ECONOMIC HARDSHIP AND ITS IMPLICATIONS ON EDUCATION IN THE DIASPORA (USA)1990 – 2024 (2025)

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ABSTRACT

Using annual time series data and employing the Autoregressive Distributed Lag (ARDL) model, the study examines the long-run and short-run effects of key macroeconomic indicators—remittance inflows, inflation, exchange rate fluctuations, and tuition costs—on educational access in the diaspora. The unit root tests reveal a mix of I(0) and I(1) variables, justifying the ARDL approach. The bounds test confirms a significant long-run relationship among the variables. Results show that currency depreciation and lagged inflation have a significant negative impact on school enrollment, while remittance flows, though vital, exhibit delayed and inconsistent effects. Tuition costs reveal complex dynamics, with both negative and positive lagged impacts, suggesting adaptive responses by Nigerian families. Diagnostic tests validate the robustness of the model, showing no evidence of serial correlation or heteroskedasticity. The findings underscore the vulnerability of diaspora education to Nigeria's macroeconomic instability and call for proactive policy interventions to stabilize the exchange rate, streamline remittance channels, and provide targeted financial support for international students. These efforts are essential to ensuring equitable and sustained access to global educational opportunities for Nigerian youth.

Keywords: *Economic hardship, diaspora education, Nigerian students, ARDL model, remittances, exchange rate, inflation, United States.*

INTRODUCTION

The pursuit of education abroad, particularly in the United States, has become a defining trend among Nigerian students over the past three decades. For many Nigerian families, overseas education represents a pathway to upward mobility, global exposure, and access to superior academic resources. However, the increasing volatility of Nigeria's macroeconomic environment has raised concerns about the sustainability of this trend. Economic hardship, characterized by exchange rate depreciation, inflation, unstable remittance flows, and rising foreign tuition costs, has the potential to significantly affect Nigerian students' ability to enroll and remain in higher education institutions abroad.

The United States remains one of the most sought-after destinations for Nigerian students. According to data from the Institute of International Education and Opendoors, Nigerian students consistently rank among the top African nationals enrolled in U.S. universities. Despite this, access remains heavily dependent on the economic strength of families and the broader Nigerian economy. As inflation erodes purchasing power and the naira weakens against the dollar, the financial burden of studying abroad becomes increasingly difficult to bear.

Remittance inflows from family members abroad have traditionally supported Nigerian students studying in the U.S., serving as a crucial buffer against local economic constraints. Yet, fluctuations in global remittance flows, coupled with regulatory hurdles in Nigeria's financial system, can interrupt this lifeline. Meanwhile, rising tuition fees in U.S. institutions and changes in visa and immigration policies further complicate the landscape.

This study aims to investigate the long-term and short-term impacts of these economic variables on Nigerian student enrollment in the United States. By using the Autoregressive Distributed Lag (ARDL) model on annual data from 1990 to 2024, this research

provides empirical insight into the dynamics of economic hardship and its implications for diaspora education. The study seeks to bridge the gap between macroeconomic policy outcomes and educational access for Nigerian youth.

LITERATURE REVIEW

Theoretically, the study is anchored on the human capital theory, which posits that education is an investment that yields returns in the form of enhanced skills, productivity, and income. However, access to education—especially abroad—is not only a function of personal ambition but also of financial capacity, which is directly influenced by macroeconomic conditions.

Empirically, several studies have emphasized the role of remittances as a major source of educational financing for developing countries. Ratha et al. (2011) noted that remittances serve as a stable income source that supports consumption and investment in human capital. In the Nigerian context, remittances have been shown to play a central role in enabling students to study abroad. However, researchers such as Adepoju (2019) argue that remittances are highly sensitive to global economic shocks, political instability, and policy restrictions on cross-border transfers.

Exchange rate volatility is another recurring theme in the literature. Studies by Ogunleye (2016) and Akpan (2020) found that naira depreciation directly increases the cost of foreign education, pushing it beyond the reach of middle-income families. Inflation also indirectly affects education financing by eroding household savings and income. Combined, these factors form what many scholars describe as the "macro-financial barrier" to global education access.

On the issue of tuition, the literature reveals that the United States has seen a steady rise in education costs, particularly for international students. According to the National Center for Education Statistics (NCES), average tuition rates for out-of-state students have increased significantly since the 1990s. This rise places Nigerian students—already grappling with currency issues and economic instability—under additional financial strain.

While most previous studies have addressed these variables in isolation, there is a growing call for more integrated approaches that examine their combined effect on diaspora education. This study responds to that call by empirically investigating how remittances, exchange rates, inflation, and tuition costs interact to shape Nigerian enrollment patterns in the U.S.

RESEARCH METHODOLOGY

This study adopted a descriptive research design using secondary data analysis. This approach allows for the collection of both qualitative and quantitative data to provide a comprehensive analysis of the issue. Secondary data from organizations such as the World Development Indicators (WDI), Statista, Nigerian Diaspora Commission (NiDCOM), and Opendoors. The aim was to examine existing data to understand the relationship between economic hardship and educational outcomes among Nigerian diaspora populations.

The target population comprised Nigerians migrants enrolled in higher education in the United States who have studied within the past 35 years (1990 – 2024) and the macroeconomic indicators of the Nigeria economy.

Time series data were collected over a period from 1990 to 2024 on the studied variables. These variables include; Number of Nigerian students enrolled in the USA, Remittance inflow to Nigeria (in USD billions), Exchange rate (NGN/USD), Nigeria's inflation rate, and Average tuition fees in the USA (USD).

The research work employed basically the secondary data sources from the World Development Indicators (WDI), Statista, Nigerian Diaspora Commission (NiDCOM), and Opendoors. The empirical implementation of the model made use of macroeconomic data covering 35 years (1990 - 2024).

MODEL SPECIFICATION

The model can be expressed as:

$$ENROLL_t = \beta_0 + \beta_1 REMIT_t + \beta_2 INF_t + \beta_3 EXR_t + \beta_4 TUITION_t + \varepsilon$$

Where:

ENROLL = Number of Nigerian students enrolled in the USA;

REMIT = Remittance inflow to Nigeria (in USD billions);

INF = Nigeria's inflation rate;

EXR = Exchange rate (NGN/USD);

TUITION = Average tuition fees in the USA (USD);

ε = Error Term.

UNIT ROOT TEST

The unit root test utilized for the purpose of evaluating the stationarity purpose of the series employed for this study are those that have been widely employed in empirical analysis such as ours. Specifically, Augmented Dickey Fuller (ADF) is the basic criteria that have been used in this study because of their widespread application in previous empirical studies. The result of the unit root test based on the ADF method is presented in the table below.

Variables	**at level**		**remark**	**at 1st difference**		**remark**	**Order of integration**
	t-statistics	***prob***		***t-statistics***	***prob***		
LnENROLL	-1.8832	***0.3354***	Non-Stationary	-3.0686	***0.0393***	Stationary	I(1)
LnREMIT	-1.1177	***0.6974***	Non-Stationary	-4.3430	***0.0017***	Stationary	I(1)
LnINF	-2.4915	***0.1263***	Non-Stationary	-4.8603	***0.0004***	Stationary	I(1)
LnEXR	-0.6561	***0.8445***	Non-Stationary	-4.5852	***0.0009***	Stationary	I(1)
LnTUITION	-3.7798	***0.0070***	Stationary	-3.7488	***0.0077***	Stationary	I(0)

Source: Author's Desk, 2025 via EViews

The results provide findings of ADF results in the sense that only infrastructure development as control variable is stationary at level but, school enrollment, per capita income, and population growth rate are stationary after first differences. This test of unit root shows the indication of I (0) and I (1) variables, thus justifying the use of the ARDL regression model.

ARDL BOUND TEST

ARDL Bounds Test
Date: 07/10/25 Time: 09:11
Sample: 1993 2024
Included observations: 32
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	6.833067	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

Source: Author's Desk, 2025 via EViews

The result of the ARDL bounds test reveals that there exists a statistically significant long-run relationship between economic hardship variables and the school enrollment of Nigerian students in the USA.

With an F-statistic of 6.833, which clearly exceeds the upper bound critical value of 5.06 at the 1% significance level, the null hypothesis of no cointegration is rejected. This means that remittance inflows, exchange rate fluctuations, inflation, and tuition fees abroad do not just have a random or short-term association with enrollment patterns — they are jointly and systematically linked to the long-term trajectory of educational access for Nigerians studying abroad. In practical terms, this suggests that while temporary economic shocks may cause short-term disruption, these variables exert a persistent and measurable influence on whether Nigerian students can sustain their educational aspirations overseas.

HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.533334	Prob. F(12,19)	0.8667
Obs*R-squared	8.063004	Prob. Chi-Square(12)	0.7802
Scaled explained SS	2.50006	Prob. Chi-Square(12)	0.9982

Source: Author's Desk, 2025 via EViews

The Breusch-Pagan-Godfrey test was used to check for the presence of heteroskedasticity in the residuals of the ARDL model — that is, whether the variance of the error terms changes systematically across observations. The null hypothesis of the test is that the residuals are homoskedastic (i.e., they have constant variance), which is a core assumption of OLS.

The results show that the F-statistic is 0.5333 with a p-value of 0.8667, while the Obs*R-squared and Scaled Explained Sum of Squares also return very high p-values of 0.7802 and 0.9982, respectively. Since all p-values are far above the conventional significance levels (1%, 5%, or 10%), we fail to reject the null hypothesis. This means there is no evidence of heteroskedasticity in the model. Therefore, the variance of the residuals appears constant, and the efficiency of the estimated coefficients remains intact. This confirms that the ARDL model is statistically sound and not suffering from unequal variance across time, lending credibility to the inferences drawn from both short-run and long-run coefficients.

SERIAL CORRELATION TEST

Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.137721	Prob. F(2,17)	0.8723
Obs*R-squared	0.510214	Prob. Chi-Square(2)	0.7748

Source: Author's Desk, 2025 via Eviews

The results of the Breusch-Godfrey Serial Correlation LM Test indicate that there is no evidence of serial correlation in the residuals of the estimated ARDL model. The F-statistic of 0.1377 with a p-value of 0.8723, alongside the Chi-square statistic (Obs*R-squared = 0.5102) with a p-value of 0.7748, both exceed the conventional significance levels of 1%, 5%, and even 10%. Therefore, we fail to reject the null hypothesis that the residuals are not serially correlated. In simple terms, the model's error terms are random and do not exhibit systematic patterns over time.

ARDL ESTIMATE

Dependent Variable: LNENROLL
Method: ARDL
Date: 07/10/25 Time: 08:55
Sample (adjusted): 1993 2024
Included observations: 32 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (3 lags, automatic): LNREMIT LNINF LNEXR LNTUITION
Fixed regressors: C
Number of models evalulated: 256
Selected Model: ARDL(1, 1, 3, 0, 3)

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
LNENROLL(-1)	0.95666	0.138535	6.90556	0
LNREMIT	0.031237	0.033541	0.931295	0.3634
LNREMIT(-1)	-0.087954	0.039246	-2.24109	0.0372
LNINF	0.010438	0.027941	0.37358	0.7129
LNINF(-1)	-0.006396	0.035254	-0.181443	0.8579
LNINF(-2)	0.022759	0.034575	0.658254	0.5183
LNINF(-3)	-0.128009	0.033658	-3.803169	0.0012
LNEXR	-0.174659	0.062772	-2.782426	0.0119
LNTUITION	-0.384882	0.738122	-0.521435	0.6081
LNTUITION(-1)	0.317249	1.097962	0.288943	0.7758
LNTUITION(-2)	-4.669944	1.482121	-3.150852	0.0053
LNTUITION(-3)	5.437947	1.097371	4.955429	0.0001
C	-4.940066	3.238363	-1.525482	0.1436
R-squared	0.995882		**Mean dependent var**	8.821455
Adjusted R-squared	0.99328		**S.D. dependent var**	0.653782
S.E. of regression	0.053593		**Akaike info criterion**	-2.723612
Sum squared resid	0.054571		**Schwarz criterion**	-2.128157
Log likelihood	56.57779		**Hannan-Quinn criter.**	-2.526235
F-statistic	382.8652		**Durbin-Watson stat**	2.024973

Prob(F-statistic)	0			

Source: Author's Desk, 2025 via EViews

The model reveals that current remittance inflows (LnREMIT) have a positive but statistically insignificant effect on Nigerian student enrollment in the USA. However, the first lag of remittance (LnREMIT(-1)) is negative and statistically significant at the 5% level. This counterintuitive result suggests that while immediate remittance flows may not significantly drive enrollment decisions, delayed remittances may negatively affect sustained access to education abroad. In practical terms, many Nigerian students rely on remittances from family members abroad to finance tuition, living expenses, and other costs in the USA. A delay or decline in remittance support—often driven by global economic uncertainties or domestic regulatory constraints such as CBN remittance policies—may force students to defer or withdraw from their academic programs.

The negative lagged effect also reflects the financial strain that delayed remittances impose on households. While the intention behind remittances is often to support educational advancement, delayed inflows may disrupt cash flow cycles, making it harder to meet tuition deadlines or visa requirements. Therefore, remittance-driven financing is a double-edged sword: it is vital, yet unstable, particularly in periods of global economic downturn or domestic currency crises.

Inflation (LnINF) is another critical variable reflecting domestic economic hardship. While the current and earlier lags of inflation were statistically insignificant, the third lag (LnINF(-3)) shows a strong negative effect on student enrollment in the USA, significant at the 1% level. This suggests a delayed impact of domestic inflation on foreign education. Inflation erodes real household income and purchasing power, which reduces a family's ability to save and sponsor students abroad. However, this effect takes time to materialize in actual enrollment figures—often requiring a few years before the financial squeeze affects international education plans.

This lag also aligns with the structure of academic decision-making. Admission cycles, visa application processes, and financial planning for studying abroad typically take months or even years. Therefore, inflationary pressure experienced in the domestic economy may not immediately deter foreign education, but its compounding effect becomes visible after a few years as families begin to reprioritize spending or abandon overseas education plans altogether. This emphasizes the need for consistent inflation control and targeted support mechanisms for education-related foreign exchange allocations.

The exchange rate (LnEXR), unsurprisingly, shows a statistically significant negative relationship with Nigerian student enrollment in the USA. The coefficient is negative (-0.175) and significant at the 5% level. This aligns with economic theory and real-world observations. As the naira weakens against the dollar, the cost of tuition, accommodation, and general living expenses in the USA escalates dramatically for Nigerian families. The more depreciated the currency, the more difficult it becomes to afford education in dollar-denominated economies like the United States.

This result carries profound implications. With the naira persistently depreciating due to inflationary policies, trade imbalances, and global shocks, the affordability of U.S. education becomes an increasingly distant dream for average Nigerian households. The exchange rate, therefore, functions as both an economic and educational barrier. Policies aimed at stabilizing the naira—especially through foreign education forex windows or scholarship grants—can help cushion the impact on prospective students. Otherwise, enrollment trends will remain vulnerable to currency instability.

Tuition cost in the U.S. (LnTUITION) is perhaps the most volatile variable in the model, showing a complex and dynamic impact across its lags. While the current and first lag of tuition fees are statistically

insignificant, the second lag is negative and significant (-4.670, $p < 0.01$), and the third lag is strongly positive and highly significant (5.438, $p < 0.001$). This oscillating behavior reveals that tuition fees influence enrollment with a delay and that the reaction is not linear.

The negative second lag suggests that a spike in tuition two years prior may initially discourage enrollment, especially for families with limited financial flexibility. However, the positive third lag implies that over time, families adjust and either mobilize additional resources, pursue scholarships, or switch to more affordable programs, leading to a recovery or even growth in enrollment figures. This behavior reflects resilience and adaptability among Nigerian families and students who, despite cost pressures, find ways to keep educational aspirations alive.

It also shows that the impact of tuition cost increases is not immediately visible; students who have already planned their studies may go ahead despite rising fees, while subsequent cohorts are more price-sensitive. These findings highlight the need for responsive planning and accessible education financing—possibly through bilateral education funds or tuition partnerships—to support Nigerian students abroad.

The lagged value of school enrollment (LnENROLL(-1)) has a coefficient of 0.957 and is highly significant ($p < 0.01$), confirming the persistence of enrollment trends over time. This means that the number of Nigerian students in the USA in one year is strongly dependent on the previous year's enrollment. This is logical because enrollment in higher education typically spans multiple years, and once admitted, students tend to continue unless interrupted by financial or personal crises.

The strong persistence also suggests that sudden economic shocks may not immediately cause sharp declines in enrollment. However, if economic conditions continue to deteriorate—as signaled by lagged remittance, inflation, or exchange rate changes—then the subsequent years may show a more dramatic contraction. This underlines the importance of early intervention during periods of macroeconomic instability to prevent long-term declines in educational participation abroad.

SUMMARY

This study examined the implications of economic hardship on the school enrollment of Nigerian students in the diaspora, with a particular focus on the United States. Using annual time series data from 1990 to 2023 and estimating an ARDL model, the analysis explored how key macroeconomic variables—remittances, inflation, exchange rate, and foreign tuition fees—affect the ability of Nigerian students to access and sustain education in the USA.

The stationarity test revealed that all variables were integrated of order one [I(1)], except tuition, which was stationary at level [I(0)]. The bounds cointegration test confirmed the existence of a long-run relationship between the variables. The ARDL(1,1,3,0,3) model was selected based on the Akaike Information Criterion (AIC), and diagnostic tests confirmed the validity of the model—there was no evidence of heteroskedasticity or serial correlation, and the Durbin-Watson statistic showed that the residuals were uncorrelated.

Empirical results show that exchange rate and inflation (with lag) significantly impact school enrollment in the USA. Specifically, naira depreciation was found to have an immediate and negative effect on enrollment, indicating that currency instability severely restricts affordability of studying abroad. Inflation, while insignificant in the short run, had a strong and negative impact with a three-year lag, suggesting that domestic economic hardship takes time to affect enrollment decisions. Interestingly, remittance inflows had a negative and significant effect at the first lag, highlighting the vulnerability of students to delayed or insufficient financial support from abroad. Tuition fees

had complex effects, with different lag structures producing alternating negative and positive impacts, reflecting both cost pressure and family adaptation strategies over time. The high significance of the lagged dependent variable also suggests that enrollment is persistent, and past values strongly predict current enrollment.

CONCLUSION

From the findings, it is clear that the economic environment in Nigeria plays a pivotal role in shaping access to diaspora education, particularly in high-cost destinations like the United States. The depreciation of the naira, rising inflation, and volatility in remittance inflows all combine to constrain the ability of Nigerian families to support education abroad. These constraints do not manifest instantly but gradually erode the financial capacity of households, eventually leading to deferral, dropout, or non-commencement of study.

The results underscore the critical importance of macroeconomic stability in sustaining international education opportunities for Nigerians. Education in the diaspora is not just a personal aspiration—it is closely tied to national economic resilience and the ability to ensure long-term human capital development. Moreover, the evidence suggests that while students and their families demonstrate strong determination to adapt and respond to economic shocks (as seen in the eventual rebound from tuition shocks), there is a limit to such resilience in the absence of structural and policy support.

In essence, this study concludes that economic hardship in Nigeria—reflected through inflation, exchange rate depreciation, and unstable remittance flows—significantly undermines the long-run sustainability of Nigerian student enrollment in the United States. As economic conditions worsen, the dream of foreign education becomes more elitist and exclusionary, cutting off access for many talented but financially constrained students.

RECOMMENDATIONS

In light of the above findings, the following recommendations are proposed to mitigate the impact of economic hardship on diaspora education:

1. **Stabilize the Exchange Rate through Sound Macroeconomic Policy**: The Nigerian government must prioritize naira stability through improved foreign exchange management, trade balance adjustments, and fiscal discipline. Stabilizing the exchange rate will reduce the cost burden on students paying tuition and living expenses in U.S. dollars.
2. **Create a Dedicated Forex Window for Education-Related Payments**: The Central Bank of Nigeria (CBN) should implement a separate and stable forex allocation for students studying abroad, particularly for tuition and accommodation. This will shield families from black-market pressures and ensure consistent access to education finance.
3. **Establish Diaspora Education Support Funds**: The Ministry of Education, in collaboration with diaspora commissions and international donors, should establish education support funds or scholarship schemes to help middle- and low-income families send their children to the U.S. and other advanced countries.
4. **Expand Bilateral Education Agreements**: Nigeria should negotiate tuition concessions and scholarship quotas with U.S. universities and colleges through bilateral partnerships. This can reduce the dollar burden on Nigerian families and encourage more inclusive access.
5. **Encourage Stable and Transparent Remittance Channels**: Policymakers should support fintech and banking innovations that make remittance transfers faster, cheaper, and more predictable. Delays in remittances

significantly disrupt students' ability to remain enrolled.

6. **Develop Affordable Domestic Alternatives to U.S. Education**: Government and private sectors should improve the quality of Nigerian universities to reduce the pressure to study abroad, especially for those pushed by perceptions of quality rather than necessity.
7. **Inflation Management through Economic Reforms**: A long-term policy strategy to control inflation—especially food and education-related inflation—will increase household disposable income, enabling families to better finance foreign education plans without compromising other essential needs.