that corresponds to the global financial crisis that impacted global energy markets and the position of India in the world significantly. The model takes into consideration possible changes in the oil-growth nexus that might not be registered under unchanging parameter regimes by the inclusion of this break.

Besides energy dependence and oil price changes, the model considers the key macroeconomic control variables including inflation and current account balance which are the channel of transmission through which the external oil price volatility effects are passed onto domestic growth dynamics. Whereas the long-run coefficients give information about equilibrium relations the short-run error correction representation demonstrates the speed at which shocks are corrected after long-run equilibrium. This two-sided view adds policy relevance to the results: in case oil price shocks are the key determinants of short-run growth, this implies that policy buffers like strategic petroleum reserves, demand controls, and macroeconomic stabilization models can reduce the negative effects. On the other hand, any long-run impact would be significant and will signify that there will be long-term weaknesses that will require structural changes at a deeper level in terms of energy sourcing and diversifying strategies.

2. Literature Review

Macroeconomic implications of oil price shocks are one of the main areas of focus of both theoretical and practical research due to the fact that oil is a major intermediate input and a major traded commodity. Study done by Killian (2009) and Baumeister and Hamilton (2019) tested the effects of cost push and external sector on production and fiscal balances respectively. They also found that the magnitude and direction of the impact are different as per the nature of the shock as well as it depends on the various

economic attributes of the countries. Methodologically, researchers have shifted to structural decompositions and nonlinear models which have the capacity to distinguish types of shocks and asymmetric reactions (Kilian, 2009; Shin, Yu, and Greenwood-Nimmo, 2014). Energy consumption pattern and economic growth have a high degree of interdependence in the Indian context, which means that structural energy dependency can affect the long-term macroeconomic performance (Shahbaz, Tiwari, and Nasir, 2017).

Studies of emerging markets prove that the impact of oil shocks persists as strongly via both real and financial channels and that the transmission has become more complicated following the pandemic and the 2014-15 and 2020 price spikes. There are empirical indications that structural oil market shocks may have a strong impact on the results of the wider financial and the real sectors, which justifies the macro-economic significance of the oil price developments (Apergis and Miller, 2009). The network and connectedness styles demonstrate that the stock markets, exchange rate and cross-border financial flows mediate the effects of oil shock spillovers, making economies that lack buffers more susceptible to shocks (Agboola, Chowdhury, and Yang, 2024; recent connectedness studies). This literature underscores two empirical implications that are relevant to country research: (i) the impacts of oil prices are often asymmetric to both positive and negative shocks, and (ii) financialisation of commodity markets increases spillover through asset-price and capital-flow mechanisms.

In the case of India, there is a new collection of recent papers that use the nonlinear time-series technique to identify asymmetric effects of oil prices on macro fundamentals. Deheri and Ramachandran (2023) apply the nonlinear ARDL (NARDL) model to reveal asymmetric long-run correlations between the movement of oil prices and the key indicators of industrial output, exchange rates and inflation, which implies that the growth of oil price correlates with the shifts in demand but not the opposite. Oil markets/Indian equity/green sector volatility spillovers Volatility spillovers between oil and Indian equity/green industry focus on the analysis of volatility spillovers, particularly between two markets during the crisis period (2020-2023) and reveal that an energy-growth nexus is fragile in India in terms of price levels and uncertainty. These findings which are based on India encourages country level models that are explicit in permitting asymmetry and structural change.

A second line of research in the recent past discusses the dependence on energy imports and the possible mitigating aspect of renewable energy as a measure to decreasing vulnerability. Empirical studies of emerging economies and cross-country CS-ARDL (country) studies reveal that the renewable energy growth and energy-efficiency initiatives can alleviate the import dependency and macroeconomic vulnerability toward global price spikes (Yadav et al., 2024; related panel studies). In the case of India, the empirical measurements of the dependency on imports after 2006-2020 captures the sustained dependency on imported fossil fuels, which implies that policy changes to renewable energy will be slow and the vulnerability in the short-to-median term will be high (MPRA/working-paper assessments, 2024). These findings justify the incorporation of a direct energy import dependence in growth equations as opposed to price of oil prices being the sole exogenous factor.

Other more recent empirical works focus on indirect mechanisms through which oil price shocks may impact macro outcomes such as bank stability, investment financing costs, and inflation dynamics (Bouzidi et al., 2024; Kumari, Singh, and Vig, 2024). Bouzidi et al. (2024) demonstrate in a panel/ARDL setting of the banking sector that international oil shocks have a significant impact on the efficiency of banks and the risk measurements of the oil-sensitive countries, which means that the effects of real-sector growth may be reinforced by the vulnerability of the financial system. It has been demonstrated that oil price volatility can have severe macroeconomic impacts not only by means of an increase or decrease in price but also by means of investment and consumption uncertainty channels (Ready, 2018). Dynamic correlation studies also show that, oil prices experience time-varying correlation to financial markets especially when the markets are in a crisis period (Filis, Degiannakis,

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and Floros, 2011). Spillover analysis has been conducted recently, showing a dynamic transmission of oil shocks between macroeconomic and financial systems, especially in interconnected emerging markets (Antonakakis, Chatziantoniou, and Filis, 2020). The evidence on long-horizon shows that oil prices have predictive value of macro-financial variables and, thus, it is possible that oil shocks have forward-looking information that can be utilized in dynamics of growth (Narayan and Gupta, 2015). As Kumari et al. (2024) point out, oil price volatility (not only the levels) has significant impacts, which are measurable, on the dynamics of GDP growth in samples of countries. Combined these studies suggest that one should control financial-sector and volatility channels in modelling oil-growth relationships.

3. Data and Methodology

3.1 Data Description

Annual time series data for India covering the period 1991-2024 has been taken for this study. Annual data for GDP growth rate (annual percentage), energy imports, net (% of energy use), Inflation, consumer prices (annual %) and Current account balance (% of GDP) has been collected from World Development Indicators (World Bank). International crude oil prices (global price of Brent crude) has been taken from FRED database.

3.2 Model Specification

This study has followed the given below growth equation within the Autoregressive Distributed lag (ARDL) Model to analyse the relationship between global oil prices, energy import dependence and the economic growth of India:

$$GRT_t = \alpha_0 + \alpha_1 \mathrm{LOIL}_t + \alpha_2 \mathrm{EDEP}_t + \alpha_3 \mathrm{INF}_t + \alpha_4 \mathrm{CAB}_t + \alpha_5 \mathrm{D2008}_t + \varepsilon_t$$

In the above equation GRT represents GDP growth rate (annual percentage), LOIL captures the log values of international crude oil prices, EDEP denotes energy imports, net (% of energy use), INF denotes Inflation, consumer prices (annual %), CAB represents Current account balance (% of GDP), D2008 represents a structural break dummy and ε_t is the stochastic error term

3.3 Methodological Approach

In order to check the stationarity of the variables under consideration, Augmented Dickey-Fuller (ADF) and Phillips-Peron tests were employed. These tests shows the order of integration i.e., I(0), I(1) or I(2). The ARDL approach requires that variables be integrated of order I(0) or I(1), but not I(2). ARDL bound testing approach has been employed under this study to check long run relationships. Following that the unrestricted error correction equation is given below.

$$\begin{aligned}\Delta GRT_t = {} & \beta_0 + \Sigma\beta_1 \Delta GRT_{t-i} + \Sigma\beta_2 \Delta LOIL_{t-i} \\ & + \Sigma\beta_3 \Delta EDEP_{t-i} \\ & + \Sigma\beta_4 \Delta INF_{t-i} \\ & + \Sigma\beta_5 \Delta CAB_{t-i} + \lambda_1 GRT_{t-1} \\ & + \lambda_2 LOIL_{t-1} + \lambda_3 EDEP_{t-1} \\ & + \lambda_4 INF_{t-1} + \lambda_5 CAB_{t-1} \\ & + \gamma \mathrm{D2008}_t + u_t\end{aligned}$$

F-statistic has been used to check the joint significance level of the variables under consideration. If the calculated value of F-statistic is less than the lower bound critical value than we reject the existence of the cointegration. If the calculated value of F-statistic exceeds the upper bound critical value, cointegration is confirmed.

After confirming the existence of the cointegration, long-run coefficients were derived from the ARDL estimation model and short-run relationship were derived from Error Correction Model (ECM) which is specified below:

$$\Delta GRT_t = \theta_0 + \Sigma\theta_i \Delta X_{t-i} + \varphi ECM_{t-1} + v_t$$

Where ECM_{t-1} denotes the lagged error correction term and φ represents the speed of adjustment towards long run equilibrium. A negative and statistically significant error correction coefficient confirms the existence of convergence.

In order to check the robustness, Breusch–Godfrey LM test has been employed for checking serial correlation, Breusch–Pagan–Godfrey test has been employed for heteroskedasticity and stability tests such as CUSUM.

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4. Results and Discussion

4.1 Unit root results.

The unit root tests (Augmented Dickey Fuller and Phillips Perron) were used to test the stationarity properties of the variables. The two tests were accomplished using an intercept term (Table. 1). The Akaike Information Criterion (AIC) was used in choosing the lag length of the ADF test, whereas the NeweyWest automatic bandwidth using the Bartlett kernel was used to select the lag length of the PP test. The findings represented in Table. 1have shown that the GDP growth (GRT), inflation (INF), and the current account balance (CAB) are at level because their test values are significant at conventional levels. Conversely, energy import dependence (EDEP) and the log of Brent crude oil prices (LOIL) are not stationary at level but they turn to be stationary after first differencing, meaning that they are order one integrated.

Table 1. Unit root results

Variable	Level (ADF)	Level (PP)	First Diff (ADF)	First Diff (PP)	Order of Integration
GRT	-5.70***	-7.09***	--	--	I(0)
EDEP	-1.80	-1.74	-4.67***	-4.67***	I(1)
INF	-3.29**	-3.26**	--	--	I(0)
CAB	-2.73*	-2.75*	--	--	I(0)
LOIL	-1.08	-1.17	-5.73***	-5.35***	I(1)

Note: *, **, *** indicate significance at 10%, 5%, and 1% levels respectively.

In general, the unit root results indicate a mixed order of integration between the variables, one series is I(0) and the other is I(1), and there is no integration of second order. Such pattern of integration meets the conditions of using the Autoregressive Distributed Lag (ARDL) bounds testing method, where I(0) and I(1) regressors are permissible, but I(2) variables are not. Lack of integration to a higher level justifies the appropriateness of the ARDL model to be used to analyze the long-run correlation between economic growth, energy dependence, oil price shocks and macroeconomic controls in the context of India.

4.2 ARDL short run

The immediate ARDL results in the short-run (Table. 2) indicate that contemporaneous oil price movements (LOIL) would not have a statistically significant immediate effect on the growth of GDP. Nevertheless, the second lag of oil prices [LOIL(-2)] has a positive and insignificantly strong at the 10 percent level implication that oil price movements have a delayed transmission to the growth. Such lagged positive effect can be an adjustment process via trade and fiscal instead of direct production reactions.

There is no statistically significant dependence on energy imports (EDEP) in the short run, which means that structural energy vulnerability does not translate into variation in growth immediately even in one year. In case of inflation, the contemporary coefficient has a negative value, it is not statistically significant. The lagged inflation term is not significant but it is positive which means that there is weak pass through of price movement to output growth in the short-run.

Table. 2 : ARDL short run coefficients

Variable	Coefficient	Std. Error	t-Statistic	p-value
GRT(-1)	-0.123	0.183	-0.670	0.511
LOIL	-1.487	2.420	-0.615	0.546
LOIL(-1)	-0.520	3.248	-0.160	0.875
LOIL(-2)	4.819*	2.769	1.740	0.097

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EDEP	0.136	0.244	0.559	0.582
INF	-0.309	0.324	-0.955	0.351
INF(-1)	0.465	0.309	1.506	0.148
CAB	-1.427*	0.719	-1.984	0.061
CAB(-1)	0.391	0.741	0.527	0.604
CAB(-2)	1.177**	0.540	2.178	0.042
D2008	-5.827*	3.104	-1.877	0.075
Constant	-4.924	6.960	-0.707	0.487

Note: *, **, *** denote significance at 10%, 5%, 1% respectively

The current account balance (CAB) shows greater short-run effects. The current CAB coefficient is negative and has no strong significance at the 10 percent level, but the second lag CAB coefficient is positive and has the significant value of 5 percent. It implies that the role of external balance changes in the short-run growth processes is not trivial, which may represent the macroeconomic stabilization effects delayed in time.

The structural break (D2008) is negative and it is significant at the 10 percent level which implies that the post-2008 period is correlated with lower growth rates, which is in line with structural regime changes after the global financial crisis. The lagged dependent variable GRT (-1) is minor indicating that there is not much short-run growth persistence, other factors of macroeconomics being held constant. All in all, the short run outcomes show that the oil price shocks impact the growth in the lagged channels whereas the external sector variables impact it in a comparatively stronger immediate way.

4.3 Long run ARDL Estimates

The long-run coefficients (Table. 3) indicate that all the explanatory variables are not statistically significant at normal levels. The coefficient of oil prices (LOIL) is positive but it is statistically insignificant which implies that the movements of oil prices do not have a constant long-run direct impact on the growth of Indian GDP in the estimated framework.

In the same way, the dependence on energy imports (EDEP) does not seem to have any major impact on long-run growth. It can mean that the Indian growth process is going to be able to make an adaptation over the time using such structural adaptation mechanisms as policy intervention, diversification, or macroeconomic stabilization.

Table. 3: Long run estimates

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**p-value**
LOIL	2.505	1.592	1.573	0.131
EDEP	0.121	0.218	0.558	0.583
INF	0.139	0.427	0.325	0.748
CAB	0.125	0.814	0.153	0.880

The relationship between growth and inflation and current account balance are also not statistically significant in the long-run. These results indicate that the macroeconomic fluctuations during the short run are possible but the long-run growth path might be yielding more to the structural and productivity-related effects that are not directly reflected in this specification. Notably, the fact that there is no individual significance does not nullify that there is cointegration because the level variables have joint significance as the bounds test proves (Table. 4). The value of the computed F-statistic (8.369) is greater than the upper limit of the critical value at the 1% significance level (5.06). Thus, the null hypothesis of the non-levels relationship is rejected. This is in support of the fact that there is a long-run relationship of cointegration between GDP growth, oil prices, and dependence on energy imports, inflation, and balance of payment. Cointegration

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implies that the long-run coefficients, as well as the error correction representation, are to be estimated.

Table. 4: ARDL Bound test for cointegration

Test Statistic	**Value**	
F-statistic	8.369	
Critical Values (K=4)		
Significance	**I(0)**	**I(1)**
10%	2.45	3.52
5%	2.86	4.01
1%	3.74	5.06

4.4 Error Correction Representation

The error correction value ECM -1 is negative (Table. 5) and it is very significant at the level of 1 percent and the coefficient of -1.123. This is the confirmation of long-run equilibrium adjustment, and implies a quick process of disequilibrium correction. The value exceeding one implies that there is an over-adjustment process, deviations to the equilibrium are fixed within a time frame of less than one year.

D(LOIL -1) has a negative and significant value at the 5% level, which implies that in the short run, growth is decreased by lagged increases in oil prices. Both D(CAB) and D(CAB (-1)) are negative and statistically significant indicating that short-run disequilibrium in the external sectors has a negative impact on growth. D2008 is negative and very large in value, which indicates that the post crisis regime has structural downward pressure on growth. The ECM model does not indicate statistically significant short-term effects of inflation.

In general, the findings of the ECMs suggest that oil price shocks and exogenous imbalances affect the growth mainly via the short-run adjustment mechanisms but not the long-run mechanisms.

Table. 5: Error Correction Estimates

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**p-value**
D(LOIL)	-1.487	2.095	-0.710	0.486
D(LOIL(-1))	-4.819**	1.852	-2.603	0.017
D(INF)	-0.309	0.186	-1.660	0.113
D(CAB)	-1.427***	0.478	-2.983	0.007
D(CAB(-1))	-1.177**	0.447	-2.635	0.016
D2008	-5.827***	1.116	-5.220	0.000
ECM(-1)	-1.123***	0.158	-7.086	0.000

Note: *, **, *** denote significance 10%, 5%, 1%

4.5 Diagnostic tests

Breusch–Godfrey LM test has been employed for checking serial correlation, Breusch–Pagan–Godfrey test has been employed for heteroskedasticity. The estimates of both the test confirms that there is no serial correlation and heteroskedasticity in the model under consideration.

Table. 6: Diagnostic estimates

Test	**Statistic**	**p-value**	**Conclusion**
Breusch–Godfrey LM	0.258	0.776	No serial correlation
Breusch–Pagan	1.358	0.266	No heteroskedasticity

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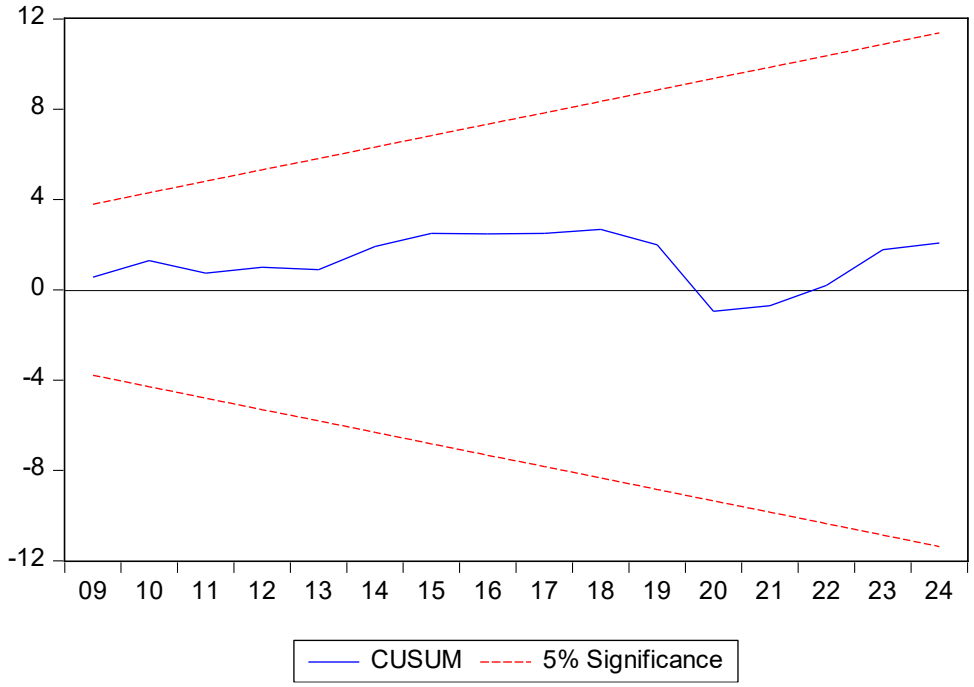
Figure 1. CUSUM test.



The blue CUSUM curve does not leave the red 5% significance indices during the whole sample period (2009-2024). Though there is a distinct downward trend in the years 2020-2021 (which is probably due to the pandemic shock), the value of the statistic does not reach the critical level. The CUSUM path approaches the center gradual after 2021, which means that it is stabilized.

As CUSUM value remains within the critical bands of 5, we do not reject the null hypothesis of parameter stability. None of the coefficients are structurally unstable The ARDL model is dynamically stable. Regime shifts are sufficiently explained by the introduction of the D2008 structural break.

5. Conclusion

The paper has investigated how global oil price shocks, dependence on energy imports and the Indian economic growth are correlated using an ARDL bounds testing model between 1991-2024. The analysis used the main macroeconomic transmission variables i.e.: inflation and current account balance and structural regime changes with a post 2008 dummy.

The empirical results represent that the relationship between the variables is cointegrating in the long run, and it will confirm that the oil prices, energy dependence, and the fundamentals of the macroeconomy are all interconnected in the dynamics of growth. Nevertheless, the coefficients of oil prices at the individual level are not significant implying that oil price levels alone do not have a structural permanent impact on the long-run growth path of India in the estimated framework.

However, in the short-run dynamics the effect is more pronounced. The change in oil prices lagged and the current account imbalances have a significant impact on the growth, hence the oil price shocks are implemented by the external sector adjustments, but not through direct long-term productivity. The error correction is a negative and extremely large value, which illustrates that the short run deviations are quickly corrected to reach the long run equilibrium. This indicates that, despite the short term macroeconomic disruptions, which are brought about by oil price volatility, the Indian economy has got good corrective mechanisms. In general, the findings suggest that the growth sensitivity of India to the oil price shocks is mainly short-term in nature, and it works through the

external balance as well as the macro-stabilization mechanisms, but not through the long-term structural growth impairment.

6. Policy Implications

The results provide various valuable policy implications.

1. Enhancement of External Sector Buffers.

As the oil price shocks are largely influenced by the current account adjustment in terms of growth, it is important to have sufficient foreign exchange reserves and efficient management of their external debts. There are short-term growth shocks that can be alleviated by the policies that are set to stabilize the balance of payments.

2. Diversification of energy and Reduction of Imports.

Though energy importation does not have strong long-term significance, it is a structural weakness. An increase in the rate of adoption of renewable energy, domestic capacity building, and an increase in energy efficiency can minimize vulnerability to global fluctuations in prices. The reports of Global energy transition underline that the decreasing reliance on fossil fuel with renewable growth and diversification is very crucial to the macroeconomic resilience of the energy-importing economies (International Energy Agency [IEA], 2023).

3. Price Smoothing and Strategic Petroleum Reserves.

The transmission of the oil price shocks in the short-run implies the significance of the counter-cyclical policy instruments. Increasing strategic reserves of petroleum and the use of planned tax changes when prices are high are some of the mechanisms that can moderate inflationary strains and stabilize growth.

4. Macro-Stabilization Frameworks

Since the adjustment process in the ECM has been reported to be very fast, there is a need to ensure that the monetary and fiscal policy frameworks remain believable. The frequency of oil shocks can be dampened using domestic macroeconomic mechanisms by flexible inflation targeting and fiscal prudence.

5. Crisis Preparedness

The structural break that occurred after 2008 is significant, and it is necessary to highlight the role of institutional preparedness to crises in the world. It should still be a policy priority to strengthen the financial sector and the resilience and external shock absorption capacity.

7. Limitations of the study

Although the study has some contributions, it has some limitations.

First, quarterly/ monthly data would be more fine-grained to give a picture on the effects of oil price pass-through. Second, oil price shocks are considered exogenous. A further structural identification that would shed more light on the transmission mechanisms is structural identification that separates supply-driven and demand-driven oil shocks. Third, the growth is modelled as a macroeconomic outcome variable. This may be through other channels of influence like investment, industrial production, exchange rate volatility or fiscal balances among other indicators.

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