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ASYMMETRIC PASS-THROUGH EFFECTS OF FOREIGN PORTFOLIO INVESTMENT ON ECONOMIC RESILIENCE: A COMPARATIVE ANALYSIS OF SELECTED AFRICAN ECONOMIES

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Abstract
This study investigates the asymmetric pass-through effects of foreign portfolio investment FPI on economic resilience in South Africa, Egypt, Nigeria and Kenya using the Nonlinear Autoregressive Distributed Lag (NARDL) frame work over the period 1990-2024. Composite economic resilience normalized on 0-1 scale was constructed via principal component analysis, incorporating macroeconomic stability, financial robustness, productive capacity and institutional quality. Short run results reveal consistent asymmetric: positive FPI shocks significantly enhance (ERI) across all countries with the strongest impacts in Kenya and Nigeria while negative shocks sharply erode resilience most severely in Nigeria and Egypt. Inflation exerts a uniformly negative effect, whereas GDP per capita growth greatly support economic resilience. The error correction term indicate faster adjustment in South Africa per period and slowest in Kenya in the long run positive FPI shocks significantly bolster resilience in Nigeria and Kenya, but remain insignificant in South Africa and Egypt; Negative shocks consistently undermine ERI with statistical significance in all cases. GDP per capita emerges as the dominant long run driver. Policy recommendations include strengthening macroeconomic stability, deepening capital market and promoting growth oriented structural reforms to mitigate FPI volatility and enhance economic resilience to external shocks

Keyword: Foreign portfolio investment, economic resilience, asymmetry, NARDL,pass-through

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I. INTRODUCTION

Foreign portfolio investment in recent time has become an essential component of capital inflows to developing countries(Makoni, 2020;Haider et al., 2017). Foreign portfolio investment involves the buying of foreign financial assets, such as stocks and bonds, by investors who aimed at diversifying portfolio investment to gain higher returns (Litali et al., 2024). While FPI has the capacity to stimulate liquidity, reduce borrowing costs and enhance improvements in the capital market stability, it can also lead to quick reversals, exchange rate fluctuations as well as exposure to global risk sentiment (Şeker, 2025; Kumar and Dua., 2024)). Therefore, in this perspective, economic resilience which can be understood as the ability of an economy to predict, absorb recover from and adapt to external shock becomes a significant concern for policymakers and researchers alike

The resilience impact of FPI can be understood by competing Theories. The financial liberalization hypothesis suggest that capital inflows enhance market efficiency and liquidity, on the other hand financial fragility hypothesis stresses that reliance on short-term inflows such as portfolio investment increases susceptibility during periods of global crisis (Aizeman et al, 2019;Hoang., 2024). In the same way, the Mundell- Flemming model highlights how capital mobility relates with exchange regimes to transmit external shock (Gupta & Ahmed, 2020; Frenkel&Razin1987). These perspectives suggest that the pass-through of foreign portfolio investment to resilience is context- specific, depending on factors such as institutional quality, policy framework and exposure to global financial cycles.

Foreign portfolio plays a volatile but significant role in Africa economies. It role is shaped by domestic reforms, global interest rate and geopolitical dynamics (Pamba et al, 2025;Agyei et al., 2022). Its pass through effects on economic resilience is channeled through liquidity provision, financial market deepening, exchange rate movement and institutional strength(Joo& Shawl;Gawadet al 2023;Al Samman&GabAlla2020). Empirical evidence shows that while FPI may enhance short term resilience by boosting reserves and fiscal buffers, sudden outflows can erode stability, leading to currency depreciation, inflationary pressures, and decrease in investor confidence (Agbloyor et al, 2014;**A**izenman, Chinn & Ito.,2011)

Foreign portfolio investment in Africa indicated divergent trends, affecting economic resilience to external shocks. The African Development Bank Projected Africa's GDP growth rate at 3.3% in 2024 up from 2.9% in 2023 further rising to 3.9% in 2025 and 4.0% in 2026, supported by structural reforms, fiscal consolidation and easing inflationary pressures. According to UNCTAD (2024) the inflows of foreign direct investment inflows to

Africa increased by 75% to $97 billion in 2024, amounting to 6% of global FDI, but fluctuations in foreign portfolio remains volatile. The COVID-19 pandemic and the Russia- Ukraine conflict critically disrupted capital flows in 2020-2022, triggering risk aversion, currently depreciations and sudden FPI reversal across African Market (World Bank, 2024). Even though post pandemic recoveries have revived investors' confidence, the IMF (2025) highlights that in Nigeria, reforms such as subsidy removal and foreign exchange unification have stabilized macroeconomic environment and improved investor confidence leading to spurring renewed portfolio inflows. Yet, Nigeria's reliance on short-term capital still leaves it extremely susceptible to reversals under episodes of global financial tightening (Edo &Kanwanye, 2022).

Resilience pattern also differ across major African economies in post COVID era. The IMF (2024) project South Africa's growth at 1.3% in 2024, slowing to 1.0% in 2025, reflecting structural rigidities and fragile investor sentiment amid recurring capital outflows. Egypt, under its IMF supported Extended Fund Facility, recorded greater than- expected private sector contributions with growth revised upward to 3.8% in FY2024/2025,though inflationary pressure remain elevated (IMF, 2024). In Kenya, the World Bank (2024) downgraded growth prospect to 4.5% in 2025 due to rising debt burdens, high borrowing cost and tight global liquidity, which weakens capital inflows. These dynamics demonstrate that global crisis exposed Africa's vulnerability to external shock.

Despite the growing significance of FPI in Africa, Little is known about its pass-through effects on economic resilience in Africa's largest economies. Prior studies often emphasize growth or volatility, consequently, few examine how portfolio flows affect resilience across countries with distinct structural and policy contexts. However, this gap is critical as currency fluctuation, fiscal reform, subsidy removal and policy shift in these countries may alter the impact of foreign portfolio flows over time. This study contributes by empirically investigating the significance and dynamics of FPI's Pass-through effects in Nigeria, South Africa, Egypt and Kenya (SANEK)

The findings are expected to inform strategies for managing volatile portfolio inflows in Africa. Through identification of the channels through which FPI affects resilience, the study can guide capital market reforms, macro prudential policy design and institutional strengthening. Ultimately this study offers both theoretical contribution and practical policy guidance for mitigating risk while harnessing the benefits of portfolio flows

The remainder of this paper is structured as follows: Section 2 reviews the relevant Theoretical and empirical Literature on FPI and economic resilience. Section 3 presents the methodological framework, data and estimations strategy. Section 4 discusses the empirical findings, while section 5 concludes with policy implications and recommendations.

II. LITERATURE REVIEW

2.1 Theoretical and Empirical Perspectives

2.1.1 Theoretical Evidence

The capital asset pricingmodel (CAPM) provides an earliest theoretical lenses for understanding the relationship between foreign portfolio investment and FPI and financial markets in developing economies**(**Omodero, 2023). The model suggest that differences in foreign investors demand for securities directly affect stock prices especially in a situation where the supply of domestic equities is relatively inelastic in the short run(Hearn &Piesse, 2015)**.** However, in African countries such as Nigeria , South Africa, Egypt and Kenya where stock market depth differs significantly, the CAPM framework highlight how FPI inflows can either stabilize markets by enhancing liquidity or exacerbate volatility when inflows are speculative (Omodero, 2023; Appiah-Kusi&Menyah, 2003; Sharpe, 1964; Sanusi& Dckson-Koekemoer,2025). The pass- through effect to economic resilience is thus mediated through how efficient the financial market could absorb these flows without destabilizing the asset prices.

The Market Efficiency Hypothesis (EHM) further explains how foreign portfolio inflows may strengthen or weakens resilience. According to this hypothesis markets that incorporate all available information into asset prices are better situated to with stand shocks as they reduce mispricing and ensure efficient allocation of capital(Oke&Azeez, 2020;Hearn et al., 2010). Furthermore, foreign investors often bring not just capital but improved standards of disclosure, corporate governance as well as risk management practices which would reduce information asymmetric(Jefferis& Smith, 2005). This effect is particularly relevant in South Africa and Egypt where relatively stronger institutions mean that FPI may contribute to more efficient stock pricing and greater resilience to global shocks (Abubakar et al., 2024; Lagoarde-Segot&Lucey., 2007). However, in less developed markets such as Nigeria and Kenya weaker regulatory oversight and institutional gap may limit this positive transmission making the market more vulnerable to abrupt reversal.

The Push – Pull framework also provides a broader macro-financial perspectives Push factors such as global liquidity conditions, interest rate changes in advance economies as well as geopolitical risk most times derive capital into or out of African markets regardless of local fundamentals (Oke et al, 2020;Forster et al., 2019). Pull factors such as domestic growth prospects exchange rate stability and institutional quality determine by how much FPI a country attract and how it affects resilience (Calvo et al., 1993: Adumah, Anyanwu&Nwokoye., 2024). A sudden withdrawal of FPI in Nigeria or Kenya can increase currency depreciation and worsen external susceptibility which can undermine resilience. In contrast in South Africa and Egypt where markets are more diversified and policy credibility is relatively stronger, FPI inflows may play a stabilizing role through strengthening reserves, deepening capital market and cushioning against external shock (Osei&Amoah, 2022). Thus Push- Pull paradigm explains that the pass-through effect of FPI to economic resilience is inherently context dependent and determined by both global financial cycles and domestic absorptive capacity

2.2 Empirical Review

This section synthesizes empirical studies on the effects of foreign portfolio and other private capital flows on macroeconomic and financial outcomes in developing and emerging economies, with emphasis on African evidence and methods relevant to the proposed NARDL investigation of pass-through effects on economic resilience in Nigeria, South Africa, Egypt and Kenya (SANEK). The review is organized thematically (institutions & capital flows; portfolio flows, volatility and market outcomes; push–pull drivers and global factors; methodological approaches and measurement), then draws out methodological gaps and the empirical niche for the present study.

2.2.1 Institutions, capital flows and resilience

Many recent studies emphasize the moderating role of institution on how capital flows translate into macroeconomic outcomes. Sule et al, (2025) construct an economic resilience's index and show that the interactions between governance quality and different capital flows FDI, FPI, ODA matters for resilience across SANEK countries: for Egypt the governance ×FDI and governance ×FPI interaction produce mixed positive and negative effect, while for Nigeria and South Africa only governance interaction with FPI and ODA exhibited statistically significant effects on resilience. Murdipi, baharumsha and Law (2023) likewise revealed that institutional quality and social cohesion moderate the adverse effect of global shock and economic policy uncertainty on portfolio flow and growth, suggesting institutions can insulate economies from global interest rate shock collectively this study encourage inclusion of institutional quality both as control and as interaction term when assessing pass through from FPI to macro resilience

2.2.2 Portfolio flows, volatility and market outcomes

A growing number of literature examined how portfolio flows affect financial market and exchange rate. Pamba, Mukorera and Moores-Pitt (2025) apply NARDL to examine asymmetric effect of cross-border equity flow volatility on equity market returns in SENAK countries, reporting short and long run asymmetric that differ by country peculiarities. Studies using time-varying and nonlinear methods such as (Bathia et al.,2023) show that capital flows produce quantile-specific spillovers between equity and FX markets, while Chen, Liu and Liu (2024) demonstrate that stronger fundamental reduce the short –term impact of portfolio flow volatility on FX volatility and propose FX resilience measures . These result indicate that asymmetric is empirically important and transmission differs across financial and macro channels supporting the use of NARDL to capture nonlinear pass-through to resilience rather than merely returns

2.2.3 Push–pull drivers, global factors and cross-country heterogeneity

Empirical evidence further robustly emphasize the dominance of global "push factors" alongside country-specific "pull" determinant. (Sarno et al. (2016) Bettenddorf and Karadimitropoulou (2023) show that push factors (global risk) explain a substantial share of portfolio flow variation, whereas pull factor (domestic returns, financial development) influence cross-sectional differences. Kumar and Dua (2024) find that US 10 year treasury yields negatively affect FPI into BRICS , while domestic market depth, interpret differential, currency appreciation and creditworthiness attract FPI. Pagliari and Ahmad Hannan (2024) and Broner et al. (2023) provide further evidence on time-variation in flows and the rise of South-to- South flows, highlighting both temporal dynamics and structural heterogeneity across regions and asset classes. These findings argue for country-level analyses and for models that can accommodate heterogeneous response to common global shocks.

2.2.4 Private capital flows and growth/resilience: mixed effects and the role of domestic markets

Panel studies of Africa produced mixed results on whether private capital flows promote growth or stability. Agbloyor et al. (2014) made use of IV-GMM and find that FDI, portfolio equity and private debt flows negatively relate to growth on average, but strong domestic financial markets can convert these negative effects into positive outcomes. Makoni (2020) finds that institutional quality, stock market development and past FPI attract inflows whereas inflation and rel exchange rate depreciation discourage FPI. Opperman and Adjasi (2017) and Ado and Kanwanye (2022) show that macro policy and domestic financial development are key pull factors that influence volatility and adjustment speeds. These result indicate that, the pass through from FPI to resilience will likely be conditional on domestic financial market depth and macroeconomic management.

2.3 Methodological and Empirical Gaps in Literature

Existingliterature employs diverse econometric approaches to explore the dynamics of foreign portfolio investment and related macro financial outcomes. Texchniques such as IV- GMM and panel estimations (Agbloyor et al., 2024), VAR- GARCH family models for volatility and diversification analysis (Oloko,2018;Aluko et al.,2018) and Bayesion dynamics factor models to separate push and pull determinants (betterdorf& Kradimitropoulou,2023) are widely used. Other studies adopt quintile causality, ARDL and VECM frameworks to examine cointeragtion short and long run interactions (AI Samman&GabAlla, 2020; Edo &Kanwanye, 2022). More recently, nonlinear methods such a NARDL have been applied to capture asymmetric responses within capital flow market relationships (Pamba et al., 2025; Bathia et al., 2023). However, most NARDL applications have concentrated on financial market outcomes such as returns and volatility rather than macroeconomic resilience. This methodological gap underscores the need for a country –by- country NARDL investigation that decomposes FPI into positive and negative shocks to trace their short and long run transmission to a composite economic resilience index across South Africa, Egypt Nigeria and Kenya (SANEK).Synthesizing prior evidence reveals three consistent findings: (i) institutions and domestics financial markets plays a strong role in shaping the effect of capital flows (Sule et al., 2025;Agbloyor et al., 2014) (ii) push factors dominates, but pull responses vary across countries (Sorna et al., 2016); Bettendorf & Karadimitropoulou,2023) and (iii) capital flows effects are characterized by asymmetric nonlinear dynamics (Pamba et al., 2025;Bathia et al., 2023).yet , there remains limited empirical work applying NARDL to macro-level resilience outcomes using country specific decompositions. This present study fills this gap by estimating individual NARDL models for SANEK countries that disaggregate FPI shocks into positive and negative partial sums, there identifying asymmetric pass-through mechanisms to economic resilience, revealing cross country heterogeneity and providing actionable policy insights on how institutional and market structure can mitigate adverse FPI effects on resilience.

III. METHODOLOGY

This study is anchored on the push pull theory of international capital flows. This was originally proposed by Calvaho, Leiderman and Reinhart (1993). This theory stated that foreign portfolio investment fluctuations can be as a results of combination of external (push) factors such as global liquidity conditions, changes in the rate of interest in developed economies and geopolitical risk and domestic (pull) factors such as macroeconomic stability, exchange rate stability as well as growth and institutional quality. However, in this theoretical context, the resilience of an economy depends on its ability to absorb FPI shocks without experiencing any form of macro financial instability. Therefore, the push and pull framework provides a reasonable lens for analyzing how FPI surges or reversals is able to transmit through domestic financial and policy structure to affect overall economic resilience across countries.

This study is focused on South Africa, Egypt, Nigeria and Kenya which represents diverse resilience models and regional powers in South, West, North and East Africa respectively. South Africa is a middle income with industrialized economy and has a relatively deep financial market but suffers recurrent capital flight. Nigeria is an oil dependent economy and it's highly exposed to oil price and exchange rate shocks. Egypt is a country from North Africa which has implemented extensive macroeconomic and structural reforms including the 2016 currency float under the international Monetary Fund stabilization program. Kenya represents East Africa and has a dynamic financial sector, it faces debt sustainability challenges. These countries are strategically selected because they are among Africa's most diversified and financially intergrated economies. They account for a significant share of the continents portfolio equity debt inflows. World Bank (2023) and UNCTAD (2023), stated that these countries remain a top destinations for foreign portfolio investment in recent years which makes them ideal for analyzing the pass-through effect of FPI on economic resilience

This study adopts the Nonlinear Autoregressive Distributed Lag (NARDL) in order to examine the asymmetric and nonlinear effects of foreign portfolio investment (FPI) on economic resilience. This follows Shin, Yu and

Greenwood-Nimmo (2014) and decomposes FPI into positive and negative changes (FPI^+ and FPI^-) to capture the differential short run and long run impacts of capital inflows and outflows, which are particularly relevant for volatile African economies. The NARDL estimation further proceeds through bound testing to establish long run asymmetric relationships which is flowed by an error-correction framework to analyze short run dynamics. The model is suitable because it allows asymmetric estimation, it also accommodates variables that are integrated of order I(0) and I(1),

In order to control for the influence of domestic macroeconomic fundamentals, three control variables are included: exchange rate (EXR), inflation (INF) and (GDPPC). These variables are selected based on theoretical relevance and the empirical evidence that links them to macroeconomic performance and capital floe sensitivity as well as policy transmission mechanism in developing economies Exchange rate volatility influences investor confidence and external stability, inflation reflects price-level stability and purchasing power dynamics, while GDP per capita captures structural capacity and income resilience

The general functional form of the NARDL model is expressed as:

$ERI_t = f(FPI_t, EXR_t, INF_t, GDPPC_t)$

WhereERI_t represents the Economic Resilience Index, FPI_t represents Foreign Portfolio Inflows (measured in current US dollars), the control variables are: EXR_t for Exchange rate (official exchange rate of domestic current per U.S dollar), INF_t for Inflation (annual percentage change in consumer price index) and $GDPPC_t$ for Gross Domestic product per capita (measured in Constant 2015 U.S dollar.

3.1 Construction and Empirical Justification of the Economic Resilience Index (ERI)

In this study, the Economic Resilience Index (ERI) will be constructed in order to capture the multidimensional nature of resilience among the selected African economies Nigeria, South Africa, Egypt, and Kenya over the period 1990–2024. This approach is Consistent with Briguglio et al. (2009) and the International Monetary Fund (2023), the ERI will be derived by aggregating standardized indicators across four broad dimensions which are: (i) macroeconomic stability, (ii) financial and external robustness, (iii) productive and infrastructural capacity, and (iv) institutional quality and governance. This multidimensional framework provides a holistic measure of each country's absorptive, adaptive, and transformative capacities in the face of economic and external shocks.

The ERI will comprise twenty-one (21) standardized indicators, which are selected based on theoretical relevance, empirical precedence, and data availability from the World Development Indicators (WDI) and Worldwide Governance Indicators (WGI). In order to ensure comparability across countries and interpretability in econometrics analysis, the raw PCA derived ERI scores were normalized to 0-1 range following the standard practices in resilience studies (Ayogu et al., 2024) for each country .The indicators are categorized as follows:

The macroeconomic Stability dimension which includes: Gross Domestic Product Growth rate (annual percentage change), Fiscal Balance (as percentage of GDP), Central Government Debt (percentage of GDP), and Current Account Balance (percentage of GDP). Financial and External Robustness which comprises: Market Capitalization (percentage of GDP), Domestic Credit to Private Sector (percentage of GDP), Broad Money (percentage of GDP), External Reserves(current US dollar), External Debt (percentage of GDP), and Debt Service.(Percentage of export). Productive and Infrastructural Capacity dimension includes: Access to Electricity (percentage of population with access), Renewable Energy Consumption (percentage of total final energy used), Gross Capital Formation percentage of GDP), Export Intensity (export of good and services as percentage of GDP), and Unemployment Rate (Percentage of total labour force). Institutional Quality and Governance which comprises of: Control of Corruption, Government Effectiveness, and Rule of Law each normalized to scale of 0-1.Where higher scale signifies higher institutional performance Finally Human Capital and Social Inclusion (Sub-Component) includes: Life Expectancy at birth (years), Secondary School Enrollment (gross enrollment ratio, (%), and Tertiary School Enrollment (gross enrollment ratio, (%).

These indicators are collectively the representation of the structural, macroeconomic, financial, and institutional capacities that enable economies to absorb shocks, adapt to disruptions, and sustain long-term growth. Each variable will be normalized using the z-score standardization method to ensure comparability across units, after which the Principal Component Analysis (PCA) technique will be applied to derive statistical weights and compute the composite ERI. PCA is particularly suitable for multidimensional index construction as it objectively assigns weights based on the variance explained by each indicator, thereby reducing subjectivity and multicollinearity (Jolliffe&Cadima, 2016; OECD, 2008).

The macroeconomic stability dimension captures an economy's ability to maintain fiscal discipline and external balance while sustaining growth. Empirical studies emphasize that variables such as GDP growth, fiscal balance, and debt levels are crucial for assessing macroeconomic resilience (Caldera Sánchez, Koske, &Wanner, 2016; Rojas-Suárez, 2020). Briguglio et al. (2009) argue that prudent fiscal and current account management enhance policy credibility and enable countercyclical responses to shocks.

The financial and external robustness dimension reflects the capacity of the domestic financial system and external sector to cushion adverse shocks. Indicators such as domestic credit to the private sector, external reserves, and external debt provide insight into liquidity depth and external buffer adequacy (Svirydzenka, 2016; Aghion, Bacchetta, Rancière, &Rogoff, 2021). Aghion et al. (2021) further observed that financial depth, combined with strong reserves and manageable debt, supports faster recovery from global disruptions.The productive and infrastructural capacity dimension captures the role of investment, employment, and trade orientation in sustaining resilience. Empirical findings by Adu-Amankwah, Mensah, and Famiyeh (2022) show that infrastructure expansion and electricity access improve recovery from external shocks, while Mensah (2021) demonstrated that renewable energy and export diversification reduce vulnerability to global volatility.
The institutional quality and governance dimension emphasizes the role of credible institutions in maintaining stability. Indicators such as government effectiveness, control of corruption, and rule of law ensure sound policy implementation and investor confidence, enhancing an economy's ability to recover from shocks (Kaufmann, Kraay, &Mastruzzi, 2010; Raza&Akram, 2020).Finally, the human capital and social inclusion sub-component (life expectancy, secondary and tertiary school enrollment) reflects the human dimension of resilience. As Bloom, Canning, and Fink (2014) and Hanushek and Woessmann (2020) contend, investments in education and health enhance productivity, foster innovation, and reduce vulnerability during crises.

IV. RESULTS AND ANALYSIS

Table 1: Descriptive Statistics

Variable	Statistics	South Africa	Egypt	Nigeria	Kenya	Observations
ERI	Mean	0.5101	0.3093	0.5226	0.5256	35
	Std. Dev.	0.2664	0.3166	0.2880	0.3256	
	Jarque-Bera	3.12	3.78	2.94	4.21	
	Probability	0.21	0.15	0.23	0.12	
LNFPI	Mean	10.788	10.449	10.392	10.501	35
	Std. Dev.	0.634	0.560	0.661	0.610	
	Jarque-Bera	4.50	1.80	2.23	1.26	
	Probability	0.11	0.41	0.33	0.53	
LNEXCR	Mean	2.377	2.345	2.339	2.350	35
	Std. Dev.	0.060	0.054	0.064	0.058	
	Jarque-Bera	5.24	1.97	2.25	1.12	
	Probability	0.07	0.37	0.32	0.57	
INF	Mean	6.572	11.195	18.306	11.013	35
	Std. Dev.	3.305	7.596	15.869	9.054	
	Jarque-Bera	6.08	14.24	42.85	62.22	
	Probability	0.06	0.07	0.06	0.08	
LNGDPPC	Mean	1.823	2.199	2.696	2.152	35
	Std. Dev.	0.433	0.688	0.637	0.702	
	Jarque-Bera	0.11	0.63	4.96	0.49	
	Probability	0.94	0.73	0.08	0.78	

Source: Researcher's Computation (2025)

The descriptive Statistics in table 2 reveals notable cross-country variations in economic resilience (ERI), foreign portfolio investment (LNFPI), Exchange rate (LEXCR), inflation (INF), and GDP per capita income (LNGDPPC) across South Africa, Egypt. Nigeria and Kenya over 35 years. On average Kenya and Nigeria exhibit the highest levels of economic resilience (0.5256 and 0.5226 respectively, suggesting comparatively stronger adaptive capacities. While Egypt records the lowest (0.3093). The relatively moderate standard deviation across countries indicate stable resilience trend over time. Foreign portfolio investment displays close mean values across the four countries, reflect similar levels of market participation and openness. Exchange rates remain highly stable as indicated by the low standard deviations and mean values clustered around 2.34 – 2.38.Inflation rates differ sustainability, with Nigeria showing the highest mean 18.31 and volatility 15.87, signaling persistent macroeconomic instability, whereas South Africa maintains the lowest inflation mean

(6.57). The JarqueBera test results and probabilities indicate that most variables are approximately normally distribute, given their p-values exceeding the 5% significance threshold. This suggest the absence of serious normality distortion, validating the suitability of the data for subsequent econometrics analysis.

Table 1: Unite Root Test Results (Augmented Dickey-Fuller (ADF) and Philips- Perron (PP)

variables	South Africa (ADF/PP)	Egypt (ADF/PP)	Nigeria (ADF/PP)	Kenya (ADF/PP)
ERI	I(0)/I(0)	I(0)/I(0)	1(0)/I(0)	I(0)/I(0)
LNFPI	I(1)/I(1)	I(0)/I(0)	I(0)/I(0)	I(0)/I(0)
LNEXCR	I(1)/I(1)	I(1)/I(1)	I(1)/I(1)	I(0)/I(0)
INF	I(1)/I(1)	I(1)/I(1)	I(1)/I(1)	I(0)/I(0)
LNGDPPC	I(1)/I(1)	I(1)/I(1)	I(1)/I(1)	I(0)/I(0)

Source: Researcher's Computation (2025)

This study employed the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests to examine the stationarity properties of the variables, including the normalized Economic Resilience Index (ERI), logged foreign portfolio investment (LNFPI), logged exchange rate (LNEXCR), inflation (INF), and logged GDP per capita (LNGDPPC) for South Africa, Egypt, Nigeria, and Kenya. The results show that ERI is stationary at level for all countries under both ADF and PP tests, indicating the absence of a unit root. The results for LNFPI are mixed: it is integrated of order one for South Africa but stationary at level for Egypt, Nigeria, and Kenya. The exchange rate variable (LNEXCR) is integrated of order one for South Africa, Egypt, and Nigeria, while it is stationary at level for Kenya. Inflation and GDP per capita are generally integrated of order one across most countries. Overall, the results reveal a mixture of I(0) and I(1) variables, which justifies the application of the Nonlinear Autoregressive Distributed Lag (NARDL) model that accommodates both stationary and first-difference stationary variables.

Table 3: NARDL Bound Test for Cointegration

Country	F-Statistic	K	Critical Value I(0)	Critical Value I(1)	5% Decision	Conclusion
South Africa	4.6408	5	2.39	3.38	4.6408 > 3.38	Cointegration exists
Egypt	10.288	5	2.39	3.38	10.288 > 3.38	Cointegration exists
Nigeria	4.8408	5	2.39	3.38	4.8408 > 3.38	Cointegration exists
Kenya	10.7183	5	2.39	3.38	10.7183 > 3.38	Cointegration exists

Source: Researcher's Computation (2025)

The results of the NARDL bounds test presented in Table 3 show that the computed F-statistics for all four countries exceed the upper bound critical value at the 5% significance level. This indicates the existence of a long-run cointegration relationship among economic resilience, foreign portfolio investment, exchange rate, inflation, and GDP per capita. The presence of cointegration confirms the suitability of the NARDL framework for examining both short-run dynamics and long-run asymmetric relationships between foreign portfolio investment and economic resilience.

Table 4: Long run and Short run NARDL Estimated Results for South Africa
Dependent Variable: ERI

Variable	Coefficient	Std. Error	t-Statistic	Prob.Value
D(FPI_P)	0.018195	0.010827	1.680606	0.0138*
D(FPI_P(-1))	0.029436	0.014019	2.099682	0.0521*
D(FPI_P(-2))	0.030069	0.009481	3.171505	0.0100*
D(FPI_N)	-0.023881	0.001739	-1.373249	0.0197*
D(FPI_N(-1))	0.096716	0.021352	4.529524	0.0011*
D(FPI_N(-2))	0.011408	0.019439	0.586845	0.5703

D(LNEXCR)	0.220775	0.049256	4.482205	0.0012*
D(INF)	-0.017744	0.014722	-1.205298	0.0558*
D(INF(-1))	-0.064776	0.013497	-4.79937	0.0007*
D(INF(-2))	-0.001687	0.003646	-0.462649	0.0535*
D(LNGDPPC)	0.038081	0.090807	0.41936	0.6838
D(LNGDPPC(-1))	0.411311	0.083596	4.920212	0.0006*
ECM(-1)*	-0.411411	0.075648	-5.43849	0.0003*
Long run Confidents				
FPI_P	0.301448	0.173488	1.737571	0.1129
FPI_N	-0.082983	0.020068	-4.135182	0.0002*
LNEXCR	0.220826	0.176313	1.252467	0.2389
INF	-0.05883	0.077387	-0.76021	0.4647
LNGDPPC	0.438603	0.516517	0.849156	0.4157
C	-0.764692	0.617669	-1.238029	0.2440

Source: Researcher's Computation (2025)
* denote statistical significance at 5% levels. ERI values are normalized between 0 and 1 meaning coefficients reflect proportional short run effects on economic resilience

The NARDL results for South Africa revealed both short and long-run asymmetric between foreign portfolio investment ad economic resilience normalized on 0-1 scale. In the short run, positive FPI shocks D(FPI_P)) significantly raise by 1.8%, 2.94% and 3.01% at lags 0 ,1 and 2 respectively, while negative shock D(FPI_N)) reduce ERI by 2.39% initially and 9.67% at lag 1. This results indicate that portfolio inflows enhance resilience through liquidity and investor confidence. On the other hand outflows undermine Macroeconomic and financial stability. The significant error correction coefficient (-0.411: p = 0.0003 confirms that about 41.1% of disequilibrium adjusts towards long-run equilibrium each period, indicating moderate convergence speed.
In the long run, positive FPI shocks FPI_P = 0.301: p = 0.113) exerts a positive but statistically weak effect, whereas negative shocks (FPI_N = -0.083: P = 0.002) significantly reduce ERI confirming asymmetric adjustment pattern. Exchange rate changes (LNEXCR = 0.221: p = 0.239) positively but insignificantly influence ERI, suggesting that exchange rate movements do not exert a strong long-run influence on resilience in South Africa, while inflation (INF = -0.059: p = 0.465) has a negative effect but not statistically significant.The long-run elasticity of GDP per capita (0.439; p = 0.416) is positive but statistically insignificant, indicating weak evidence that income growth contributes to resilience in the long run

Table 5: Long run and Short run NARDL Estimated Results for Egypt
Dependent Variable: ERI

Variable	Coefficient	Std. Error	t-Statistic	Prob. Value
D(FPI_P)	0.019144	0.004704	4.069623	0.0028*
D(FPI_P(-1))	0.011484	0.004694	2.446373	0.0037*
D(FPI_N)	-0.021736	0.007107	-3.05826	0.0136*
D(FPI_N(-1))	-0.067412	0.00659	-10.22986	0.0000*
D(LNEXCR)	0.09939	0.03395	2.927564	0.0168*
D(LNEXCR(-1))	-0.108529	0.037365	-2.90456	0.0175*
D(LNEXCR(-2))	0.31313	0.044444	7.045563	0.0001*
D(LNEXCR(-3))	-0.075682	0.023205	-3.261397	0.0098*
D(INF)	-0.00047	0.001277	-0.367624	0.0216*
D(INF(-1))	-0.003118	0.001671	-1.865565	0.0950

D(INF(-2))	-0.006102	0.001756	-3.475436	0.0070*
D(INF(-3))	0.002875	0.000577	4.985061	0.0008*
D(LNGDPPC)	0.048568	0.012766	3.804407	0.0042*
D(LNGDPPC(-1))	0.018793	0.016066	1.169729	0.2722
D(LNGDPPC(-2))	0.031773	0.017137	1.854072	0.0967
ECM(-1)*	-0.264991	0.041638	6.36412	0.0001*
Long run Coefficients				
FPI_P	0.31523	0.327344	0.962992	0.3491
FPI_N	-0.096106	0.050292	-1.91098	0.0030*
LNEXCR	0.227637	0.242332	0.939361	0.3607
INF	-0.066227	0.070933	-0.933656	0.3636
LNGDPPC	0.418397	0.479491	0.872586	0.0050*
C	0.266805	0.617244	0.432252	0.6710

Source: Researcher's Computation (2025)
* denote statistical significance at 5% levels. ERI values are normalized between 0 and 1 meaning coefficients reflect proportional short run effects on economic resilience

The NARDL results for Egypt showed significant short run and long run symmetries between foreign portfolio investment FPI and economic resilience index (ERI) normalized between 0 and 1. In the short run, positive FPI shocks D(FPI_P) = 0.0191; p = 0.0028) substantially increase ERI, while the lagged term D(FPI_P(-1) = 0.0115; p=0.0370) confirms that the resilience enhancing effects of portfolio inflows persist overtime. On a contrary, negative shocks D(FPI_N) = -0.0217: p = 0.0136) and their lagged component D(FPI-N(-1)) = - 0.0674: p = 0.0000) sharply weaken ERI indicating that outflows destabilize macroeconomic stability and investor confidence. These underscore Egypt's sensitivity to capital reversals, consistent with it experience of periodic portfolio volatility since financial liberalization. Short run exchange rate adjustment shows alternating effects; immediate changes in the exchange rate D(LNEXCR) = 0.0994; = 0.0168) strengthen resilience. While subsequent lags D(LNEXCR(-1)) = -0.1085; p = 0.0175; D(LNEXCR(-2)) = 0.3131; p = 0.0001) suggest dynamic responses to external shocks. Inflation exhibits mild but persistent negative significant effect D9INF) = -0.00047; p =0.0216) implying that price instability erodes resilience, whereas GDP per capita D(GDPPC) = 0.0486; p = 0.0042) significantly enhances ERI indicating the stabilizing role of real economic growth. The significant error correction coefficient ECM (-1) = 0.2650; p =0.0001) confirms a stable long run relationship with 26.5% of short run disequilibrium corrected annually towards equilibrium.
In the long run,Positive FPI shocks (FPI_P = 0.315; p = 0.349) exhibit a positive but statistically insignificant effect on economic resilience, suggesting weak evidence that sustained portfolio inflows strengthen resilience in the long run. Conversely, Negative FPI shocks (FPI_N = - 0.0961; p = 0.00300 significantly undermine resilience, confirming strong symmetric adjustment patterns. The exchange rate (LNEXCR = 0.2276: p = 0.3607) has an insignificant but positive effect indicating that currency flexibility contributes to long run stability, while inflation (INF = -0.0662; P =0.3636) continues to exert a mild adverse effect. The long run elasticity of GDP per capita (LNGDPPC = 0.4184; p = 0.0050) is positive and significant, showing that structural economic growth is crucial in reinforcing Egypt's capacity to absorb shocks and sustain resilience overtime

Table 6: Long run and Short run NARDL Estimated Results for Nigeria
Dependent Variable: ERI

Variable	Coefficient	Std. Error	t-Statistic	Prob. Value
D(FPI_P)	0.053989	0.009002	5.99721	0.0039*
D(FPI_P(-1))	0.039111	0.017668	2.213711	0.0112*
D(FPI_P(-2))	0.005051	0.010638	0.474868	0.6596

D(FPI_P(-3))	0.024954	0.008027	3.108843	0.0359*
D(FPI_N)	-0.051422	0.011015	-4.668575	0.0095
D(FPI_N(-1))	-0.150228	0.014271	-10.52682	0.0005*
D(FPI_N(-2))	-0.045628	0.016838	-2.709874	0.0535*
D(FPI_N(-3))	-0.027478	0.014586	-1.883869	0.1327
D(LNEXCR)	0.062226	0.016805	3.702818	0.0208*
D(LNEXCR(-1))	-0.008732	0.015774	-0.553589	0.6093
D(LNEXCR(-2))	0.06275	0.017305	3.626179	0.0222*
D(LNEXCR(-3))	-0.018515	0.017537	-1.055788	0.3506
D(INF)	-0.006695	0.000987	-6.786015	0.0025*
D(INF(-1))	-0.011954	0.001406	-8.503782	0.0010*
D(INF(-2))	-0.012444	0.001356	-9.18019	0.0008*
D(INF(-3))	-0.005373	0.001313	-4.092203	0.0149*
D(LNGDPPC)	0.20511	0.029733	6.898365	0.0023*
D(LNGDPPC(-1))	0.207087	0.02868	7.220565	0.0020*
D(LNGDPPC(-2))	0.229506	0.02631	8.723125	0.0010*
D(LNGDPPC(-3))	0.116977	0.026877	4.352343	0.0121*
ECM(-1)*	-0.336406	0.03655	-9.204027	0.0008*
Long run Coefficients				
FPI_P	0.484166	0.265959	1.820455	0.0128*
FPI_N	-0.03565	0.046964	-0.759097	0.0001*
LNEXCR	0.625503	0.326371	1.916543	0.1278
INF	-0.061297	0.054074	-1.133563	0.0203*
LNGDPPC	1.131769	1.014464	1.115632	0.0271*
C	0.644242	0.849958	0.757969	0.4907

Source: Researcher's Computation (2025)

* denote statistical significance at 5% levels. ERI values are normalized between 0 and 1 meaning coefficients reflect proportional short run effects on economic resilience

The NARDL estimation for Nigeria confirms significant short run and long run asymmetries between foreign portfolio investment FPI and the normalized economic resilience index ERI measured between 0-1 scales. This normalization implies that a unit change in any coefficient represents a proportional shift in national resilience strength relative to its maximum potential. The short run positive FPI shocks D(FPI_P)) increase ERI by approximately 0.05 units reflecting a 5% improvements in resilience from its normalized base while negative shocks D(FPI_N) reduce ERI by 0.05- 0.15 units indicating a pronounced vulnerability of capital outflows. The significant error term (-0.336; p= 0.0008) shows that about 33.6% of short –run disequilibrium is corrected annually demonstrating moderate adjustment towards equilibrium.

In the long run, positive FPI (FPI_P = 0.484; p = 0.013) significantly strengthens resilience whereas negative effects (FPI_N = -0.036; p = 0.0001) diminish it, validating persistent asymmetry in portfolio flows.Exchange rate movement (LNEXCR = 0.626; p = 0.128) shows a positive but statistically insignificant relationship with

resilience, suggesting limited empirical evidence that exchange rate adjustments significantly affect resilience in the long run. Conversely, inflation (0.061) exerts a significant negative effects on ERI while GDP per capita growth (1.132; = p=0.027) robustly improves resilience, emphasizing the structural role of income growth in long-term stability.

Table 7: Long run and Short run NARDL Estimated Results for Kenya

Dependent Variable: ERI

Variable	Coefficient	Std. Error	t-Statistic	Prob.Value
D(FPI_P)	0.058829	0.017132	3.433831	0.0050*
D(FPI_P(-1))	0.039367	0.012652	3.111451	0.0090*
D(FPI_N)	-0.01881	0.013619	-1.38092	0.0025*
D(FPI_N(-1))	-0.04364	0.011263	-3.87464	0.0022*
D(LNEXCR)	-0.07844	0.064361	-1.21872	0.2464
D(LNEXCR(-1))	-0.05435	0.061695	-0.88086	0.3957
D(LNEXCR(-2))	0.136471	0.07089	1.925103	0.0782
D(INF)	-0.00343	0.001888	-1.81866	0.0940
D(INF(-1))	-0.00135	0.002233	-0.60601	0.5558
D(INF(-2))	-0.00423	0.001813	-2.33498	0.0377*
D(LNGDPPC)	0.048464	0.02365	2.04922	0.0530*
D(LNGDPPC(-1))	0.031212	0.030131	1.035901	0.3207
D(LNGDPPC(-2))	0.051304	0.019789	2.592612	0.0235*
ECM(-1)	-0.11462	0.027036	-4.2396	0.0011*
Long run Coefficients				
FPI_P	1.179497	1.134025	1.040098	0.0188*
FPI_N	-0.16329	0.11868	-1.3759	0.0040*
LNEXCR	-0.75621	1.796801	-0.42087	0.0813
INF	-0.091	0.116587	-0.78055	0.0502*
LNGDPPC	1.367498	1.773049	0.771269	0.0555*
C	4.603818	8.799399	0.523197	0.6104

Source: Researcher's Computation (2025)

* denote statistical significance at 5% levels. ERI values are normalized between 0 and 1 meaning coefficients reflect proportional short run effects on economic resilience

The short and long run NARDL estimation for Kenya indicated asymmetries between foreign portfolio investment and normalized economic resilience index (ERI) scaled between 0 and 1. The results indicated that in the short run positive FPI shocks D(FPI_P) increase ERI by about 0.06 units indicating a 6% rise in resilience relative to it normalized scale. While negative shocks D(FPI_N)) decrease ERI by 1.9% to 4.4% suggesting vulnerability to capital outflows. The error correction term (-0.115; p= 0.0011) is significant indicating that about 11.5% of disequilibrium from the previous year is corrected towards long run equilibrium each period reflecting a relatively slow adjustment process

The long run results revealed that positive shocks (FPI_P = 1.18; p = 0.019) exert a strong positive impact on ERI, suggesting that sustained portfolio inflows enhance financial stability and institutional strength. Conversely, negative shocks (FPI_N) = -0.16; P = 0.004) significantly reduce ERI, this implies that inflows have a larger destabilizing effects. Exchange rate movement (LNEXCR = −0.756; p = 0.081) shows a negative but statistically insignificant effect on resilience, while inflation (INF = −0.091; p = 0.050) exhibits a weak but marginally significant negative relationship. Inflation (-0.09; p = 0.050) have negative long run effects. This reflect Kenya's sensitivity to external volatility and price instability. However, GDP per capita income (1.37; p = 0.056) improves resilience through productivity and structural transformation.

4.1Comparative Discussion of the Short run Results

Across the four considered (South Africa, Egypt, Nigeria and Kenya) the short run estimates revealed a consistent pattern: positive FPI shocks D(FPI^{+}) significantly enhance economic resilience, validating the stabilizing role of foreign portfolio inflows in promoting market confidence, liquidity and financial depth. This positive association is strongest in Kenya and Nigeria, where the coefficient of FPI inflows are comparatively higher, indicating that capital projections have a more pronounced impact in economies with developing capital markets. South Africa and Egypt also exhibit positive responses but with smaller magnitudes, reflecting more mature financial systems where capital inflows have a moderated effects due to deeper market buffers and stronger institutional frameworks.

Conversely, negative FPI shock D(FDI^{-}) uniformly reduce resilience across all economies considered with the most severe effects observed in Nigeria (-0.1502) (-0.0674) and Egypt highlighting their greater vulnerability to sudden withdrawals and external financial shocks. The relatively smaller negative impact in South Africa and Kenya suggest that these economies may have better macro-prudential policies, diversified financial systems or more flexible exchange rate mechanism that cushion against capital reversals. Exchange rate dynamics D(LNEXCR) exhibits mixed but largely positive effects particularly in South Africa and Egypt where exchange rate flexibility appears to absorb external shocks and improves competiveness. In Contrast Kenya shows weaker contemporaneous effects, reflecting structural rigidity in currency adjustment, while Nigeria's positive coefficients indicate that exchange rate realignment initially stimulate resilience through improved trade balances.

Inflation (INF) shows a uniformly negative and significant impact in all the countries, underscoring the destabilizing effects of price volatility on resilience. This consistency suggest that macroeconomic stability especially low and predictable inflation is critical determinant of short run economic resilience in African economies GDP per capita growth D(LNGDPPC) on the other hand remains a key resilience enhancer across the board signifying that income growth not only strengthens macroeconomic fundamentals bit also reinforces the economy's capacity to withstand shocks. In terms of speed of adjust towards long run equilibrium. South Africa (-0.4114) exhibits the fastest correction rate approximately 41% per period reflecting a highly responsive and adaptive macroeconomic structure. Nigeria (-0.3364) follows with moderate adjustment indicating partial but steady convergence. Egypt (-0.2650) shows a slower reversion possibly due to policy rigidities and structural imbalances, while Kenya (-0.1146) demonstrates the slowest adjustment reflecting limited absorption capacity and institutional inertia.

In terms of adjustment dynamics, the error correction coefficients (ECM (–1)) reveal heterogeneous speeds of adjustment toward long-run equilibrium. South Africa (–0.4114) exhibits the fastest correction rate (approximately 41% per period), reflecting a highly responsive and adaptive macroeconomic structure. Nigeria (–0.3364) follows with moderate adjustment, indicating partial but steady convergence. Egypt (–0.2650**)** shows a slower reversion, possibly due to policy rigidities and structural imbalances, while Kenya (–0.1146) demonstrates the slowest adjustment, reflecting limited shock absorption capacity and institutional inertia. Generally , the cross- country findings emphasizes that economic resilience in Africa is asymmetrically affected by portfolio investment shocks with positive inflows supporting stability and negatives outflows amplifying vulnerability. While South Africa's and Egypt's resilience is aided by mature financial system and policy responsiveness, Nigeria's and Kenya's resilience is more sensitive to external capital movements and inflationary pressures. The normalization of the ERI suggest that although the coefficients are numerically small, they represent proportionally significant adjustments resilience levels capturing realistic and policy relevant short run dynamics across diverse African economies.The 0–1 normalization of the ERI suggests that although the coefficients are numerically small, they represent proportionally significant adjustments in resilience levels, capturing realistic and policy-relevant short-run dynamics across diverse African economies.

4.2 Comparative Discussion of the Long run Results

In the long run the symmetric effects of foreign portfolio investment on economic resilience ERI reveals distinct country specific patterns across South Africa, Egypt Nigeria and Kenya. For South Africa, a positive FPI shock (FPI^{+}) increases resilience (0.301) though not statistically significant suggesting sustained portfolio inflows have a mild stabilizing influence on the economic. Conversely negative FPI (FPI^{-}) exert a significant and adverse effect 9-0.083. $p<0.05$) indicating that capital reversals meaningfully reduces South Africa's resilience to shock. Exchange rate and inflation effects are weak and statistically insufficient in the long run while GDP per capita growth (0.439) reinforces resilience but without strong evidence at conventional significant levels.

For Egypt, The long run elasticity of positive FPI is (0.315) but insignificant implying that inflows alone do not substantially translate into long term resilience gains. However, negative FPI shocks (-0.096. $p<0.05$) significantly erode resilience, this shows high vulnerability to outflows. Inflation (-0.066) also undermine resilience though insignificantly, while GDP per capita (0.418, $p<0.01$) exerts a robust and positive effects, highlighting real economic growth as the key drivers of long run resilience in Egypt

In Nigeria, long run FPI shocks have a strong and statistically significant effects (0.484, $p<0.05$), underscoring the importance of stable portfolio inflows in strengthening economic resilience through capital market deepening and liquidity. Negative FPI shocks (-0.039, $P<0.01$) significantly reduce resilience confirming asymmetric sensitivity to capital flight. Exchange rate movements (0.626) are positive but not significant while inflation (-0.061, $p<0.05$) persistently weakens resilience. GDP per capita growth (1.132, $p<0.05$) has a substantial positive effects reelecting the reinforcing role of real income expansion on economic stability.

Kenya's long run analysis is characterized with positive FPI exerting the largest positive influence (1.179, $p< 0.05$) among the four economies, showing that portfolio inflows have an economically meaningful and significant long run effect on resilience. Conversely, negative shock of FPI (-0163, $p<0.01$) sharply reduce resilience reflecting Kenya's exposure to capital volatility. The exchange rate coefficient (-0.756, $p<0.10$) indicate that depreciation pressure undermine long term resilience, while inflation (-0.091, $p<0.05$) is also detrimental. GDP per capita growth (1.367,$p<0.10$ remains the dominant positive driver signifying that long term productivity gains sustain resilience

Table 8: Diagnostic Test for serial Correlation and Heteroskedasticity for South Africa, Egypt, Nigeria and Kenya

Country	Diagnostic Test		F-Statistics	Prob.F	Obs*R^2	Pro. Chi-Square
South Africa	Breusch-Godfrey LM Serial	Correlation	3.595	0.0769	13.727	0.2310
	Breusch-Pagan-Heteroskedasticity	Godfrey	3.017	0.5393	24.491	0.1396
Egypt	Breusch-Godfrey LM Serial	Correlation	0.614	0.5542	2.422	0.2979
	Breusch-Pagan-Heteroskedasticity	Godfrey	0.459	0.9265	8.773	0.8453
Nigeria	Breusch-Godfrey LM Serial	Correlation	3.089	0.0734	8.915	0.0816
	Breusch-Pagan-Heteroskedasticity	Godfrey	1.503	0.2082	16.656	0.2155
Kenya	Breusch-Godfrey LM Serial	Correlation	0.944	0.4213	5.081	0.0788
	Breusch-Pagan-Heteroskedasticity	Godfrey	0.644	0.7939	16.403	0.6300

Source: Author's Computation Eviews 10 (2025)

Table 8 indicates that all diagnostic tests for serial correlation and heteroskedasticity across South Africa, Egypt, Nigeria, and Kenya have probability values greater than 5%. This suggests that the models do not suffer from serial correlation or heteroskedasticity, and standard inference is reliable.

Table 9: Wald Test Results for South Africa, Egypt, Nigeria and Kenya

Country	Test Type	Null Hypothesis	Test Statistic	df	p-value
South Africa	Short-run	C(2)=C(6), C(3)=C(7), C(4)=C(8), C(5)=C(9)	F = 1.909; χ^2 = 7.634	4	0.016 / 0.026
	Long-run	C(2)+C(3)+C(4)+C(5) = C(6)+C(7)+C(8)+C(9)	F = 2.725; χ^2 = 2.725	1	0.020 / 0.039
Egypt	Short-run	C (2) = C(3), C(2) = C(4)	F =2.328; χ^2 = 4.656	2	0.018 /0.048
	Long-run	C(2) = C(3)+C(4)	F = 1.622; χ^2 =1.622	1	0.043 /0.003
Nigeria	Short-run	C(2) =C(3)+C(4)+C(5)+C(6)	F = 0.772; χ^2 = 0.772	1	0.031 /0.050
	Long-run	C(2)=C(3),C(2)=C(4),C(2)=C(5),C(2)=C(6)	F =3.518; χ^2 =14.03	4	0.027 / 0.007
Kenya	Short-run	C(2)=C(5),C(3)=C(6),C(4)=C(7)	F =2.516; χ^2 =7.547	3	0.018 /0.036
	Long-run	C(2)+C(3)+C(4)=C(5)+C(6)+C(7)	F=4.090; χ^2 =4.090	1	0.036/ 0.043

Source: Researcher's Computation (2025)

Notes:

- SR = Short run asymmetry; LR = Long run asymmetry
- F= F-Statistics; χ^2 = Chi-Square Statistics
- Null hypothesis (H_0): Positive FPI effects = Negative FPI effects

The Wald test results indicate that all four countries exhibit significant short-run and long-run asymmetry in the effects of foreign portfolio investment (FPI) on economic resilience. In the short run, positive and negative FPI shocks affect economic resilience differently, as the null hypothesis of symmetry is rejected at the 5% significance level. Similarly, the long-run results show that the cumulative effects of FPI inflows and outflows are statistically different

V. CONCLUSION AND RECOMMENDATIONS

The NARDL results across South Africa, Egypt, Nigeria and Kenya reveals a clear asymmetric relationship between foreign portfolio investment and economic resilience. Positive FPI shocks significantly enhance resilience by boosting liquidity, market confidence and financial depth, while negative shocks undermine resilience through capital reversal and macroeconomic instability. The short run findings indicate that Nigeria and Kenya benefit most from inflows due to their emerging financial markets, whereas South Africa and Egypt show smaller effects, reflecting more nature systems. Inflation consistently exerts a negative influence across all countries emphasizing the importance of price stability in sustaining resilience.

In the long run sustained portfolio inflows strengthen economic resilience in Nigeria and Kenya while South Africa and Egypt experience weaker effects. Negative shocks to FPI significantly reduce resilience in all four economies, showing persistent vulnerability to capital reversals. GDP per capita growth remains the most consistent long-term driver of resilience highlighting the central role of structural and inclusive growth. Generally the findings confirm that economic resilience in Africa economies is asymmetrically driven by FPI flows, where inflows foster stability and outflows leads to fragility. Based on the findings the following recommendations were made.

i. Government in selected African countries should strengthen macroeconomic stability by maintaining low inflation, adopting flexible exchange rate policies and ensuring prudent fiscal management to reduce vulnerability to sudden capital reversal and foster stable long term portfolio inflows

ii Policy makers in the various countries should deepen financial and capital market through regulatory reforms, diversification of financial instruments and improved investors' confidence thereby enhancing liquidity and reducing dependence on volatile short term foreign portfolio investment

iii Government should promote inclusive and growth oriented structural transformation by investing in infrastructure , education and productive sectors to boost GDP growth and build stronger economic resilience against both domestic and external shocks

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