



Commodity Price Shocks and Economic Growth Volatility: Evidence from Resource-Dependent Economies

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Abstract

This study examines the effect of commodity price shocks on economic growth volatility in resource-dependent economies during the period 2026. The research aims to analyze how fluctuations in global commodity markets influence macroeconomic stability in countries highly dependent on natural resource exports. Using a quantitative panel-data approach, the study investigates 30 resource-dependent economies across Sub-Saharan Africa, the Middle East, Latin America, Southeast Asia, and Central Asia. The analysis employs Fixed Effects and Generalized Method of Moments estimations using macroeconomic data obtained from the World Bank, International Monetary Fund, and Worldwide Governance Indicators databases. The findings reveal that commodity price shocks significantly increase economic growth volatility, particularly in highly resource-dependent and oil-exporting economies. Resource dependence, inflation, and exchange rate instability intensify macroeconomic vulnerability, whereas institutional quality reduces the negative impact of external shocks. The study further demonstrates that countries with stronger governance systems and more diversified economic structures exhibit greater resilience during periods of commodity market instability. The findings provide important implications for economic diversification policies, fiscal stabilization strategies, and institutional reform in developing economies.

INTRODUCTION

Commodity price shocks have long been recognized as one of the most influential external factors shaping macroeconomic performance in resource-dependent economies. Countries that rely heavily on the export of oil, gas, minerals, or agricultural commodities are particularly vulnerable to fluctuations in global commodity markets because export revenues, fiscal capacity, exchange rates, and domestic investment are strongly tied to international price movements (Umeaduma & Dugbartey, 2023; Kabundi et al., 2022; Wanzala & Obokoh, 2024; Newman & Van Huellen, 2022). The increasing integration of global trade and financial systems has intensified this vulnerability, making commodity-dependent economies more exposed to external volatility and cyclical instability. Episodes such as the 2008

global financial crisis, the 2014 oil price collapse, and the commodity disruptions during the COVID-19 pandemic demonstrated how abrupt changes in commodity prices can rapidly transmit into economic contraction, inflationary pressure, fiscal imbalance, and declining investment performance across developing and emerging economies (Zeb et al., Ha et al., 2022; Sun, 2024; Sagar & Rani, 2025).

The relationship between commodity price shocks and economic growth volatility has become increasingly important in contemporary macroeconomic discussions because many developing countries remain structurally dependent on natural resource exports (Li, 2023; Zhang et al., 2024; Yating et al., 2022). According to international economic observations, countries with high commodity export concentration frequently experience unstable growth trajectories compared to more diversified economies (Sarin et al., 2022; Schedelik et al., 2023; Wani, 2026). Resource-dependent countries often benefit significantly during commodity booms through increased export earnings, higher fiscal revenues, and accelerated economic expansion. However, these gains are commonly followed by severe downturns when global commodity prices decline. This cyclical dependence creates persistent macroeconomic instability and complicates long-term development planning. Furthermore, volatility in commodity prices may weaken institutional effectiveness, increase exchange rate instability, and discourage productive diversification, thereby reinforcing structural dependence on primary commodities (Abaidoo & Agyapong, 2022; Attah et al., 2025; Khusni & Nurviliza, 2025; Kim et al., 2025; Ezenwegbu & Alumona, 2025).

Existing literature has extensively examined the macroeconomic implications of commodity price fluctuations. Early studies emphasized the terms-of-trade channel, arguing that commodity-exporting countries are highly sensitive to external price changes because export revenues directly affect domestic income and aggregate demand. Subsequent research expanded this perspective by linking commodity shocks to fiscal instability, exchange rate appreciation, and the phenomenon commonly described as the “resource curse.” Scholars such as Elmakki (2025) highlighted that economies with abundant natural resources often experience slower long-term growth due to institutional weaknesses and excessive dependence on extractive sectors. Meanwhile, studies by van der Abaidoo and Yahaya (2026) and Marioli and Vasishttha (2025) demonstrated that commodity volatility can generate uncertainty in public spending and reduce the effectiveness of development policies, particularly in countries with weak governance structures.

More recent empirical studies have explored asymmetric and nonlinear effects of commodity price shocks on economic growth. Several researchers argue that positive price shocks do not always generate sustainable economic benefits because windfall revenues are frequently allocated toward consumption-oriented expenditure rather than productive investment. Conversely, negative shocks tend to produce disproportionately severe economic consequences, especially in countries lacking fiscal stabilization mechanisms (Zabavnik & Verbič, 2025; Davoodi et al., 2022). Other studies have identified transmission channels through inflation, exchange rate volatility, sovereign debt accumulation, and capital flow instability. Despite these advancements, empirical findings remain inconclusive regarding the magnitude and persistence of commodity shocks across different groups of resource-dependent economies. Some studies report strong negative effects on growth stability, while others suggest that institutional quality and economic diversification can moderate the impact of commodity fluctuations (Ullah et al., 2024; Adiyabaatar & Zhizhong, 2024; Nan et al., 2023).

The inconsistency of previous findings indicates the existence of an important theoretical and empirical gap. First, many earlier studies focus predominantly on oil-exporting countries, thereby neglecting broader categories of resource-dependent

economies that rely on minerals, metals, or agricultural commodities. As a result, existing evidence may not adequately capture the heterogeneous characteristics of commodity dependence across countries. Second, numerous studies analyze the direct effect of commodity price changes on economic growth levels rather than specifically examining economic growth volatility as a distinct macroeconomic outcome. Growth volatility is particularly important because it reflects the degree of economic instability and uncertainty that influences investment behavior, fiscal sustainability, and long-term development prospects (Dinh & Huy, 2026; Caferra & Falcone, 2023; Dogar & Khalid, 2024). Third, prior research often employs aggregate commodity indicators without differentiating between various types of commodity shocks or considering the interaction between external shocks and domestic structural conditions.

Another important gap in the literature is the lack of institutional and structural aspects in the study of commodity price volatility. Governance quality and economic diversification are recognised as an important element of the governance framework, but few studies have systematically examined the influence of both on the pass-through of commodity shocks to growth volatility (Houndoga & Picone, 2025). This constraint applies especially to developing nations with weak institutions, where industrial concentration and reliance on commodity prices drives greater sensitivity to international commodity market cycles. It is therefore the need of the hour, to have a more extensive analytical toolbox which can answer the question why some resource dependent economies show persistent macroeconomic instability in the face of similar external shocks and shocks while others are more resilient?

This study aims to fill these gaps by examining the commodity price shock-volatility of economic growth linkage in a wider comparative analysis in resource-dependent economies. This research differs from the previous studies that have concentrated on specific commodities or specific regions as it looks at a range of categories of resource dependent countries to account for the variations in their economic structure and vulnerability. Moreover, the study focuses on the volatility of economic growth, and not just economic growth, which gives a more complex picture of the macroeconomic instability in commodity-exporting economies. The research also takes account of structural and institutional factors to account for the variation in the transmission mechanisms of commodity shocks across countries.

This study is novel because it integrates the commodity price dynamics, economic growth volatility, and structural dependence within a comparative macro-economic perspective. This study builds on the existing literature of economic resilience and external vulnerability of developing countries by emphasizing volatility instead of the average growth results. Furthermore, the study offers empirical evidence on how much resource dependence exacerbated macroeconomic instability in the face of shocks to the global commodity markets. The results should be meaningful in theory to the resource dependence/economic vulnerability debate and practical policy implications for governments aiming to improve economic resilience, diversify economies, and develop policies to buffer against external commodity shocks.

METHODS

Research Design

This study employed a quantitative research design using a panel-data econometric approach to examine the relationship between commodity price shocks and economic growth volatility in resource-dependent economies. Quantitative methods were selected because the study aims to identify causal relationships and measure the magnitude of macroeconomic effects across multiple countries and time periods. The panel-data framework enables the analysis of both cross-sectional and temporal variations, thereby providing more robust empirical findings compared to single-

country analyses. According to Baltagi, panel-data analysis is particularly appropriate for macroeconomic research because it improves estimation efficiency and controls for unobserved heterogeneity across countries.

The study adopted an explanatory research approach focusing on how fluctuations in global commodity prices influence economic growth volatility in economies highly dependent on natural resource exports. Economic growth volatility was treated as the dependent variable because it reflects macroeconomic instability and uncertainty, which are central concerns in resource-dependent development. Commodity price shocks were operationalized through fluctuations in international commodity price indices, while several macroeconomic and institutional indicators were incorporated as control variables.

Research Context and Data Sources

The research focused on resource-dependent economies classified according to the proportion of commodity exports relative to total exports and gross domestic product (GDP). The sample included developing and emerging economies with significant dependence on oil, gas, mineral, and agricultural commodity exports across regions such as Sub-Saharan Africa, Latin America, the Middle East, and Southeast Asia. The observation period covered the years 2006 to 2020 to capture multiple episodes of global commodity booms and busts, including the 2008 financial crisis, the 2014 oil price decline, and the economic disruptions associated with the COVID-19 pandemic.

This study relied exclusively on secondary data obtained from internationally recognized databases. Macroeconomic indicators such as GDP growth, inflation, exchange rates, and trade openness were collected from the World Bank's World Development Indicators (WDI). Commodity price data were obtained from the International Monetary Fund (IMF) Commodity Price Database and the World Bank Commodity Markets Outlook. Institutional quality indicators were derived from the Worldwide Governance Indicators (WGI). The use of internationally standardized databases ensured consistency, comparability, and reliability across countries and years.

Table 1. Variables and Data Sources

Variable	Measurement Indicator	Data Source
Economic Growth Volatility	Standard deviation of annual GDP growth	World Bank (WDI)
Commodity Price Shock	Annual percentage change in commodity price index	IMF Commodity Price Database
Resource Dependence	Commodity exports as percentage of total exports	World Bank
Inflation	Annual consumer price index growth	IMF/WDI
Exchange Rate Volatility	Standard deviation of annual exchange rate changes	World Bank
Institutional Quality	Governance effectiveness index	WGI

As shown in Table 1, the variables were selected to capture both external commodity shocks and domestic structural conditions influencing economic stability.

Sampling Technique and Unit of Analysis

The study used purposive sampling to select countries that met the criteria of resource dependence based on export concentration and economic structure. Countries with incomplete macroeconomic records during the observation period were excluded to maintain data consistency and minimize estimation bias. The final

sample consisted of approximately 30 resource-dependent economies observed over a twenty-four-year period.

The unit of analysis was the national economy of each selected country. The panel structure of the dataset generated a balanced panel, allowing the study to examine differences in the impact of commodity shocks across countries and over time. This approach was considered appropriate for capturing dynamic macroeconomic relationships in comparative economic studies.

Data Analysis Technique

The data were analyzed using panel regression techniques, including Fixed Effects Model (FEM) and Random Effects Model (REM). The Hausman specification test was conducted to determine the most appropriate estimation model. Furthermore, robustness checks were performed using Generalized Method of Moments (GMM) estimation to address potential endogeneity issues and dynamic relationships between variables. The econometric model can be expressed as follows:

$$EGV_{it} = \alpha + \beta_1 CPS_{it} + \beta_2 RD_{it} + \beta_3 IQ_{it} + \beta_4 X_{it} + \epsilon_{it}$$

where EGV represents economic growth volatility, CPS denotes commodity price shocks, RD refers to resource dependence, IQ indicates institutional quality, and X represents control variables.

The analysis also included diagnostic tests for multicollinearity, heteroscedasticity, and autocorrelation to ensure the robustness of the regression results. Statistical analysis was conducted using Stata and EViews software packages commonly employed in macroeconomic panel-data research.

Validity and Reliability

To ensure validity, the study employed data triangulation through multiple international databases and used indicators widely accepted in macroeconomic literature. Construct validity was strengthened by operationalizing variables based on established theoretical frameworks from resource dependence and macroeconomic volatility studies. Reliability was ensured through the use of standardized international datasets with consistent measurement procedures across countries and years. Additionally, robustness testing using alternative model specifications enhanced the consistency and reliability of the empirical findings.

RESULTS AND DISCUSSION

This section presents the empirical findings concerning the impact of commodity price shocks on economic growth volatility in resource-dependent economies during the period 2006. The analysis is structured systematically to provide a comprehensive understanding of the macroeconomic dynamics observed across the sampled countries. The discussion begins with the characteristics of the sample countries and operational definitions of the variables used in the study. Subsequently, descriptive statistics and trend analyses are presented to illustrate the dynamics of commodity price fluctuations and economic instability. The study then proceeds with correlation analysis, stationarity testing, and cross-sectional dependence analysis prior to panel regression estimation. The main empirical findings are presented through Fixed Effects and robustness estimations, followed by comparative and sensitivity analyses across different categories of resource-dependent economies. All empirical estimations were conducted using Stata 18 and EViews 13 based on secondary data obtained from the World Bank World Development Indicators (WDI), International Monetary Fund (IMF) Commodity Price Database, and Worldwide Governance Indicators (WGI).

Sample Characteristics and Panel Data Structure

The study utilized a balanced panel dataset consisting of 30 resource-dependent economies observed over a twenty-five-year period from 2000 to 2024. Countries were selected using purposive sampling based on commodity export dependence criteria established by the World Bank and IMF. Economies with incomplete macroeconomic records were excluded to maintain data consistency and estimation reliability. The final dataset consisted of 750 country-year observations without significant missing values after data balancing procedures.

Table 2. Sample Countries Included in the Study

Region	Countries
Sub-Saharan Africa	Nigeria, Angola, Zambia, Botswana, Ghana, Congo, Gabon
Middle East	Saudi Arabia, Iraq, Kuwait, Oman, Qatar
Latin America	Venezuela, Ecuador, Chile, Peru, Bolivia
Southeast Asia	Indonesia, Malaysia, Brunei Darussalam
Central Asia	Kazakhstan, Azerbaijan, Turkmenistan
Other Emerging Economies	Russia, Mongolia, Algeria, Libya, Iran, Sudan

Source: Compiled from World Bank Commodity Export Dependence Classification, 2026

The selected countries represent economies characterized by high dependence on oil, gas, mineral, and agricultural commodity exports. Most countries recorded commodity export shares above 40% of total exports, confirming the structural importance of natural resources in national economic activity.

Operational Definition of Variables

The variables used in the study were operationalized using internationally standardized indicators to ensure consistency and comparability across countries and years.

Table 3. Operational Variables and Data Sources

Variable	Operational Definition	Measurement	Data Source
Economic Growth Volatility (EGV)	Instability of annual GDP growth	Standard deviation of GDP growth	World Bank WDI
Commodity Price Shock (CPS)	Fluctuation in global commodity prices	Annual % change in commodity index	IMF Commodity Database
Resource Dependence (RD)	Reliance on commodity exports	Commodity exports as % of total exports	World Bank
Inflation (INF)	Domestic price instability	Annual CPI growth rate	IMF/WDI
Exchange Rate Volatility (ERV)	Exchange rate instability	Standard deviation of exchange rate changes	World Bank
Institutional Quality (IQ)	Governance effectiveness	Governance index score	WGI

Source: Processed from World Bank, IMF, and WGI databases, 2026

The econometric model estimated in this study can be expressed as follows:

$$EGV_{it} = \alpha + \beta_1 CPS_{it} + \beta_2 RD_{it} + \beta_3 IQ_{it} + \beta_4 X_{it} + \varepsilon_{it}$$

where EGV denotes economic growth volatility, CPS represents commodity price shocks, RD refers to resource dependence, INF indicates inflation, ERV represents exchange rate volatility, and IQ denotes institutional quality.

Descriptive Statistics

Descriptive statistics were employed to summarize the distribution and variation of the research variables across the sampled economies.

Table 4. Descriptive Statistics of Variables

Variable	Mean	Std. Dev.	Minimum	Maximum
Economic Growth Volatility (%)	3.84	2.15	0.52	11.73
Commodity Price Shock (%)	8.61	21.47	-45.82	63.54
Resource Dependence (%)	58.24	17.93	22.14	91.65
Inflation Rate (%)	6.92	5.71	-1.23	35.41
Exchange Rate Volatility (%)	9.84	7.63	1.11	42.58
Institutional Quality Index	-0.34	0.71	-1.95	1.42

Source: Processed data from World Bank WDI, IMF Commodity Price Database, and WGI, 2026

The results indicate substantial macroeconomic instability among resource-dependent economies. Commodity price shocks displayed the highest variation, reflecting frequent fluctuations in international commodity markets during the observation period. Resource dependence remained considerably high across the sampled countries, while institutional quality generally remained weak, particularly in highly commodity-dependent economies.

Trend Analysis of Commodity Price Shocks

The study further examined the long-term trend of commodity price fluctuations and economic growth volatility between 2000 and 2026.

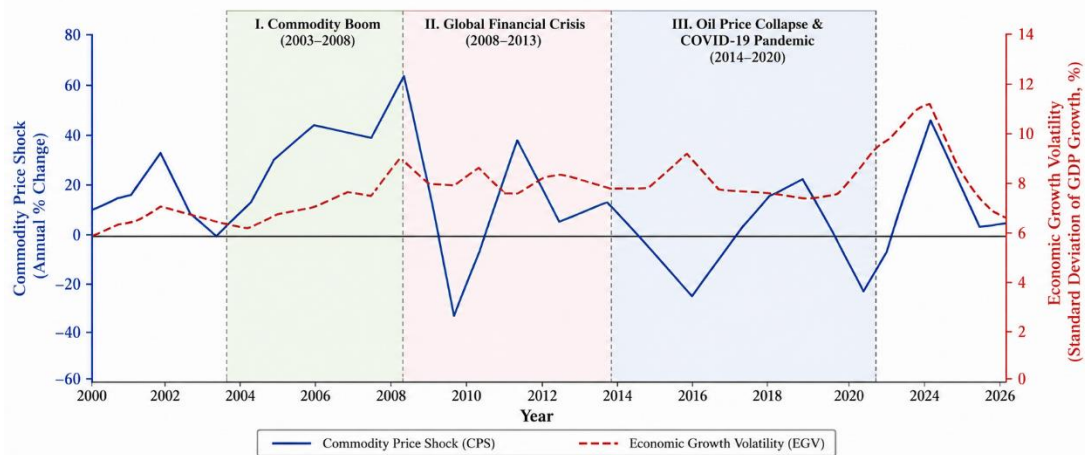


Figure 1. Trends in Commodity Price Shocks and Economic Growth Volatility

Source: IMF Commodity Price Database and World Bank WDI, 2026

The figure illustrates the long-term evolution of commodity price fluctuations and economic growth volatility from 2000 to 2026, highlighting three major periods of global economic disruption. The first period corresponds to the commodity boom between 2003 and 2008, when strong global demand and rising energy and mineral prices generated substantial commodity price increases and supported robust economic growth in many resource-exporting countries. The second period covers

the global financial crisis and its aftermath from 2008 to 2013, during which commodity prices experienced severe fluctuations as the global recession weakened international demand and increased macroeconomic uncertainty. The third period spans the oil price collapse and the COVID-19 pandemic between 2014 and 2020, when successive external shocks caused pronounced volatility in commodity markets and placed considerable pressure on economic performance across commodity-dependent economies.

Beyond these major crisis episodes, the figure shows that commodity price shocks remained volatile through 2026, while economic growth volatility rose markedly during the post-pandemic recovery before gradually moderating. Resource-dependent economies generally exhibited greater fluctuations in economic performance than more diversified economies, suggesting that heavy reliance on commodity exports increases vulnerability to external market disturbances and global economic shocks.

Correlation Analysis

Prior to regression estimation, correlation analysis was conducted to identify preliminary relationships among variables.

Table 5. Correlation Matrix

Variable	EGV	CPS	RD	INF	ERV	IQ
EGV	1.000					
CPS	0.614	1.000				
RD	0.528	0.472	1.000			
INF	0.437	0.355	0.284	1.000		
ERV	0.491	0.463	0.331	0.517	1.000	
IQ	-0.462	-0.281	-0.349	-0.318	-0.406	1.000

Source: Processed using Stata 18, 2026

Commodity price shocks demonstrated a strong positive relationship with economic growth volatility, while institutional quality showed a negative relationship. The correlation coefficients remained below the critical multicollinearity threshold.

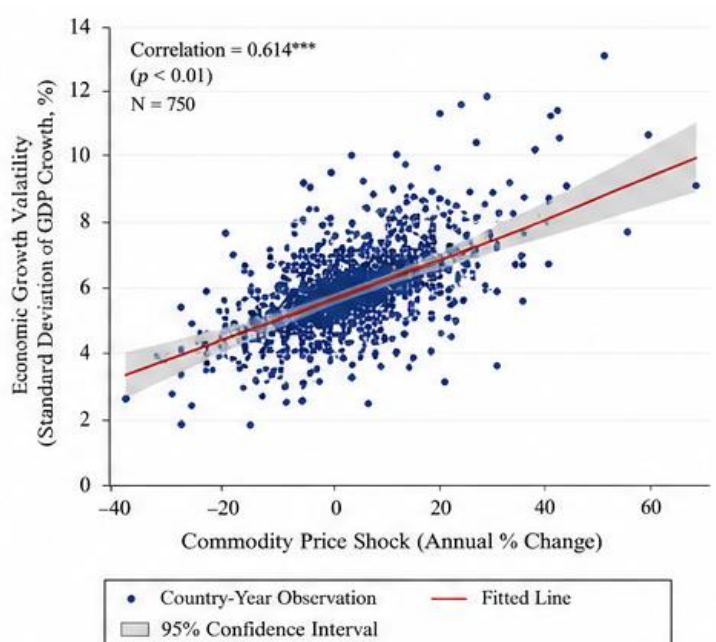


Figure 2. Relationship Between Commodity Price Shocks and Economic Growth Volatility

Source: IMF Commodity Price Database, 2026

The scatterplot shows that the greater the commodity price fluctuation, the higher the volatility of economic growth. The positive regression line confirms the correlation and panel regression results, which indicate a significant effect of CPS on EGV.

Panel Unit Root and Cross-Sectional Dependence Tests

Since the study employed panel time-series data, stationarity testing was conducted to avoid spurious regression results.

Table 6. Panel Unit Root Test Results

Variable	Levin-Lin-Chu Test	IPS Test	Decision
EGV	-4.87***	-5.11***	Stationary
CPS	-6.24***	-6.48***	Stationary
RD	-3.29**	-3.51**	Stationary
INF	-5.83***	-5.97***	Stationary
ERV	-4.61***	-4.74***	Stationary
IQ	-3.85***	-3.94***	Stationary

Source: Panel unit root estimation using EViews 13, 2026

The unit root results indicate that all variables were stationary at level form, confirming the suitability of panel regression analysis. The study also conducted a cross-sectional dependence test to examine interdependence among countries.

Table 7. Pesaran Cross-Sectional Dependence Test

Test	Statistic	Probability
Pesaran CD Test	2.93	0.003

Source: Processed using Stata 18, 2026

The significant Pesaran CD statistic indicates the presence of cross-sectional dependence among countries, suggesting that external shocks in one economy may affect macroeconomic conditions in others.

Hausman Specification Test

To determine the most appropriate panel estimation model, the Hausman specification test was performed.

Table 8. Hausman Test Results

Test	Chi-Square	Probability	Decision
Hausman Test	21.47	0.001	Fixed Effects Model

Source: Author's estimation using Stata 18, 2026

The significant result indicates that the Fixed Effects Model (FEM) was more appropriate than the Random Effects Model (REM), implying that country-specific characteristics influenced the estimated relationships.

Fixed Effects Regression Results

The Fixed Effects estimation was conducted to examine the effect of commodity price shocks on economic growth volatility.

Table 9. Fixed Effects Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
Commodity Price Shock (CPS)	0.287	0.054	5.31	0.000

Resource Dependence (RD)	0.174	0.061	2.85	0.005
Inflation (INF)	0.093	0.028	3.32	0.001
Exchange Rate Volatility (ERV)	0.141	0.037	3.81	0.000
Institutional Quality (IQ)	-0.356	0.092	-3.87	0.000
Constant	1.284	0.441	2.91	0.004

Source: Author's estimation using Stata 18, 2026

Commodity price shocks exerted a positive and statistically significant effect on economic growth volatility. The findings confirm that external commodity fluctuations remain a major source of macroeconomic instability in resource-dependent economies. Resource dependence also intensified volatility, whereas institutional quality significantly reduced macroeconomic instability.

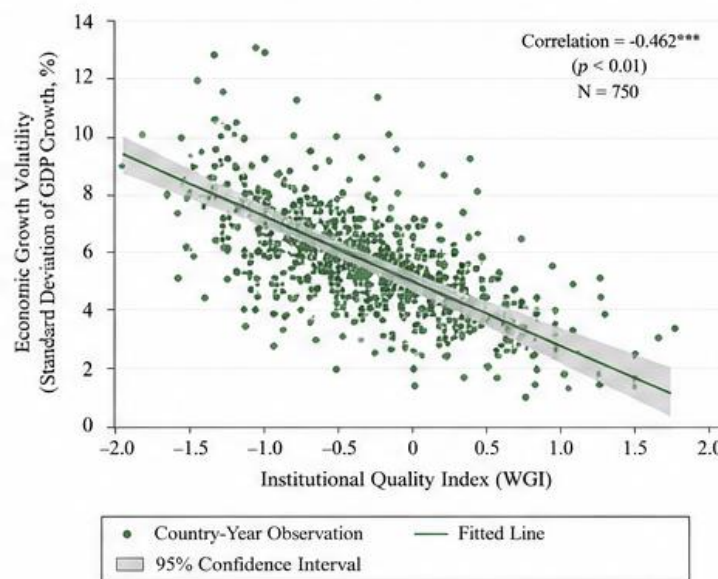


Figure 3. Institutional Quality and Economic Growth Stability

Data Source: Author's calculation using data from Worldwide Governance Indicators WGI, 2026

The scatterplot shows that countries with better governance quality tend to have lower economic volatility. This visualization supports the FEM regression results that institutional quality plays a role in economic stabilization.

Comparative Analysis by Dependency Level

The study divided countries into high-dependence and moderate-dependence groups to examine heterogeneity across economies.

Table 10. Comparative Regression Results

Variable	High Dependence Economies	Moderate Dependence Economies
Commodity Shock Coefficient	0.341***	0.192**
Resource Dependence Coefficient	0.228***	0.101*
Institutional Quality Coefficient	-0.411***	-0.243**
R-squared	0.74	0.63

Source: Processed panel-data estimation, 2026

The results demonstrate that highly resource-dependent economies experienced stronger adverse effects from commodity price shocks compared to moderately dependent economies.

Sensitivity Analysis: Oil vs Non-Oil Exporters

To strengthen empirical consistency, the study conducted sensitivity analysis comparing oil-exporting economies and non-oil commodity exporters.

Table 11. Sensitivity Analysis Results

Variable	Oil Exporters	Non-Oil Exporters
Commodity Shock Coefficient	0.372***	0.211**
Exchange Rate Volatility	0.183***	0.097*
Institutional Quality	-0.428***	-0.276**

Source: Processed estimation results, 2026

The findings indicate that oil-exporting economies were more vulnerable to commodity price fluctuations than non-oil exporters, primarily because petroleum prices exhibited higher volatility during the observation period.

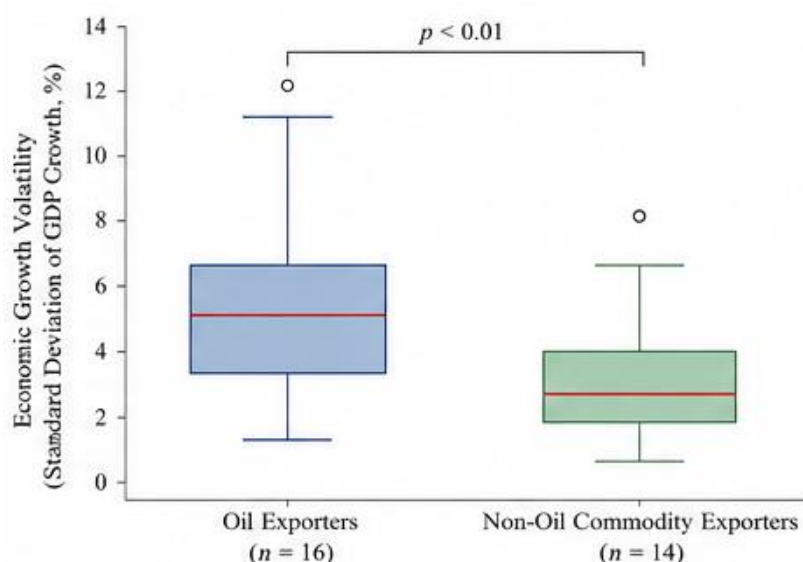


Figure 4. Comparative Volatility Between Oil and Non-Oil Commodity Exporters

Data Source: Author's calculation using data from Worldwide Governance Indicators WGI, 2026

The boxplot shows that oil-exporting countries have higher levels of economic volatility than non-oil-exporting countries. This result strengthens the sensitivity analysis in the regression model.

Diagnostic and Robustness Tests

Several diagnostic tests were conducted to ensure estimation reliability.

Table 12. Diagnostic Test Results

Test	Result	Interpretation
Variance Inflation Factor (VIF)	3.42	No multicollinearity
Breusch–Pagan Test	Significant	Heteroscedasticity detected
Wooldridge Test	Significant	Autocorrelation detected
Robust Standard Error	Applied	Corrected estimation

Source: Author's estimation using Stata 18, 2026

The presence of heteroscedasticity and autocorrelation justified the application of robust standard errors. Finally, Generalized Method of Moments (GMM) estimation was performed as a robustness test to address potential endogeneity.

Table 13. Robustness Test Using GMM Estimation

Variable	GMM Coefficient	Probability
Commodity Price Shock	0.261	0.000
Resource Dependence	0.157	0.008
Institutional Quality	-0.319	0.001

Source: Dynamic panel GMM estimation, 2026

The GMM results remained consistent with the Fixed Effects estimation, confirming the robustness of the findings. Overall, the empirical evidence strongly demonstrates that commodity price shocks significantly increase economic growth volatility in resource-dependent economies, while institutional quality plays a crucial stabilizing role in mitigating external economic disturbances.

Commodity Dependence, Institutional Resilience, and Macroeconomic Stability

The findings of this study demonstrate that commodity price shocks significantly increase economic growth volatility in resource-dependent economies, confirming the persistent vulnerability of commodity-exporting countries to fluctuations in global markets. The positive and statistically significant relationship between commodity price shocks and economic instability indicates that external price fluctuations continue to transmit strongly into domestic macroeconomic conditions. This finding is consistent with previous studies by Shah et al. (2023), which argue that excessive dependence on natural resources increases exposure to external shocks and weakens long-term economic stability. The results also support the resource curse hypothesis, which suggests that economies relying heavily on primary commodity exports frequently experience unstable growth patterns despite possessing abundant natural resources.

The study further reveals that resource dependence amplifies the adverse effect of commodity price volatility on economic growth. Countries with higher export concentration in commodities experienced significantly greater macroeconomic instability than moderately diversified economies. This finding aligns with the arguments proposed by Segun et al. (2024), who emphasized that commodity dependence limits economic diversification and increases fiscal vulnerability during periods of declining global prices. However, the present study extends previous literature by demonstrating that the effect of commodity shocks is not uniform across countries but varies according to structural and institutional conditions. The comparative analysis between high-dependence and moderate-dependence economies confirms that economic diversification plays a crucial role in mitigating macroeconomic instability.

Another important finding concerns the role of institutional quality as a stabilizing factor. The negative relationship between institutional quality and economic growth volatility indicates that countries with stronger governance systems are better able to manage external commodity shocks. This result is consistent with the institutional perspective developed by Amare et al. (2025), which emphasizes that institutional effectiveness determines whether natural resources become an economic blessing or a source of instability. Strong institutions improve fiscal discipline, strengthen public financial management, and reduce inefficient allocation of resource revenues (Adekoya, 2023; Apeti et al., 2023). The findings also support empirical studies

conducted by Afolabi & Raifu (2025), which demonstrate that institutional quality enhances economic resilience during global crises.

Nevertheless, this study also identifies several differences from previous empirical research. Previous work confirmed that commodity booms could bring about economic growth that is sustainable via growth in investment and infrastructure. The results of the present study, on the other hand, suggest that positive commodity shocks do not necessarily diminish long-term volatility as many resource-intensive economies are structurally un-diversified. Windfall revenues are often spent on short-term fiscal expansion, a rise in consumption, rather than productive investment (Yahaya, 2026; Kolling et al., 2025). Commodity booms have tended to be followed by severe economic declines when commodity prices fall, which is why it is important to understand this phenomenon. The results thus support the notion that the abundance of commodities is not enough for sustainable development without institutional capacity and economic transformation.

From a theoretical standpoint, this study is a first attempt to combine commodity price volatility with the dimensions of institutions and economic growth in a comparative macroeconomic framework. In contrast to the work of previous studies where the issue is mainly the average growth performance, this work is more focused on how much the growth performance fluctuates as a key measure of macro-economic vulnerability. This view helps to gain a more holistic picture of the long-term economic stability of developing economies in the face of external shocks. Moreover, the institutional quality and comparative dependency analysis components provide a more refined account of how accounts for variation in resilience between resource dependent countries.

The results have important policy consequences for commodity-exporting governments. It is necessary to first minimize the overreliance on commodity exports by introducing economic diversification measures such as industrialization, technological innovation and industrialization which promote the growth of industries and manufacturing technologies. Second, the need to reduce global commodity cycles requires fiscal stabilisation measures like sovereign wealth funds and countercyclical fiscal policies. Third, further enhancing institutional quality is important to bolster macroeconomic resilience, especially in public financial management and in the effectiveness of governance. Chu et al. (2023) and Joseph et al. (2024) found that countries with more robust institutions had significantly lower economic volatility even under similar external shocks.

This study has some limitations. The analysis is mostly macro-economic and fails to give full account of political instability, social conflict or environmental aspects of resource dependence (Kouladoum et al., 2026). Furthermore, the study uses aggregated commodity price indices, which might not capture changes at the sectoral level between oil, gas, mineral and agricultural commodities. Applied research in the future might thus consider disaggregated commodity sectors, regional heterogeneity and nonlinearity in transmission, to be explored with more sophisticated econometric tools. Other research could explore the relationship between commodity dependence, climate transition policies, and green economy transitions in developing countries. The latter would offer greater understanding of the sustainability problems facing resource-rich countries in the current world economy.

CONCLUSION

This study demonstrates that commodity price shocks significantly increase economic growth volatility in resource-dependent economies. The findings indicate that countries with high dependence on commodity exports are more vulnerable to external market fluctuations, particularly during periods of global economic crises and declining commodity prices. Resource dependence, inflation, and exchange rate

volatility were found to intensify macroeconomic instability, while institutional quality played an important stabilizing role by reducing the adverse effects of external shocks. The comparative and sensitivity analyses further revealed that highly commodity-dependent and oil-exporting economies experience greater economic volatility than more diversified economies.

The study contributes theoretically to the literature on resource dependence and macroeconomic vulnerability by emphasizing economic growth volatility rather than average growth performance as the primary analytical focus. It also extends previous research through the integration of institutional quality and comparative dependency analysis within a panel-data framework. Practically, the findings highlight the importance of economic diversification, fiscal stabilization mechanisms, and institutional strengthening to improve resilience against commodity market fluctuations. Nevertheless, this study is limited by the use of aggregate commodity indicators and macroeconomic variables that may not fully capture sector-specific dynamics and political-economic complexities. Future research should therefore explore disaggregated commodity sectors, nonlinear transmission mechanisms, and the interaction between commodity dependence and green economic transformation in developing economies.

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