Exchange Rate Shocks and Trade Dynamics in African Emerging Markets: A Panel VECM Study.

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Abstract

This study investigates the impact of exchange rate shocks on trade flows in African emerging markets using a panel Vector Error-Correction Model (VECM) with data spanning 1980–2024. Panel unit root and cointegration tests confirm long-run relationships among imports, exports, the exchange rate, consumer prices, and output. The results show that currency depreciation reduces both imports and exports in the long run, reflecting structural import dependence and limited export competitiveness. Consumer prices, however, significantly increase trade flows, while domestic GDP stimulates imports and foreign GDP drives exports, consistent with macroeconomic expectations. Impulse response analyses reveal heterogeneous effects across identification schemes: baseline ordering indicates mild trade expansion, faster financial block and generalised IRFs show contractionary dynamics, while managed exchange rate settings yield muted responses. The study recommends that African emerging markets complement exchange rate policies with structural reforms aimed at reducing import dependence, diversifying exports, and strengthening productive capacity. Also, flexible exchange rate regimes, supported by sound macroeconomic frameworks, are essential for enhancing resilience and ensuring trade gains from exchange rate adjustments.

Keywords: Exchange rate shocks; Trade flows; VECM; Africa; Impulse response.

1. Introduction

Exchange rate volatility constitutes a critical challenge for African emerging markets, exerting significant influence on trade dynamics and overall economic stability (Manda, 2025). As Rudahindwa and Van Huellen (2021) observe, the sixteen economies classified as emerging markets by major financial institutions remain particularly vulnerable to currency fluctuations due to their structural dependence on primary commodity exports, limited economic diversification, and deepening integration into global financial markets. Lefatsa et al. (2025) further emphasise that the transmission mechanisms linking exchange rate movements to trade flows are complex, with far-reaching implications for both macroeconomic performance and investor decision-making.

The structural composition of most African emerging markets amplifies these vulnerabilities through what is often termed the *commodity currency* phenomenon. For example, Nigeria, Angola, and Zambia derive more than 70% of their export earnings from oil and minerals (NBS, 2024; Abiola, 2025), rendering their real effective exchange rates highly sensitive to global commodity price fluctuations. This dependence creates a paradoxical situation where commodity price booms

lead to currency appreciation through increased foreign exchange inflows, subsequently eroding the competitiveness of non-commodity exports - a manifestation of Dutch Disease. Conversely, when commodity prices fall, currencies depreciate sharply, which in theory should enhance export competitiveness. In practice, however, such gains remain limited because global demand for commodities is relatively price inelastic (Chen & Lee, 2023).

Exchange rate shocks are transmitted to trade flows through multiple, interconnected channels. On the export side, currency depreciation may theoretically enhance price competitiveness, but persistent structural constraints, such as inadequate infrastructure, supply bottlenecks, and limited value-added production, often diminish potential benefits (Umeaduma & Dugbartey, 2023). For instance, South Africa's manufacturing exports have shown weak responsiveness to rand depreciation (Mnguni & Simbanegavi, 2020), reflecting the burden of energy shortages and logistical challenges.

On the import side, the impact of exchange rate shocks is more immediate and severe (Hong Nga et al., 2024), given most African emerging markets' heavy reliance on imported essentials such as food, fuel, and capital goods. Empirical evidence suggests that a 10% depreciation typically raises inflation by 2–3 percentage points within a year, a phenomenon acutely observed in import-dependent African economies (Carrière-Swallow et al., 2021; IMF, 2023).

These domestic vulnerabilities are further exacerbated by external shocks. Changes in global financial conditions, particularly shifts in U.S. monetary policy, generate powerful spillover effects. The 2022–2023 Federal Reserve tightening cycle, for example, led to large capital outflows and sharp depreciations across African currencies, with Ghana's cedi and Egypt's pound each losing more than 40% of their value against the U.S. dollar (Ayiah-Mensah et al., 2023; U.S. Department of Commerce, 2023; Aizenman et al., 2024). Moreover, geopolitical risks, such as the Russia–Ukraine conflict and escalating global trade tensions, combined with shallow foreign exchange markets, limited hedging instruments, and institutional weaknesses, continue to fuel persistent volatility that undermines long-term trade-related investment in African emerging markets (Yeboah et al., 2025).

For policymakers and international investors, understanding the dynamics of exchange rate shocks is essential as their effects are highly heterogeneous: while sharp depreciations may support certain export-oriented industries, import-dependent sectors often experience severe cost pressures (Cherif & Hasanov, 2024). Countries with more diversified export structures, such as Morocco and South Africa, have shown greater resilience to exchange rate shocks compared to resource-dependent mono-exporters like Angola (Freire & Slany, 2023).

Policy responses also play a decisive role, with some governments adopting flexible exchange rate regimes that allow for smoother adjustment, while others rely on costly foreign exchange interventions or distortionary capital controls. This complex interplay between exchange rate movements and trade flows underscores the need for nuanced analysis tailored to Africa's emerging markets. The present study examines these relationships across sixteen African economies, with particular attention to asymmetries in shock transmission, sectoral variations, and policy implications. By elucidating these dynamics, the research aims to provide investors with actionable insights for navigating currency risks while offering policymakers evidence-based recommendations for enhancing trade resilience in the face of exchange rate shocks.

2. Empirical Literature

A growing body of empirical research has investigated the nexus between exchange rates and international trade, with evidence showing mixed results across countries and methodologies. Brun et al. [(2020)] analysed the asymmetric effects of exchange rate dynamics on trade in Pakistan using a threshold error correction model and a VECM. Their findings revealed that exchange rate appreciation shocks significantly reduced exports, while depreciation shocks had an insignificant positive effect. Similarly, Nguyen and Do [(2020)], in a study on Vietnam covering the period 1990–2018, employed a VECM framework and reported that while foreign investment and imports had significant long-run effects on exports, the role of exchange rates remained statistically insignificant. At the cross-country level, Aslan et al. (2021) applied a panel SVAR model to quarterly data from 21 emerging economies (2005Q1–2018Q4) and found that exchange rate shocks exerted an insignificant effect on export volumes. In contrast, Carrel and Wilfried (2021), examining the Congolese economy with monthly data spanning 2000–2019, showed that exchange rates negatively affected both exports and imports in the short and long run. Further regional evidence is provided by Banik and Roy (2021), studied eight SAARC countries and demonstrated that exchange rate uncertainty marginally reduced bilateral trade flows using a panel gravity model.

Other studies highlighted country-specific dynamics. Nguyen et al. (2021) examined U.S.–Vietnam trade using ARDL and NARDL models and reported that exchange rate depreciation reduced export and import volumes in the short term but improved them in the long term. In Kenya, Mwito et al. (2021) used a PMG panel ARDL approach with data on 30 trading partners and found that the real exchange rate worsened the trade balance in both the short and long run. Similarly, Zhu et al. (2022), using panel FMOLS on Asian economies, documented that exchange rate, real GDP, and human capital had positive long-run effects on exports. By contrast, Truong et al. (2022) identified asymmetric effects in Vietnam, showing that appreciation negatively influenced trade balances in the short run but had positive effects in the long run, while depreciation was largely insignificant. Country-level studies also demonstrate important variations. Thorbecke and Sengonul (2022) showed that exchange rate depreciation significantly reduced both imports and exports in Turkey, while also depressing stock prices across sectors. In Nigeria, Ijirshar et al. (2022) employed symmetric and asymmetric ARDL models and reported that exchange rate appreciation positively influenced imports in the short run but had contrasting effects in the long run, where exports and trade balance benefited while imports declined. In Canada, Alexander and Reza (2022) employed a Bayesian SVAR with multiple identification schemes and found that exchange rate shocks from global sources significantly affected exports, though domestic shocks exerted only limited influence. More recently, Doojav et al. (2024), using an SBVAR model for Mongolia, documented that exchange rate shocks increased net exports and consumer prices while raising real GDP above its steady state.

Despite the diversity of findings, several limitations remain. Existing studies using VECM frameworks (e.g., Brun et al., 2020; Nguyen and Do, 2020) generally omit impulse response analyses, thereby limiting insights into the dynamic adjustment of trade to exchange rate shocks. Furthermore, most prior research does not incorporate generalised impulse response functions (GIRF), which provide robust results irrespective of variable ordering. This study contributes to filling this gap by employing panel VECM with GIRF and FEVD, alongside other impulse response schemes, thereby providing richer evidence on the trade-exchange rate nexus in African emerging markets.

3. Methodology and Data

3.1. Model Specification

The study applies a five-variable Panel Vector Error-Correction Model (PVECM) to investigate the impact of exchange rate shocks on trade dynamics in African emerging markets, specified as:

$$
\begin{bmatrix} \Delta \ln(\text{Impt}_{it}) \\ \Delta \ln(\text{Expt}_{it}) \\ \Delta \ln(\text{ExR}_{it}) \\ \Delta \ln(\text{GDP}_{it}) \\ \Delta \ln(\text{GDPf}_{it}) \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \\ a_{41} & a_{42} \\ a_{51} & a_{52} \end{bmatrix} \begin{bmatrix} 1 & 0 & \beta_{13} & \beta_{14} & 0 \\ 0 & 1 & \beta_{23} & 0 & \beta_{25} \end{bmatrix} \begin{bmatrix} \ln(\text{Impt}_{it-1}) \\ \ln(\text{Expt}_{it-1}) \\ \ln(\text{ExR}_{it-1}) \\ \ln(\text{GDP}_{it-1}) \\ \ln(\text{GDPf}_{it-1}) \end{bmatrix} + \sum_{i=1}^{p} \Gamma_i \Delta Z_{it-i} + v_{it} \quad (1)
$$

In the model in Equation 1, Impt denotes imports, Expt represents exports, ExR is the exchange rate, GDP serves as a proxy for domestic income, and GDPf proxies foreign income using U.S. GDP, all of which are theoretically consistent. The beta (β) matrix represents the cointegration vectors that capture the long-run relationships between exports and imports. In the first row, the import equation vector reflects the long-run effects of the exchange rate and domestic income on imports, represented by parameters β_{13} and β_{14}. The second row corresponds to the export equation vector, where the long-run influence of the exchange rate and foreign income on exports is captured by parameters β_{23} and β_{23}. The alpha (α) matrix contains the error-correction terms, indicating the short-run adjustments of the variables within the system. In essence, the alpha matrix reflects the speed at which each variable converges back to the two equilibrium relationships in the model.

To robustly assess the dynamic effects of exchange rate shocks on trade variables, four different impulse response functions (IRFs) are employed within the panel VECM framework. The first follows the baseline Cholesky decomposition with degree-of-freedom correction. The second adopts a "faster financial block" ordering within the Cholesky framework, placing foreign GDP, the exchange rate, domestic GDP, consumer prices, exports, and imports in sequence, reflecting the view that the exchange rate adjusts contemporaneously while domestic output responds more slowly. The third imposes a "price-before-exchange rate" structure, ordering foreign GDP, domestic GDP, consumer prices, the exchange rate, exports, and imports, consistent with managed exchange rate regimes where currency adjustments lag behind monetary and price movements. Finally, the fourth employs the generalised impulse response function (GIRF), which avoids dependence on variable ordering and serves as a robustness check on the Cholesky-based specifications.

3.2. Data and Sources

This study utilized time series data on exports ($ billion), imports ($ billion), GDP ($ billion), U.S. GDP ($ billion), the consumer price index, and the exchange rate (local current to dollar), all obtained from the World Bank's World Development Indicators (WDI) database, covering the period 1980–2024. The analysis focused on 16 African emerging markets, regionally grouped as follows: North Africa—Egypt and Morocco; West Africa—Côte d'Ivoire, Ghana, Nigeria, and Senegal; East Africa—Ethiopia, Kenya, Rwanda, Tanzania, and Uganda; and Southern Africa—Botswana, Mauritius, Mozambique, South Africa, and Zambia.

4. Results and Discussions

Table 1: Descriptive statistics of variables

Variable	Mean	Std. Dev.	C.V.	Max.	Min.
Impt	14.4701	23.702	1.638	150.305	0.2946
Expt	12.5679	22.520	1.792	152.096	0.0504
ExR	281.882	612.42	2.173	3757.26	0.0003
CPI	208.846	340.58	1.631	3735.23	0.0202
GDP	56.2469	98.334	1.748	568.499	0.8376
GDPf	12261.4	7037.6	0.574	29184.9	2857.3

Source: Author's computation.

Table 1 shows the descriptive statistics of the variables used in the study. It can be observed that imports (Impt) and exports (Expt) have relatively low mean values (14.47 and 12.57, respectively) but large standard deviations, suggesting substantial fluctuations across countries and time. Their coefficients of variation (1.638 and 1.792) indicate high relative dispersion, confirming instability in trade flows within African emerging markets. The exchange rate (ExR) has a mean of 281.88 but an exceptionally large standard deviation (612.42) and the highest coefficient of variation (2.173), reflecting pronounced exchange rate volatility over the study period. The consumer price index (CPI) also shows wide variability, with a mean of 208.85 and a coefficient of variation of 1.631, highlighting episodes of inflationary pressure. Domestic GDP (GDP) has a mean of 56.25 and a high relative dispersion (C.V. = 1.748), suggesting uneven growth performance across countries. In contrast, foreign income proxied by U.S. GDP (GDPf) displays a high mean of 12,261.4 and the lowest coefficient of variation (0.574), indicating greater stability compared to domestic variables.

Table 2: Descriptive statistics for regional Africa emerging markets

Variable	North		West		East		South	
	Mean	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
Impt	32.70	0.832	14.71	1.400	5.646	1.158	15.81	1.912
Expt	23.86	0.810	14.38	1.461	3.293	1.132	15.88	1.953
ExR	7.961	0.776	281.8	0.926	659.9	1.440	13.49	1.119
CPI	147.5	1.114	267.4	1.879	200.3	1.520	195.1	1.282
GDP	108.0	0.975	74.94	1.668	24.38	1.279	52.44	1.980

Source: Author's computation.

A further descriptive analysis is presented in Table 2 to examine the pattern of the variables regionally. The descriptive statistics across regional African emerging markets reveal distinct patterns in trade and macroeconomic performance. North Africa records the highest average imports (32.70) and exports (23.86), with relatively low coefficients of variation (0.832 and 0.810), indicating more stable trade flows compared to other regions. In West Africa, imports (14.71) and exports (14.38) are moderate but exhibit higher variability (C.V. = 1.400 and 1.461), reflecting fluctuations in trade performance. East Africa shows the lowest trade values, with mean imports at 5.65 and exports at 3.29, but with relatively high dispersion (C.V. = 1.158 and 1.132), suggesting small but unstable trade volumes. Southern Africa displays similar trade averages to West Africa (imports = 15.81; exports = 15.88) but with the highest variability (C.V. = 1.912 and 1.953), implying considerable trade instability in the region. Exchange rates differ sharply across regions:

while North (mean = 7.96) and South (mean = 13.49) maintain relatively lower levels with moderate variability, West (mean = 281.8) and East (mean = 659.9) experience extremely high exchange rate values and greater instability, particularly in East Africa (C.V. = 1.440). For consumer prices, West Africa shows the highest average (267.4) and greatest instability (C.V. = 1.879), consistent with episodes of inflationary pressures, while North Africa has relatively lower CPI volatility (C.V. = 1.114). GDP patterns also vary: North Africa has the highest average GDP (108.0) with moderate stability (C.V. = 0.975), whereas Southern Africa, despite recording a moderate GDP level (52.44), exhibits the greatest instability (C.V. = 1.980). It can thus be inferred that North Africa demonstrates the strongest and most stable trade and macroeconomic performance; West Africa faces moderate trade but high inflationary pressures; East Africa records the weakest trade volumes alongside volatile exchange rates; while Southern Africa maintains moderate trade levels but suffers from the greatest overall instability.

Table 3 presents the panel unit root test results for the Levin-Lin-Chu (LLC), Im-Pesaran-Shin (IPS), and the Augmented Dickey-Fuller (ADF), respectively. The results indicate that all variables are non-stationary at levels but become stationary after first differencing, implying they are integrated of order one, I(1). Specifically, the LLC test (which assumes a common unit root process) and the IPS and ADF tests (which assume individual unit root processes) consistently confirm that each variable achieves stationarity only in first differences. This outcome suggests the possibility of long-run equilibrium relationships among the variables despite their non-stationarity at levels. Given that the series are I(1) and may be cointegrated, the Panel Vector Error-Correction Model (PVECM) is appropriate.

Table 3: Panel unit root test summary.

Variable	LLC	D.LLC	IPS	D.IPS	ADF	D.ADF	Order
ln(Impt)	0.128	-10.49***	2.058	-9.294***	14.89	136.3***	I(1)
ln(Expt)	-1.561	-10.70***	0.795	-9.364***	23.34	137.2***	I(1)
ln(ExR)	2.110	-10.14***	2.003	-9.049***	28.24	131.9***	I(1)
ln(CPI)	-0.761	-8.061***	-0.783	-6.673***	33.10	97.31***	I(1)
ln(GDP)	-0.007	-9.622***	-0.611	-8.993***	38.01	132.3***	I(1)
ln(GDPf)	3.347	-12.15***	1.387	-7.492***	14.25	105.2***	I(1)

Note: *** p < 1%, ** p < 5%, * p < 10%.

The PVECM framework not only captures the short-run dynamics through differenced terms but also incorporates the long-run equilibrium relationships via the cointegration vectors. Moreover, the inclusion of error-correction terms allows the model to measure the speed at which deviations from equilibrium are corrected, making it well-suited for analysing trade and exchange rate dynamics in African emerging markets. Table 4 reports the optimal lag length selection for the VECM using the Akaike (AIC), Schwarz (SBIC), and Hannan-Quinn (HQ) information criteria. The results show that while the AIC favours a lag length of three, both the SC and HQ criteria select a lag length of two. Accordingly, a lag order of one is deemed appropriate and is employed in the cointegration analysis.

Table 4: Information criteria statistics for optimal lag

Lag	AIC	SBIC	HQ
0	13.81	13.85	13.82
1	-11.28	-11.00	-11.17

2	-12.28	-11.75*	-12.07*
3	-12.30*	-11.54	-12.01

Note: * denotes lag selected based on 5% critical value.

Table 5: Johansen panel cointegration test summary

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	6	5	4	3	3
Max-Eig	4	5	3	3	3

Note: Critical values based on 5% MacKinnon-Haug-Michelis (1999)

Table 5 presents the panel Johansen cointegration test results. The Johansen approach allows for different specifications regarding the inclusion of an intercept, a trend, or both in the cointegration space, and provides two key test statistics for inference: the trace statistic and the maximum eigenvalue statistic. The general rule is that if the test indicates full rank, a VAR model is appropriate, whereas a reduced rank suggests a VECM. A zero-rank outcome, by contrast, implies the need to estimate a VAR in first differences. Since the trace and maximum eigenvalue statistics do not always converge, the literature (Lütkepohl & Krätzig, 2004; Lütkepohl, 2005) emphasises that the trace statistic is generally more robust. Based on the results across different specifications, evidence suggests the existence of at least three and up to six cointegrating vectors in the five-variable panel VECM. This validates the presence of two long-run relationships as specified in model Equation 1.

The long-run cointegrating vector estimates and the adjustment terms vector are presented in Table 6. Similarly to the findings of Carrel and Wilfried (2021), Mwito et al. (2021), and Thorbecke and Sengonul (2022), the result showed that the exchange rate exerts a significant negative long-run impact on both imports and exports, with a 1% depreciation reducing imports and exports by approximately 0.047% and 0.175%, respectively. This result implies that exchange rate depreciation does not provide the expected trade-enhancing effect in African emerging markets. Instead of stimulating exports and discouraging imports, depreciation appears to constrain both sides of trade in the long run. This could be attributed to structural weaknesses such as high import dependence for production inputs, limited export diversification, and weak competitiveness in global markets. In such contexts, currency depreciation raises the cost of imported intermediate and capital goods, which are essential for production, thereby reducing export capacity. At the same time, consumers face higher costs for imported final goods, suppressing overall trade activity. These findings underscore the vulnerability of African emerging markets to exchange rate volatility and suggest that without structural transformation, exchange rate depreciation may have contractionary rather than expansionary effects on trade.

Table 6: Long-run estimate and short-run adjustment

Vector	Impt	Expt	ExR	CPI	GDP	GDPf
β	1		0.047*** (0.007)	-0.190*** (0.012)	-0.836*** (0.012)	
		1	0.175*** (0.020)	-0.293*** (0.049)		-1.090*** (0.126)
α	-0.041***	0.018	-0.054***	-0.000	0.051***	-0.005**

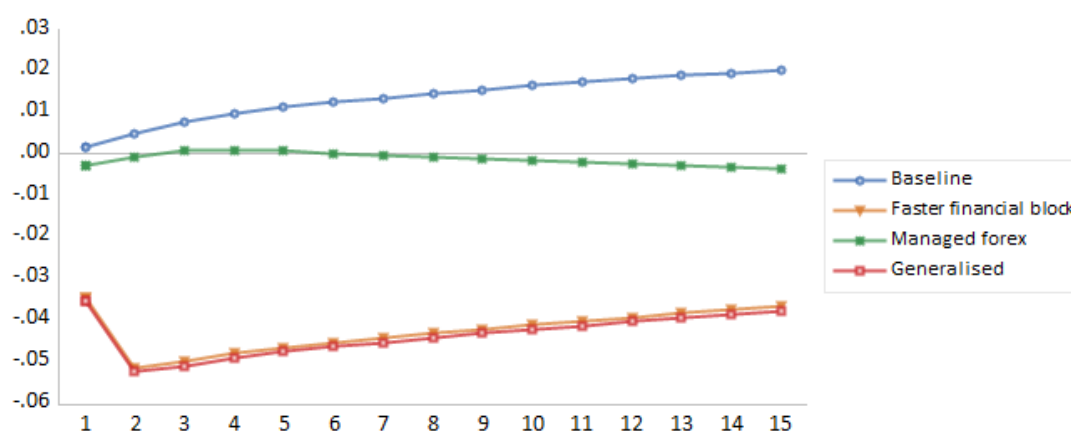| (0.015)	(0.017)	(0.017)	(0.009)	(0.015)	(0.003)
-0.008*	-0.021***	-0.000	-0.001	-0.006	0.000
(0.005)	(0.005)	(0.005)	(0.003)	(0.005)	(0.001)

Note: *** p < 1%, ** p < 5%, * p < 10%.

The results further reveal that the price level, measured by the consumer price index (CPI), has a significant positive long-run effect on trade variables. Specifically, a 1% rise in CPI increases imports and exports by about 0.19% and 0.293%, respectively. At first glance, this finding may seem counterintuitive, since higher domestic prices are often expected to suppress demand for imports and weaken competitiveness in exports. However, in the context of African emerging markets, the result is not entirely unexpected. Inflationary pressures frequently stem from currency depreciation and rising costs of imported goods, which directly increase the nominal value of imports. Likewise, exporters may adjust prices upward in response to domestic inflation, leading to higher export receipts in value terms even if export volumes remain unchanged. Thus, the positive association may reflect price-driven increases in trade values rather than genuine gains in trade competitiveness. This finding underscores the inflation-pass-through effect in open economies that are heavily reliant on imports for both consumption and production inputs. It also suggests that while inflation may boost trade values in the long run, it does not necessarily imply improved trade performance in real terms. In line with macroeconomic theory, the findings show that domestic GDP growth significantly increases imports, with a 1% rise in GDP leading to about a 0.836% increase in imports in the long run. This outcome is expected, as higher domestic income expands purchasing power and demand for both consumer and intermediate goods, much of which is met through imports in African emerging markets due to structural dependence on foreign products. Similarly, foreign GDP, proxied by U.S. GDP, exerts a significant positive effect on exports, where a 1% rise in foreign income increases exports by approximately 1.09% in the long run. This result aligns with the standard income–trade relationship, as stronger economic activity abroad enhances demand for exports from African economies. Taken together, these findings confirm that income growth, both domestic and foreign, is a key driver of trade flows, with domestic output expansion fueling import demand and global economic expansion supporting export performance.

The error correction term vector (i.e., the alpha vector) in Table 6 indicated that the adjustment process is heterogeneous across variables, with import-related disequilibria exerting more pervasive effects than export disequilibria. For the import equation, both ECTs[1] are negative and statistically significant, suggesting that import dynamics respond to disequilibria in their long-run relation as well as to imbalances in the export equation. Specifically, approximately 4.1% of deviations from the import equilibrium and 0.8% of deviations from the export equilibrium are corrected in each period, highlighting the central role of imports in system adjustment. In contrast, the export equation exhibits significant adjustment only to its long-run relation, with a speed of adjustment of about 2.1% per period. The coefficient on ECT1 is positive but insignificant, indicating that exports are not directly responsive to disequilibria in the import relation. This asymmetry suggests that while import behaviour is influenced by both equilibria, export dynamics remain primarily self-correcting. The exchange rate equation adjusts significantly to import disequilibria, with 5.4% of the imbalance corrected each period, but shows no meaningful response to the export relation. Similarly, domestic GDP exhibits a strong positive adjustment to import

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[1] ECT1 and ECT2 denote error-correction terms from the long-run import and export equations, with α coefficients indicating adjustment speeds.

disequilibria (5.1% correction), while foreign GDP responds only marginally. These findings indicate that import-related imbalances are more influential in driving short-run corrections in macroeconomic fundamentals, particularly the exchange rate and output. By contrast, consumer prices show no significant adjustment to either long-run relation, implying that price dynamics are weakly linked to the cointegrating vectors in the short run. These results suggest that the adjustment process in African emerging markets is primarily anchored in the import equilibrium. Imports serve as the key transmission channel through which long-run disequilibria influence both trade flows and broader macroeconomic dynamics, whereas exports exhibit a narrower adjustment mechanism centred on their equilibrium path.

Figure 1: Response of exports to exchange rate shock in African emerging markets
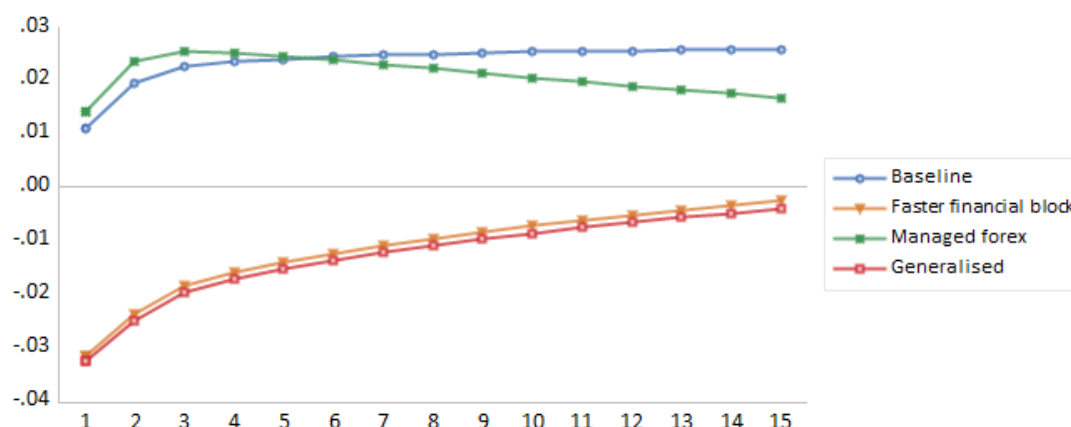

Source: Estimated PVECM

Figure 1 presents the impulse responses of imports to exchange rate shocks under four identification strategies: baseline ordering, faster financial block, price-before-exchange rate (managed FX), and generalised IRFs. Under the baseline ordering, imports respond positively to an exchange rate shock, rising gradually from 0.0017% above the steady state in the first horizon to about 0.0201% by the fifteenth horizon. This outcome appears counterintuitive, since depreciation should ordinarily reduce imports by making foreign goods more expensive. However, it reflects the structural dependence of African emerging markets on imported inputs, capital goods, and consumer products, which remain inelastic even when exchange rates deteriorate. In the faster financial block ordering, where exchange rates adjust contemporaneously while GDP responds with a lag, imports show a consistently negative response, in line with the findings of Thorbecke and Sengonul (2022). They fall by 0.0348% below the steady state in the first horizon and stabilise around –0.037% by the fifteenth. This conforms to theoretical expectations, as depreciation raises import costs and suppresses demand when financial market dynamics dominate adjustment. Under the price-before-exchange rate (managed FX) scenario, the import response is negligible, staying close to zero across horizons (–0.0029% in horizon 1 to –0.0037% by horizon 15). This muted impact indicates that when the exchange rate is tightly managed and responds sluggishly to price conditions, the effect of depreciation on imports is largely neutralised. The generalised IRFs, which are ordering-invariant, closely mirror the faster financial block results, showing persistent negative effects of depreciation on imports (around –0.035% to –0.038% across

horizons). This suggests that, while depreciation tends to reduce imports when structural and financial factors are considered, persistent import dependence and varying degrees of exchange rate management in African emerging economies limit its effectiveness as a trade adjustment tool.

Figure 2: Response of exports to exchange rate shock in African emerging markets

Source: Estimated PVECM

Figure 2 shows the dynamic responses of exports to exchange rate shocks across four identification strategies: baseline ordering, faster financial block, price-before-exchange rate (managed FX), and generalised IRFs. Under the baseline ordering, exports respond positively to depreciation (similar to Doojav et al., 2024), rising steadily from 0.0111% in horizon 1 to about 0.0258% by horizon 15 above the steady state. This outcome aligns with conventional trade theory, as currency depreciation makes domestic goods relatively cheaper in international markets, thereby stimulating export demand. The gradual but persistent positive response underscores the export-enhancing potential of exchange rate depreciation in African emerging markets. In contrast, similar to Brun et al. (2020) and Thorbecke and Sengonul (2022), the faster financial block ordering produces a negative response: exports decline by 0.0316% initially and gradually converge toward zero (–0.0026% by horizon 15). This suggests that when financial market adjustments dominate, exchange rate depreciation may initially dampen exports, possibly due to higher imported input costs, tighter financial conditions, or lags in supply-side adjustments that outweigh the competitiveness gains. The managed FX (price-before-exchange rate) scenario yields consistently positive effects on exports, rising from 0.0143% at horizon 1 to 0.0167% at horizon 15 above the steady state. However, the magnitude is smaller than in the baseline case, indicating that under tightly managed regimes, depreciation still supports exports but with a dampened effect. This reflects how policy interventions, while stabilising, also reduce the full transmission of exchange rate movements to trade outcomes. The generalised IRFs, which are ordering-invariant, closely mirror the faster financial block case, showing initial export declines (–0.0326%) that gradually diminish in absolute terms (–0.004% by horizon 15) below the steady state. This again emphasises the role of financial frictions and structural rigidities in muting the textbook benefits of depreciation for exports. Taken together, the results suggest that although depreciation has the potential to stimulate exports, structural bottlenecks and exchange rate management practices in African economies tend to weaken this adjustment channel.

5. Conclusion

This study provides new evidence on the dynamics of exchange rate shocks and trade flows in African emerging markets. The long-run results show that exchange rate depreciation reduces both imports and exports, underscoring the structural rigidity of these economies where external competitiveness is limited and import dependence remains strong. Consumer prices and income effects, both domestic and foreign, are important drivers of trade, highlighting the role of macroeconomic fundamentals beyond exchange rate adjustments. The impulse response analysis further reveals that the impact of exchange rate shocks depends critically on identification assumptions, with managed exchange rate regimes and generalised responses dampening trade effects. Taken together, the findings suggest that exchange rate movements alone are insufficient to improve trade outcomes. The study recommends that African emerging markets should not rely solely on currency depreciation as a mechanism for improving trade balances, since depreciation reduces both imports and exports in the long run. Instead, policies should prioritise strengthening domestic productive capacity to reduce structural import dependence and enhance the responsiveness of exports to exchange rate movements. This entails targeted investment in infrastructure, energy supply, and value-added industries to ease supply-side bottlenecks that limit competitiveness. Furthermore, the study recommends export diversification strategies to reduce vulnerability to commodity price shocks and expand the range of goods that can benefit from potential exchange rate adjustments. Policymakers should also consider adopting flexible exchange rate regimes supported by credible macroeconomic frameworks, while limiting costly interventions and distortionary capital controls. By combining exchange rate management with structural reforms, African emerging economies can build greater resilience to external shocks and ensure that exchange rate dynamics contribute more effectively to sustainable trade growth.

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