

Impact of Foreign Exchange Risk on the Performance of Global Portfolios

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Abstract

Nigerian investors diversifying into international markets face a significant obstacle in the form of foreign exchange risk, but there is a startling lack of empirical data on its effects. This study closes this gap by carefully examining the impact of Naira volatility (NGN/USD, NGN/GBP, and NGN/EUR) on the risk-adjusted performance of international portfolios. We use comparative hedging simulations and multivariate regression using monthly data from 2010–2023, which includes Nigeria's 2016 capital liberalisation, several currency crises, and the 2023 Naira float. Key findings show that oil price fluctuations and inflation discrepancies increase losses, and that a 1% increase in forex volatility lowers real risk-adjusted returns (Sortino ratio) by 0.62% ($p < 0.001$). Importantly, despite transaction costs, forward contracts through Nigeria's Investors' & Exporters' window prove to be the best hedge, providing net returns during crises that are 10.8 percentage points higher than unhedged portfolios. Currency diversification provided only moderate protection. According to these findings, Nigerian international investors' underlying asset performance is dominated by forex risk, necessitating management that is given top priority. To turn currency risk from a vulnerability into a managed variable, we advise SEC Nigeria to require real-Naira return disclosures, CBN reforms to expand derivatives markets, and systematic forward hedging for at least 50% of exposure.*

Keywords: *Foreign exchange risk, Nigerian investors, global portfolios, currency hedging, portfolio performance,*

Introduction

Nigerian investors now have greater access to the world of international investing thanks to the Central Bank of Nigeria's (CBN) 2016 capital account liberalisation reforms. Through the facilitation of outbound investment flows, these reforms made it possible to participate in Eurobonds, UK gilts, and foreign equity markets, such as U.S. tech stocks (CBN, 2019; Afrinvest, 2023). For investors in emerging markets, international portfolio diversification has historically offered higher returns and risk reduction (Solnik, 1974; Adeoye & Yusuf, 2021). A persistent aberration, however, has upset the typical expectation of portfolio growth through global exposure: the erosion of returns via foreign exchange (forex) risk. During currency crises, as was the case with the 2016 and 2023 devaluations, the Nigerian naira's volatility—caused by changes in the price of oil, inflation, and capital controls—turns gains denominated in foreign currencies into losses denominated in naira (World Bank, 2023; IMF, 2024).

Investors and policymakers have taken action to stop this anomaly. In order to improve liquidity, the CBN created the Investors' & Exporters' (I&E) forex window in 2017 and implemented forward contracts in 2021 (CBN, 2021). Simultaneously, Nigerian asset managers increasingly adopted currency-hedged funds and diversification into non-USD assets (PwC Nigeria, 2022). Forex risk is still a serious concern in spite of these initiatives. Inflation differences (Nigeria: 24.1% vs. US: 3.4% in 2023) made conversion losses worse (NBS, 2023; U.S. BLS, 2023), and unhedged portfolios lost 22% during the 2023-naira float, wiping out gains from global equities (Abdullahi et al., 2024).

Forex risk has been widely recognised in the literature as a factor influencing portfolio performance in both developed markets (Lucas & Sercu, 2020) and emerging economies, such as South Africa (Van der Merwe, 2021). However, research on Nigeria mostly ignores investor-level portfolio dynamics in favour of macroeconomic forex exposure (Aliyu, 2018) or corporate hedging (Okafor, 2022). There aren't many empirical studies that compare hedging strategies (forwards, options, and diversification) in the context of high inflation in Nigeria or quantify the direct effects of naira volatility on risk-adjusted returns. According to Onyeagwu (2023), "Investors navigating global markets with fragmented risk mitigation strategies due to the absence of Nigeria-specific frameworks." Both retail investors and financial regulators find it difficult to make evidence-based decisions as a result of this disparity.

This study assesses hedging options and looks into how forex risk affects the international portfolios of Nigerian investors. It seeks to compare how well forwards, options, and currency diversification mitigate losses, measure the relationship between naira volatility and risk-adjusted returns, and suggest scalable investor and policy strategies. How naira volatility impacts risk-adjusted returns and which hedging techniques maximise returns under Nigeria's particular macroeconomic constraints are the research questions.

This work is significant in many ways. It offers data-driven hedging frameworks to investors in order to protect returns. It informs investor protection guidelines and forex market reforms for policymakers (CBN, Securities and Exchange Commission). By putting theoretical models (like the International CAPM) to the test in Nigeria's high-volatility environment, it advances the academic literature on international finance with an emphasis on Africa. From 2010 to 2023, the scope covers Nigerian investments in publicly traded stocks and sovereign bonds in the US, UK, and Eurozone, covering both pre- and post-liberalization regimes as well as several naira crises.

This study gives stakeholders the tools they need to turn forex risk from a constant vulnerability into a controllable variable by filling in empirical gaps and contextualising solutions.

Literature Review

Conceptual Clarification

Foreign exchange risk

Foreign exchange risk, often oversimplified as the potential loss due to currency fluctuations, is crucial for Nigerian investors navigating erratic international markets. It is defined as transaction exposure, or the negative impact of exchange rate fluctuations on settled or future cash flows in foreign currencies (Shapiro, 2023). This perspective, prevalent in corporate finance, is based on contractual duties like Eurobond coupons or dividend payments from US stocks. If the NGN/USD exchange rate declines, Nigerian investors may receive less Naira for converting \$10,000 in dividends (Abdullahi & Bala, 2024).

The definition of "translation exposure" is limited due to its transactional nature and overlooking the ongoing revaluation of unreal portfolio holdings. This is a significant issue for equity investors holding assets for appreciation rather than income. Translation exposure, or accounting exposure, is the risk that changes in exchange rates can distort the consolidated book value of foreign assets when converted into the investor's home currency (Madura, 2022). This is particularly important for Nigerian mutual funds or pension managers using IFRS. Detractors argue this is a fabricated "accounting illusion" reflecting reporting practices rather than real economic loss (Bodie et al., 2021, p. 812).

Economic exposure refers to the long-term impact of exchange rates on an investor's competitive position and future cash flows due to macroeconomic changes (Eun & Resnick, 2021). This includes the impact of naira depreciation on foreign investments and the appeal of US versus Eurozone assets (Sanusi, 2023). However, this definition is ambiguous and may compromise the study's emphasis on quantifiable portfolio returns (Eun & Resnick, 2021).

Integrated financial exposure views forex risk as a dynamic interaction between market, interest rate, and sovereign risks. Nigerian investors face challenges in addressing naira volatility, which is often exacerbated by capital controls, oil price shocks, and domestic inflation (CBN, 2023; IMF, 2024). The transaction exposure lens underestimates the mark-to-market reality of international portfolios and may confuse accounting results with actual wealth erosion (Ahmed, 2023).

Forex risk is defined as the possibility that unfavorable changes in exchange rates, particularly NGN/USD, NGN/GBP, and NGN/EUR, may reduce the realised risk-adjusted returns of Nigerian investors' international portfolios through direct conversion losses, indirect effects on asset valuations, and interactions with macroeconomic volatility at home.

Portfolio performance

Portfolio performance is a complex concept that requires careful examination, especially in the context of Nigerian investments' unstable position in international markets. Traditional methods, such as absolute nominal returns, are often used to measure performance, but they overlook the complex realities faced by investors in cross-border investing (Brealey et al., 2020). For example, a 15% USD return can result in a negative Naira return after considering a 25% NGN depreciation. This definition is narrow and ignores currency conversion, which is a fundamental component of forex risk.

A more advanced method, the Sortino or Sharpe ratio, is used to measure risk-adjusted returns, which recognizes that high returns at excessive risk are gambling rather than true performance

(Bodie et al., 2021). However, traditional risk measures often fail to capture tail risks common in emerging markets, such as abrupt devaluations of the Naira or capital controls (Ahmed, 2024). Additionally, these ratios often assume normally distributed returns, which is often violated during currency collapses (Okafor & Eze, 2022).

A third viewpoint, which is common in academic finance, conceptualises performance using attribution based on factors. According to Fama and French (2015) and Asness et al. (2024), this breaks down returns into exposures to systematic risk factors such as market beta, size, value, momentum, and, increasingly, currency factors. Deliberate factor tilts (value stocks, for example) or inadvertent currency bets may be the cause of a portfolio outperforming its benchmark. This definition is useful for diagnosis, but it has real-world implications for Nigerian investors. There is a lack of trustworthy factor data for Nigeria, and when domestic inflation (which averaged 17.5% between 2020 and 2023, according to NBS, 2024) interacts with foreign exchange fluctuations, it becomes difficult to separate the pure "currency factor" contribution. Sanusi (2023) contends that the application of developed-market factor models to high-inflation, forex-constrained environments, such as Nigeria, runs the risk of misattribution and may obscure the real drag of systemic forex instability.

Lastly, a growing corpus of research highlights the preservation of real (inflation-adjusted) and realised (post-tax, post-cost) wealth as the most important performance indicator, particularly for long-term investors (Siegel, 2022). As a result, attention is diverted from short-term market values to the investor's actual preserved and available purchasing power. This means that Nigerians who invest overseas must first convert their foreign exchange gains back into Naira and then account for the country's consistently high inflation rate. Following conversion and inflation, a USD gain may be positive nominally and in USD real terms but negative in Naira real terms. When conversion costs, taxes, and 22% average inflation were taken into account, many retail investors' nominal USD gains from 2022–2023 turned into real Naira losses of more than 10%, according to the Nigerian SEC (2023). The harsh fact that performance is pointless if it doesn't boost the investor's long-term purchasing power is addressed by this definition.

By neglecting the catastrophic effects of Naira depreciation, relying only on absolute nominal returns—particularly in foreign currencies—fundamentally misrepresents the outcomes for Nigerian investors. Despite being better, risk-adjusted metrics need to be carefully modified to take into consideration the tail risks and non-normality present in Nigeria's forex market shocks. Although factor attribution has the ability to diagnose problems, it is limited by data and the particular way that currency risk and domestic macro instability interact. Despite its comprehensive approach, the wealth preservation lens requires detailed information on the tax status and transaction costs of individual investors, which may be unfeasible for aggregate analysis. Most importantly, every definition runs the risk of ignoring behavioural aspects: during forex crises, decisions like panic selling are influenced by performance perception, which increases losses (Abdullahi & Bala, 2024).

The real (inflation-adjusted), Naira-denominated, risk-adjusted return that Nigerian investors realise on their international portfolios, taking into account the effects of volatility and foreign exchange conversion costs, is the conceptualisation of portfolio performance for this study. It is measured using metrics that are susceptible to tail events and downside risk.

Theoretical Framework

The International Capital Asset Pricing Model (ICAPM)

The International Capital Asset Pricing Model (ICAPM) is a theoretical framework that examines the relationship between foreign exchange risk and the performance of Nigerian global portfolios. It was developed by Solnik in (1974) to account for the complexity of international investing, where investors hold diversified portfolios across multiple currencies and are subject to both market and currency risk. The ICAPM asserts that investors should receive compensation for their exposure to other risk factors, including foreign exchange risk, in addition to systematic market risk (Solnik, 1974; Adler & Dumas, 1983).

The model is based on several important assumptions, such as global capital markets being completely integrated, investors having uniform expectations regarding asset returns and currency fluctuations, and the assumption that purchasing power parity (PPP) holds consistently. However, these assumptions are often broken in practice, and the model assumes no taxes, transaction fees, or capital controls, making borrowing and lending risk-free worldwide.

The ICAPM's foundational assumptions and empirical validity have been challenged by critics, who argue that the assumption of perfect market integration is undermined by widespread market segmentation, capital controls, information asymmetries, and home bias (Abdullahi et al., 2022).. This infraction suggests that fluctuations in exchange rates affect competitiveness and real returns, generating a separate source of risk that the straightforward forex premium term cannot adequately account for (Rogoff, 1996).

Despite these objections, the ICAPM still has significant theoretical and empirical support, especially when it comes to describing cross-border portfolio returns. Proponents like De Santis and Gérard (2017) and Carrieri et al. (2020) argue that the trend towards globalization has strengthened market ties, making global risk factors more significant. They contend that the ICAPM serves as a vital benchmark even in the face of market deviations and offers the most cogent normative framework for understanding how forex risk should be priced in an integrated world.

Critics argue that the International Capital Markets Approach (ICAPM) has limitations, particularly in frontier markets like Nigeria. However, the ICAPM's basic theoretical insight that forex risk is a systematic, potentially priced factor affecting the required returns of internationally held assets remains relevant and empirically supported. The model's integrative focus aligns with the growing involvement in international markets since 2016 liberalisation (Afrinvest, 2023). The failure of PPP amplifies the importance of forex risk as a driver of real returns for Nigerian investors.

The main variables and relationships in this study are explained directly by the ICAPM. Currency risk manifests as foreign exchange volatility, specifically changes in NGN/USD, NGN/GBP, and NGN/EUR. The model predicts a positive correlation between an asset's sensitivity to forex risk factor and the expected return Nigerian investors demand. However, unexpected negative forex movements can harm realised portfolio performance.

Applying the ICAPM to this work involves treating forex volatility as a systematic risk factor, empirically testing its relationship with realised risk-adjusted Naira portfolio returns, and framing hedging strategies as ways to manage the portfolio's exposure to this systematic forex risk factor. The ICAPM supports the hypothesis that times of increased Naira volatility will be linked to lower realised returns for unhedged Nigerian global portfolios.

Empirical Review

Nigerian investors face a complex and uneven landscape in understanding foreign exchange risk and global portfolio performance. Currency volatility significantly impacts returns, particularly for investors in emerging markets. Lucas and Sercu's (2020) contend that forex volatility accounts for 15-30% of variation in realised returns for cross-border equity and bond portfolios held in developing economies. Carrieri et al. (2023) found that a 0.8% decrease in monthly risk-adjusted returns corresponds to a one standard deviation increase in local currency volatility relative to the US dollar. Economies with significant inflation disparities and reliance on commodities have a stronger negative correlation (IMF, 2024). Hedging techniques, such as systematic hedging with one-month forward contracts, have been shown to provide protective value. However, the cost-benefit analysis of hedging is highly susceptible to changes in market liquidity and interest rate differentials. In frontier markets with undeveloped derivatives markets and wide bid-ask spreads, such as Nigeria, the net benefit of formal hedging may be diminished or eliminated, pushing investors towards "natural hedging" through strategic asset allocation (CBN, 2023).

Although its effectiveness varies depending on the situation, natural hedging—diverging across currencies and asset classes with offsetting forex exposures—has also received empirical support. According to Carrieri et al. (2023), emerging market investors' portfolios that were purposefully diversified across non-correlated currency blocs (such as USD, EUR, and JPY assets) showed 20% less volatility caused by forex than portfolios that were concentrated on USD. However, this strategy has drawbacks when there are systemic "dollar strength" episodes or when domestic currency collapses coincide with widespread stress in emerging markets, which lessens the benefits of diversification (Ahmed, 2023). Furthermore, smaller Nigerian retail investors frequently cannot afford the significant capital and advanced risk management skills needed to implement effective natural hedging (SEC Nigeria, 2023).

In particular, empirical studies on forex risk and portfolio performance in Africa continue to be overly centred on more advanced financial markets such as South Africa. Van der Merwe's work from 2021 is noteworthy because it shows the cost-effectiveness of partial hedging and rigorously quantifies the forex risk premium that South African investors demand. There are fewer studies conducted in other African contexts, and they frequently have a wider macroeconomic focus. In his seminal work on Nigeria, Aliyu (2018) acknowledged the importance of forex risk for FDI flows but acknowledged the paucity of detailed information on how it affects the returns of individual or institutional portfolios. Okafor (2022) looked at corporate forex hedging practices in Nigeria and found that adoption rates were low (less than 30% of the firms studied) and that there were a lot of unanswered questions. This suggests that investors whose asset managers might not have advanced hedging knowledge could be at risk. Despite its value, this corporate focus is crucially lacking in terms of its direct influence on the performance of Nigerians' investment portfolios. There is a startling lack of empirical research that specifically addresses forex risk in relation to the international portfolios of Nigerian investors. Previous research frequently lacks granularity on actual realised returns or confuses macroeconomic forex exposure with investor-level portfolio performance. With their event study of the June 2023 naira float, Abdullahi et al. (2024) made a major advancement. During the immediate devaluation shock, unhedged global equity portfolios experienced average mark-to-market losses of 18.2% (in Naira terms), significantly underperforming both the underlying foreign assets (in their local currency) and locally hedged portfolios, according to their analysis of transaction data from three Nigerian asset management firms. Importantly, they discovered that forward contracts that were executed via the

CBN's I&E window showed real protection by lowering losses to about 4.7%. However, their study was limited to a single event window and a small institutional sample.

Market conduct reports provide complementary evidence. Retail investor complaints about "unexplained losses" on foreign investments increased by 45% in 2022–2023, according to the Nigerian Securities and Exchange Commission (SEC, 2023). Post-hoc analysis attributed a significant amount of these complaints to unexpected Naira depreciation upon withdrawal or conversion, which was made worse by investors' inadequate comprehension of forex risk. Additionally, in a survey of Nigerian pension funds with international allocations, Okonkwo (2023) discovered that although 65% of respondents cited forex risk as a "major concern," only 28% used systematic hedging beyond basic diversification. The main obstacles cited were lack of expertise, regulatory complexity, and cost. These results suggest a significant gap between risk awareness and effective risk reduction.

There are still obvious empirical gaps for the Nigerian context in spite of these important contributions. The relationship between Naira volatility (NGN/USD, NGN/GBP, and NGN/EUR) and the risk-adjusted, real Naira returns of diversified global portfolios (equities and bonds) held by Nigerian investors over a considerable period of time spanning multiple forex regimes and crises is not quantitatively modelled by any thorough, longitudinal study. In Nigeria's distinct operating environment, which is marked by CBN regulations, liquidity constraints in the I&E window, high interest differentials, and inflation, the relative efficacy of particular hedging instruments (forwards, options, and currency ETFs) is still not well measured. Although studies like Abdullahi et al. (2024) make some progress, there isn't a thorough comparison that takes cost-benefit analysis into account for all instruments. Additionally, the relationship between Naira volatility and Nigerian-specific domestic macroeconomic factors (such as changes in monetary policy, inflation spikes, and oil price shocks) and how they affect portfolio performance is not well understood empirically and is frequently limited to theoretical debate. By using multivariate regression on a solid 2010–2023 dataset to isolate the impact of forex risk while controlling for important Nigerian macro variables and by carrying out a focused empirical evaluation of hedging strategy performance within the operational realities faced by Nigerian investors, this study directly fills these gaps.

Gap in Study

The study aims to fill a gap in understanding the impact of forex risk on the returns of global portfolios held by Nigerian investors. Existing research mainly focuses on macroeconomic forex exposure and its impact on foreign investment flows or corporate balance sheets (Aliyu, 2018). There is a lack of comprehensive, longitudinal quantitative analysis that systematically models the relationship between Naira volatility and the real, risk-adjusted returns of diversified global portfolios over an extended period (Okafor, 2022). There is also a lack of empirical evidence comparing the practical effectiveness and cost-efficiency of specific hedging instruments within Nigeria's challenging operational environment (Van der Merwe, 2021; De Rosa & Riddiough, 2022). The complex interaction between Naira forex volatility and endemic domestic Nigerian macroeconomic variables in driving portfolio outcomes is poorly understood empirically. This research provides empirically grounded, Nigeria-specific evidence for investors to make informed hedging decisions and for policymakers to develop targeted frameworks to enhance Nigerian participation in global financial markets.

Methodology

This study employs a quantitative, ex-post facto research design to examine how foreign exchange risk affects the performance of international portfolios owned by Nigerian investors. The study employs observable data from January 2010 to December 2023, documenting important policy changes, several crises involving the Naira, and fluctuating global market conditions (Abdullahi et al., 2024; World Bank, 2024). The Bloomberg Barclays Global Aggregate Bond Index and the MSCI World Index are used to construct portfolio returns, and data is sourced from reliable public databases and organisations. Using the Central Bank of Nigeria's (CBN) monthly average I&E window exchange rates for USD, GBP, and EUR, these returns are translated into real, risk-adjusted Naira terms. To account for Nigeria's high level of volatility, risk-adjusted performance is computed using the Sortino ratio. The annualised standard deviation of the monthly logarithmic returns for the NGN/USD, NGN/GBP, and NGN/EUR exchange rates is used to quantify foreign exchange volatility. Multivariate Ordinary Least Squares (OLS) regression is used to test the core relationship. Alternative metrics of foreign exchange risk and portfolio performance are used to perform diagnostic tests and evaluate the robustness of the model. In order to assess the efficacy of hedging, simulated portfolios are created and compared using performance ratio analysis and paired t-tests. To ensure reproducibility, EViews 13 and Python are used for data processing and statistical analyses.

Data Analysis and Discussion

This section uses monthly data from January 2010 to December 2023 to provide a thorough empirical analysis of the effects of foreign exchange risk on Nigerian global portfolios. Three methodological approaches are used in the analysis: 1) descriptive statistics of important variables, 2) multivariate regression looking at factors that affect portfolio performance, and 3) a comparative evaluation of the efficacy of hedging strategies during currency crises. All of the data sources are officially recognised financial institutions in Nigeria and abroad, guaranteeing reproducibility and methodological rigour.

1. Descriptive Statistics of Key Variables

Table 1: Summary Statistics of Key Variables (Monthly Data: Jan 2010-Dec 2023)

Variable	Mean	Std. Dev	Min	Max	Source(s)
Real Risk-Adjusted Return (Sortino Ratio)	0.85	0.35	-1.20	1.75	Authors' calculation based on MSCI, Bloomberg, CBN, NBS data
Forex Volatility (NGN/USD, %)	18.2%	8.5%	5.3%	45.3%	CBN Statistical Bulletins (2010-2023); Authors' calculations
Global Portfolio Return (USD, %)	7.8%	12.4%	-28.7%	32.5%	MSCI World Index; Bloomberg Barclays Global Aggregate Bond Index

Variable	Mean	Std. Dev	Min	Max	Source(s)
Oil Price (Brent Crude, \$/barrel)	76.8	25.6	19.6	128.4	World Bank Commodity Price Data (2024)
Inflation Differential (Nigeria-US, %)	11.5%	4.8%	3.2%	22.1%	NBS (2024); U.S. BLS (2023)
VIX Index	18.4	8.2	9.6	82.7	CBOE VIX Historical Data (2024)
Monetary Policy Rate (CBN, %)	13.2%	2.8%	11.0%	18.5%	

Data Interpretation: The descriptive statistics reveal Nigeria's high-risk investment environment. Forex volatility averaged 18.2% annually but spiked to 45.3% during crises (2016 and 2023), exceeding emerging market averages (Carrieri et al., 2023). The inflation differential (Nigeria-US) averaged 11.5%, peaking at 22.1% in 2023 (NBS, 2024), creating persistent real return erosion. Global portfolios showed moderate USD returns (7.8% mean), but significant volatility (12.4% std dev). The Sortino ratio (0.85 mean) indicates vulnerability to downside risk, particularly during currency crises when it turned negative (-1.20 in 2020).

2. Regression Analysis: Determinants of Portfolio Performance

Table 2: Multivariate Regression Results (Dependent Variable: Real Risk-Adjusted Naira Return - Sortino Ratio)

Independent Variable	Coefficient	Robust Std. Error	t-statistic	p-value	Significance
Forex Volatility (NGN/USD)	-0.62	0.11	-5.87	<0.001	***
Oil Price	0.15	0.04	3.45	0.001	***
Inflation Differential	-0.83	0.14	-6.12	<0.001	***
VIX Index	-0.08	0.03	-3.21	0.002	***
Monetary Policy Rate	0.05	0.03	1.89	0.061	*
Model Statistics					

Independent Variable	Coefficient	Robust Error	Std. t-statistic	p-value	Significance
Observations	168				
Adjusted R ²	0.74				
F-statistic	45.23		<0.001		
Durbin-Watson	1.92				

p<0.01, **p<0.05, *p<0.1
Note: Diagnostic tests confirmed no multicollinearity (mean VIF=2.1) and stationarity (ADF p<0.01)

According to the study, risk-adjusted returns are reduced by 0.62% for every 1% increase in NGN/USD volatility, and by 23.9% during the 2023 crisis. While global uncertainty and inflation disparities decreased returns, oil prices had a positive effect. With forex volatility explaining 38% of the variation in returns, the model's high adjusted R² (0.74) indicates explanatory power.

3. Hedging Effectiveness During Currency Crises

Table 3: Performance of Hedging Strategies During Naira Crises (Real Naira Returns)

Strategy	2016 Crisis	2020 Crisis	2023 Crisis	Average	Protection Unhedged vs.
Unhedged Portfolio					
Return (%)	-22.5	-14.3	-18.4	-18.4	-
Max Drawdown (%)	-40.2	-25.1	-32.5	-32.6	-
Forward-Hedged					
Return (%)	-5.2	-2.5	-4.6	-4.1	+14.3 pp
Max Drawdown (%)	-14.8	-9.1	-12.9	-12.3	+20.3 pp
Cost (% of portfolio)	3.8	2.5	4.2	3.5	-
Currency-Diversified					
Return (%)	-12.8	-5.1	-8.2	-8.7	+9.7 pp

Strategy	2016 Crisis	2020 Crisis	2023 Crisis	Average	Protection Unhedged vs.
Max Drawdown (%)	-25.7	-14.0	-18.5	-19.4	+13.2 pp
Crisis Characteristics					
NGN Depreciation (%)	42.6	22.3	51.8	38.9	-
Oil Price Change (%)	-56.4	-68.2	-28.7	-51.1	

Data Sources: CBN (2023), Abdullahi et al. (2024), Authors' calculations based on I&E window rates

According to the study, forward hedging outperforms unhedged positions in times of crisis, yielding average returns that are 14.3 percentage points higher. Although currency diversification offers some protection, it performs 4.6 percentage points worse than forwards, particularly in times of extreme stress. The combined effects of the 2023 crisis resulted in the worst performance.

Discussion of Findings

In the Nigerian context, the empirical findings offer strong validation of the International CAPM framework. The strong inverse correlation between risk-adjusted returns and forex volatility ($\beta = -0.62$, $p < 0.001$) supports Solnik's (1974) claim that currency risk is a priced variable. Nigeria's particular macroeconomic circumstances amplify this effect; according to Carrieri et al. (2023), the combination of inflation disparities, oil price shocks, and currency volatility accounts for 74% of return variation, which is higher than in economies with more stable conditions.

The hedging analysis provides important real-world information. Despite Nigeria's market frictions, forward contracts proved remarkably effective, maintaining 14.3% of portfolio value during crises. Although it quantifies net benefits within Nigerian constraints, this supports Van der Merwe's (2021) findings. The average cost of 3.5% is consistent with IMF (2024) reports on I&E window spreads, indicating cost-effectiveness despite market imperfections. Despite its advantages, currency diversification was insufficient as a stand-alone remedy during the severe Naira crisis when correlations between emerging market currencies grew (Ahmed, 2023).

Notably, the 2023 crisis exposed previously unheard-of vulnerability: despite moderate global market performance (-2.3% MSCI USD return), unhedged portfolios lost 18.4%. Given that forex risk has the potential to dominate the performance of underlying assets, this divergence emphasises how crucial currency management is for Nigerian investors. The fact that forwards were successful in keeping losses to 4.6% during this extreme event offers strong support for their strategic use.

According to the study, risk-adjusted returns are decreased by 1% Naira volatility, which also lowers the Sortino ratio by 0.62. In times of crisis, forward hedging yields net returns that are +10.8 percentage points higher than those of unhedged positions. The findings recommend that risk management frameworks for Nigerian investors be reconsidered, that active currency hedging

be given precedence over passive diversification, and that fundamental capital preservation be the main focus.

Conclusion

This study fills a crucial void in the financial literature devoted to Africa by offering solid empirical evidence measuring the substantial negative impact of foreign exchange risk on the performance of international portfolios owned by Nigerian investors. Using robust methodologies and longitudinal data (2010–2023), our analysis demonstrates that Naira volatility is a major contributor to portfolio underperformance. Even after adjusting for global uncertainty, inflation differences, and oil prices, a 1% increase in forex volatility reduces real risk-adjusted returns (Sortino ratio) by 0.62% ($*p < 0.001$) (Table 2). The International CAPM's claim that currency risk is a systematically priced factor in emerging markets (Solnik, 1974; De Santis & Gérard, 2017) is supported by this finding, which also emphasises how severe it is in Nigeria's particular macroeconomic environment, which is marked by oil dependence, ongoing inflation differentials (averaging 11.5%), and sporadic currency crises (Abdullahi et al., 2024; IMF, 2024).

Most importantly, the study settles the controversy surrounding the efficacy of hedging for Nigerian investors. The best approach was forward contracts, which reduced maximum drawdowns by 20.3 percentage points and produced net returns 10.8 percentage points higher than unhedged portfolios during crises (2016, 2020, 2023) despite operational limitations in the I&E window (e.g., 3.5% average transaction costs) (Table 3). As demonstrated in 2023 when GBP/EUR correlations collapsed, currency diversification provided moderate protection (+9.7 pp returns), but its effectiveness was reduced during acute Naira-specific stress (Ahmed, 2023).

Recommendations

The Central Bank of Nigeria should prioritise distributing at least half of its foreign exchange exposure through forward contracts, which provide net protection of over 10 percentage points during crises. To lessen concentration risk during periods of dollar strength, add strategic diversification into non-USD assets and aim for allocations of 30-40% to bonds or stocks denominated in GBP and EUR. Accelerate reforms to increase liquidity and transparency in the I&E forex window, introducing exchange-traded forward and options contracts that are standardised. Implement a formal inflation-targeting framework to reduce the Nigeria-US/EU inflation differential from 11.5% to 5-7%. Strengthen foreign exchange reserves during oil price upswings above \$85/barrel to establish a credible buffer for smoother interventions during future Naira pressures. Require asset managers to report performance metrics only in real, risk-adjusted Naira, taking inflation and conversion costs into account. Create investor education programs on forex risk and hedging strategies, and remove bureaucratic obstacles by working with the CBN to expedite regulatory approvals for currency-hedged collective investment schemes. Include customised hedging cost-benefit calculators and real-time forex volatility alerts in client portals and advisory tools. Provide retail investors with low-fractional access to forward contracts, democratizing protection.

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