International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. 13, Issue 8, Aug 2025

https://ijecm.co.uk/

EFFECT OF CURRENCY REDESIGN POLICY ON HOUSEHOLD WELFARE IN FEDERAL CAPITAL TERRITORY

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Abstract

Currency redesign policies are employed globally to combat counterfeiting and promote financial inclusion; however, their welfare effects in developing economies remain understudied. Nigeria's 2022 policy triggered severe liquidity shortages that disproportionately affected households. Existing studies have focused on macroeconomic effects, neglecting micro-level welfare outcomes. This study addresses this gap by analyzing the income, consumption, and savings dynamics in Nigeria's Federal Capital Territory (FCT). A cross-sectional survey of 375 households was conducted using a regression model, with controls for education, location, and employment status. The results reveal that financial access boosted income by 32% and savings by 38%, while urban residency amplified the advantages between 35% and 42%. The results also reveal that

larger households suffered significant declines in consumption, by 22%. This policy imposes regressive welfare costs. Phased implementation, rural financial inclusion, and targeted social protection are critical to mitigate future shocks.

Keywords: Currency redesign, Household welfare, Financial inclusion, OLS regression, Nigeria

INTRODUCTION

Currency redesign is globally acknowledged as a strategic monetary policy tool employed by the central bank of any country to achieve 21st-century macroeconomic and financial stability objectives, such as curbing inflation, reducing counterfeiting, promoting a cashless economy, enhancing financial inclusion, and stabilizing the economy (Olujobi, 2022; Udo et al, 2023). Globally, developed economies, such as Canada, the United States, and members of the European Union, have successfully implemented currency redesign initiatives, integrating advanced security features to curb counterfeiting, protect household welfare, and restore confidence in their monetary system. In 2011, the Bank of Canada introduced polymer banknotes, which significantly reduced counterfeit currency and boosted investor confidence (Bank of Canada, 2019). Similarly, the European Central Bank (ECB, 2019) reported that redesigned euro banknotes reinforced public confidence despite initial challenges. In the sub-Saharan African region, countries like Kenya and Ghana embracing currency redesign have successfully combatted counterfeit notes, addressed illicit financial flows, and expanded access to financial services despite initial challenges (Aroghene & Imene, 2023).

In a bid to address increasing macroeconomic and financial stability challenges such as high inflation, high unemployment, widespread poverty, financial exclusion at 65%, and the geometric increases in counterfeit currency in circulations in higher denominations of N200, N 500, and N 1000 which is above the acceptable threshold of 100 pieces per million banknotes, erodes public trust in Nigeria's monetary system and undermines the financial security of households, individuals, and businesses. The Central Bank of Nigeria (CBN) in October 2022, announced a policy to redesign the ₦200, ₦500, and ₦1000 notes. However, policy implementation in Nigeria led to unintended economic disruptions, such as cash shortages, especially during the first quarter of 2023, resulting in a decline in household liquidity and increased transaction costs in Nigeria.

This policy, although theoretically sound, sparked economic disruptions and disproportionately affected small-scale businesses, individuals, and households that relied heavily on cash transactions for consumption, savings, access to basic goods, and financial services (Okafor et al., 2023; Udo et al, 2023b). The ripple effect of this policy is particularly

evident in the Federal Capital Territory (FCT), the scope of this study, where urban-rural inequalities and informal sector dominance intensified its impact. Given that household welfare is a key indicator of economic resilience, understanding how currency redesign influences welfare dynamics is crucial for evidence-based policy making.

Existing studies largely focus on macroeconomic indicators (inflation or exchange rate effects), ignoring micro-level analyses, particularly in assessing how household welfare, measured by savings, consumption, access to food, healthcare, income stability, and financial inclusion, has been affected. Extant studies by Chodorow-Reich et al. (2020), Adeniran and Adegoke (2023), and Oyelami et al. (2023) assessing the contributive effect of the currency redesign policy revealed that poor implementation of this policy can exacerbate financial exclusion and deepen poverty levels. In India, Chodorow-Reich et al. (2020) reveal that sudden cash shortages significantly reduce household consumption, employment, and business revenue.

In Nigeria, the lack of effective planning and institutional coordination, particularly the CBN's rigid deadline for the withdrawal of old notes, created panic and long queues, while the limited availability of new notes led to public unrest and constrained household and individual purchasing power (Ezeanyeji & Uche, 2023). Afolabi and Okonkwo (2023) further revealed that the poor integration of digital payment systems and exclusion of rural populations from financial services degraded the policy's effects on households. Similarly, Oyelami et al. (2023) report that over 70% of informal traders in Nigeria experienced income drops because of a decline in customer purchasing power caused by a cash shortage. These results reveal a critical gap in the policy's implementation triggered by Nigeria's inadequate banking and ICT infrastructure to cushion households' socioeconomic vulnerabilities. This institutional failure made the policy not only economically disruptive but also socially regressive.

While extant studies have explored the diverse effects of currency redesign on counterfeiting, economic activity, and financial inclusion, limited research has focused on key welfare indicators such as income, consumption, savings, and access to financial services. This study seeks to bridge this knowledge gap by evaluating the effect of the 2022 currency redesign policy on household welfare in Nigeria's Federal Capital Territory. By analyzing these key pathways, this study aims to provide evidence-based insights into the successes, challenges, and areas for improvement in currency redesign policy implementation. Methodologically, this study adopted the Ordinary Least Squares (OLS) regression model for its straightforwardness, efficiency, flexibility with cross-sectional surveys, and reliance on post-policy household survey data to assess the immediate policy impact, controls for confounding variables such as educational level and location, and the use of continuous outcome variables such as income.

This study contributes to the literature by expanding the empirical literature on monetary policy and household welfare in Africa, providing evidence for designing socially inclusive monetary reforms, offering a replicable model for assessing similar policies in other developing countries, and informing future policies on transition planning, stakeholder communication, and rural inclusion.

LITERATURE REVIEW

Currency Redesign

Currency redesign refers to the deliberate physical and structural alteration of the existing currency, with updated security features, design elements, and the introduction of new banknotes or coins by the central bank. The primary objective of this physical and structural alteration is to address issues such as counterfeiting, control inflation, illicit financial flows, reinforce public trust in the monetary system, and promote cashless transactions (Olujobi, 2022; CBN, 2022; Udo et al, 2023). Currency redesign is a global monetary policy tool for economic and security reasons. In Nigeria, the currency redesign policy introduced in late 2022 involved the replacement of high-denomination notes (₦200, ₦500, and ₦1,000) with new notes to curb inflation and excess funds in circulation, tackle counterfeiting, and accelerate the transition to a cashless economy. Globally, this policy is used as a strategic tool for macroeconomic stabilization. In 2011, the Bank of Canada introduced polymer notes to reduce counterfeit currencies by over 70%, strengthen consumer confidence, and increase the lifespan of banknotes (Bank of Canada, 2019). The European Central Bank (ECB) introduced enhanced Euro banknotes with upgraded security features to reinforce public trust and currency integrity (ECB 2019). In the Global South, Ghana's 2007 redenomination eased transaction burdens and curbed inflation, whereas Kenya's 2019 currency change mitigated money laundering and improved financial traceability (Osei, 2012; Aroghene & Imene, 2023). The policy's objectives directly influenced household welfare through consumption, savings, income stability, and access to financial services.

Household welfare, as a microeconomic construct, is typically measured through consumption, savings, income, and access to essential services such as healthcare, food, and finance (Deaton, 1997). Currency redesign policies can directly or indirectly affect household welfare through these channels. On the positive side, successful redesign promotes financial inclusion, reduces counterfeit money circulation, and facilitates smooth financial transactions, thereby improving household economic security. India's demonetization in 2016 led to a 25% surge in digital transactions and a corresponding increase in financial account ownership (Ghosh, 2017). However, when poorly executed, it reduced access to cash, as evidenced in

early 2023 in Nigeria (NBS, 2023), eroded savings by reducing their value (IMF, 2020), increased financial exclusion (Udo et al, 203), decreased consumption, and disrupted income (World Bank 2023) especially in cash-dependent economies such as Nigeria.

The positive and negative effects of this policy on household welfare are anchored in infrastructure, institutional readiness, and population financial literacy. Studies by Okafor et al. (2023) and Afolabi and Okonkwo (2023) reveal that many households experience liquidity constraints, decline in access to food and healthcare, and increased borrowing costs. Oyelami et al. (2023) note that 70% of small traders in Nigeria report lower sales and income due to liquidity constraints. EFInA (2022) reports show that only 45% of Nigerian adults are financially included, and digital payment adoption is significantly lower in rural areas, exacerbating regional welfare inequality. Afolabi and Okonkwo (2023) revealed that rural and urban households, especially those that were financially excluded without access to bank accounts or digital wallets, were unable to conduct basic transactions. The infrastructural weakness of the financial system and digital divide increase inequality and exclusion, undermining the welfare of vulnerable populations.

Theoretical Framework

Several economic theories underpin this study and provide a lens through which to interpret the effects of currency redesigns on household welfare.

Keynesian Liquidity Preference Theory (1936) and Quantity Theory of Money (1911)

Keynes (1936) posits that individuals prefer holding cash for transaction, precautionary, and speculative purposes. Sudden cash scarcity has forced households to reduce their consumption and adopt costly digital alternatives, worsening welfare (Ajide, 2023). This implies that the currency redesign policy cash flow restriction increases transaction costs, reducing consumption and savings. This is evident in Nigeria, where limited cash supply due to policy implementation affects households' ability to meet basic needs (Ezeanyeji & Uche, 2023). Fisher (1911) articulated the quantity theory of money and posited that sudden cash withdrawal led to cash scarcity, forcing households to reduce consumption, save, and engage in daily economic activities, especially in predominantly cash-based sectors, thereby controlling money supply (M), reducing inflation (P), and stabilizing the economy (CBN, 2022). Fisher's equation (**MV = PT**) posits that

$$Money\ supply\ (M) \times Velocity\ of\ money\ (V) = Price\ level\ (P) \times Volume\ of\ transactions\ (T) \ldots\ldots\ldots (Eq1)$$

According to the quantity theory of money, a 1% change in money supply significantly decreases economic transactions (T), constraining consumption and production cycles. From the Keynesian perspective, the inability to access liquid funds undermines individual financial behavior and security, thereby exacerbating poverty and inequality. Thus, currency redesign acts as a double-edged sword, while aiming to improve monetary control and inflation in the long run. In the short term, it imposes liquidity constraints that increase household vulnerability, especially in economies with lax digital and financial infrastructure such as Nigeria. India's 2016 demonetization led to a 22% decline in rural consumption due to cash shortages (Chodorow-Reich et al., 2020), mirroring Nigeria's experience, where 70% of informal traders reported income losses (Ezeanyeji & Uche, 2023).

Welfare Economics

This theory emphasizes how public policy influences individuals' utility, measured in terms of income, access to goods, and life satisfaction (Pigou, 1920). Deaton (1997) emphasizes the role of consumption, access to markets, and income distribution as central to understanding household welfare, especially in developing economies. In this context, currency redesign, as a monetary policy intervention, has direct implications for household welfare. When implemented without adequate planning, it imposes significant welfare losses, particularly in vulnerable populations, which rely heavily on cash for daily transactions. This theory posits that policies that hinder access to essential goods and services or disproportionately burden the poor lead to declines in utility and exacerbate inequality (Atkinson & Stiglitz, 1980). Empirical evidence from Nigeria confirms these theoretical concerns. During currency redesign implementation in 2022–2023, cash shortages disrupted household access to food, healthcare, education, and transportation, which are key components of basic welfare (Ezeanyeji & Uche, 2023; Udo et al, 2025; Akande & Yusuf, 2023). These conditions reflect what welfare economists refer to as "deadweight welfare loss," in which policy-induced inefficiencies create losses in societal surplus that are not recovered elsewhere (Varian, 2010).

Financial Inclusion Theory

This states that access to formal financial services, such as savings accounts, credit facilities, mobile money, and insurance, enhances household economic stability, resilience to shocks, and long-term welfare (Demirgüç-Kunt et al. 2018; Emmanuel et al 2023; Samuel et al 2023). Financially excluded households, individuals, and businesses are exposed to the proliferation of informal credit sources and unethical financial activities (Samuel et al, 2024), while the financially included households, individuals, and businesses are protected from

informal credit sources and unethical financial activities. This theory underscores the crucial role of accessible, affordable, and user-friendly financial infrastructure in promoting inclusive growth and reducing poverty (Zins & Weill, 2016). Together, these theories explain the transmission mechanism from monetary policy (currency redesign) to microeconomic welfare outcomes.

Empirical Review and Gaps

Despite extensive studies on the macroeconomic effects of currency redesign, such as inflation control and currency stability, there is a significant gap in research focusing on household-level impacts, particularly in Nigeria. Previous African studies have reported mixed results. In Ghana and Kenya, currency redesign policies positively and significantly influence macroeconomic indicators and enhance currency stability. In India, the policy caused acute disruptions before stabilizing the benefits that emerged. Nigeria's experience mirrored the Indian scenario but was compounded by infrastructural weaknesses, low digital penetration, limited financial literacy, and weak interagency coordination (Ezeanyeji & Uche, 2023). In Nigeria, poor timing and execution in the midst of high inflation and economic uncertainty, along with a poorly coordinated rollout of new notes, led to widespread chaos, affecting both short-term liquidity and longer-term income and savings patterns. Most studies focus on the macroeconomic implications of currency redesign in Nigeria, such as inflation, exchange rates, and monetary controls. Few studies have focused on its microeconomic impact, particularly on household welfare. Most of the available literature is either theoretical or descriptive, lacking rigorous empirical methods or ignoring the heterogeneity of impacts across different population groups.

This study addresses this empirical gap by assessing the direct impact of the 2022 currency redesign policy on household welfare in the FCT, using a structured survey and econometric analysis (OLS regression). By focusing on key welfare indicators, such as consumption, income, savings, and access to financial services, this study goes beyond macro-level outcomes to provide household-level evidence. It also incorporates controls for education, location (urban vs. rural), and employment status, making the analysis more robust. This study contributes to the broader discourse on monetary policy and social protection by providing new empirical data on household welfare under currency reforms in a developing-country context. Offering methodological insights through the use of OLS and structured welfare indicators. Presenting policy solutions grounded in evidence to improve future policy design and implementation, especially in informal and digitally excluded communities.

METHODOLOGY

Research Design

This study adopted a cross-sectional survey design supported by quantitative analysis to assess the effect of the currency redesign policy on household welfare in the FCT. The cross-sectional design is appropriate for this study, as it allows for the collection of data after the implementation of the currency redesign policy, enabling the researcher to assess the immediate effects of the policy on household welfare. This design is particularly useful for identifying the nexus between welfare variables, such as income, consumption, savings, and access to financial services. This design enables the application of econometric modeling such as OLS to test the hypothesized nexus among these variables. This choice of design is supported by similar empirical studies that have evaluated economic reforms using household-level data (Chodorow-Reich et al., 2020; Ghosh, 2017).

Source and Nature of Data

The study utilizes primary data collected through a structured post-policy household survey conducted in the FCT. These data are quantitative, focusing on variables such as household income, consumption patterns, savings behavior, and access to financial services. This data was collected using structured questionnaires distributed to a stratified random sample of households across the six area councils of the FCT (Abuja Municipal, Bwari, Gwagwalada, Kuje, Kwali, and Abaji). FCT hosts about 141,776 households according to the 2022 national social register of Nigeria (National social register of Nigeria, 2022).

Table 1: The Population of Households in FCT, Nigeria

S/N	Area Councils	Households
1	Abaji	44713
2	AMAC	10806
3	Bwari	6971
4	Gwagwalada	6017
5	Kuje	35588
6	Kwali	37681
	Total	**141,776**

Source: National social register of Nigeria (2022).

Sample Size Determination

The target population comprised 141,776 households in the FCT, Abuja. This study used the Taro Yamane (1967) formula, given the large study population, to determine the sample size and provide a robust result. Taro Yamane's formula of 1967 was adopted as the best sample

size determination and is suitable for smaller or finite populations, but can be less accurate for very large populations. Taro Yamane is simpler, considering the level of confidence, margin of error, and variability of the population. The Taro–Yamane formula is expressed as

$$n = \frac{N}{1 + N(e^2)}$$

Where: n = the sample size; N = the target population; e = the margin of error (level of precision).

$$n = \frac{141776}{1 + 141776(0.05^2)}$$

$0.05^2 = 0.0025$

$1 + 141{,}776\ x\ 0.0025$

$1 + 354.44 = 355.44$

$n = \frac{141{,}776}{355.44} = 398.8$

Approximately the sample population n ≈ 399

Stratification of the study populations ensures coverage of both urban and rural populations, allowing for the assessment of spatial disparities in the policy's impact. The reliance on post-policy data ensures that the effects of the 2022-naira redesign policy are accurately captured.

Table 2: Sample Size distribution of households in FCT, Nigeria

S/N	Area Councils	Sample Size
1	Abaji	125.8
2	AMAC	30.4
3	Bwari	19.6
4	Gwagwalada	16.9
5	Kuje	100.1
6	Kwali	106.0
	Total	**398.8 ≈ 399**

Source: National Social Register of Nigeria (2022) and author's computation, 2025.

Model Specification

To estimate the effect of the currency redesign policy on household welfare, this study adopted the OLS model to assess continuous dependent variables, such as income, consumption, and savings, capturing multiple independent variables and control variables, enabling the estimation of partial effects. This model is (Best Linear Unbiased Estimator) under the Gauss-Markov assumptions.

The general form of the model is as follows:

$$Y_i = \beta_0 + \beta_1 AFS_i + \beta_2 EMPSTAT_i + \beta_3 EDU_i + \beta_4 URB_i + \beta_5 AWARE_i + \beta_6 HSIZE_i + \varepsilon_i$$

Where:

Y_i = Household welfare outcome (income, consumption, savings); β_0 = intercept; β_1- β_5 = coefficients of independent variables; ε_i = error term.

This model also controls for possible confounding variables, such as educational attainment, employment status, urban/rural location, and household size, which ensures robust estimates of the impact of currency redesign on welfare. The variables used in the study are presented in Table 3, along with their justifications.

Table 3: Variable Definitions

Variable Name	Acronym	Type	Measurement/Scale	Justification
Household Income	**HINC**	Dependent	Continuous (₦ per month)	Core welfare indicator; reflects earnings post-policy implementation
Household Consumption	**HCONS**	Dependent	Continuous (₦ per month on food, housing, etc.)	Immediate indicator of welfare; affected by liquidity availability
Household Savings	**HSAV**	Dependent	Continuous (₦ per month)	Reflects capacity for future resilience and financial planning
Access to Financial Services	**AFS**	Independent	Binary (1 = has access, 0 = no access)	Measures financial inclusion, critical during cash scarcity
Awareness of Redesign Policy	**AWARE**	Independent	Binary (1 = aware, 0 = not aware)	Measures information reach and preparedness for the change
Employment Status	**EMPSTAT**	Control	Binary (1 = employed, 0 = unemployed)	Key determinant of household income and stability
Education Level	**EDU**	Control	Ordinal (0 = No formal, 1 = Primary, 2 = Secondary, 3 = Tertiary)	Proxy for digital literacy and policy adaptation potential
Urban/Rural Location	**URB**	Control	Binary (1 = urban, 0 = rural)	Captures the digital divide and access to banking infrastructure
Household Size	**HSIZE**	Control	Integer (number of household members)	Larger households may face a greater impact from cash shortages

Estimation Strategy

Separate OLS models were estimated for each welfare indicator (Income, Consumption, Savings). The key independent variables of interest were access to financial services and

awareness of the currency redesign policy, while other socioeconomic and demographic characteristics served as controls. Cronbach's alpha was adopted to test the reliability of the study instrument to ensure internal consistency with the study objectives. Additionally, multicollinearity was tested using Variance Inflation Factors (VIF) to ensure that the independent variables were not highly correlated with each other, as the violation of this assumption inflates the standard errors of the estimated coefficients, which leads to unstable estimates.

RESULTS AND DISCUSSIONS

Questionnaires were administered to 399 respondents from 141,776 households within the six area councils in the FCT, Nigeria. The hypotheses of this study were tested using OLS.

Questionnaire Distribution and Response Rate

Table 4. Distributed and Returned Questionnaire / Response Rate

S/N	Area Councils	Distributed Questionnaire	Returned Questionnaire	Response Rate
1	Abaji	126	118	29.57
2	AMAC	30	29	7.27
3	Bwari	20	18	4.51
4	Gwagwalada	17	16	4.01
5	Kuje	100	94	23.56
6	Kwali	106	100	25.06
	Total	**399**	**375**	**93.98**
Valid	Response Rate	Frequency	Percent	
	Complete	375	93.98	
	Invalid	9	2.26	
	Incomplete	15	3.76	
	Total	399	100.0	

From the results in Table 4, out of 399 questionnaires administered to respondents, 375 (93.98 percent) were valid, duly completed, and resubmitted to the researcher, and were used to assess the effect of currency redesign policy on household welfare in FCT.

Pre-estimation Test Results

First, the internal consistency and reliability of the questionnaire for reliable and robust results were tested using the Cronbach's alpha test. The Cronbach's alpha reliability test result of 0.919, which exceeds the generally accepted threshold of 0.70 (Nunnally, 1978), shows that the instrument possesses excellent internal consistency and can produce dependable and valid results suitable for statistical analysis and inference.

Table 5: Reliability Statistics

	Cronbach's Alpha	No of Items
Questionnaire	0.919	9

Table 6: Descriptive Statistics

	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
HINC	85,400	32,150	15,000	250,000	1.25	2.18
HCONS	63,200	18,750	12,000	120,000	0.68	0.92
HSAV	12,300	8,450	0	50,000	1.85*	4.32*
AFS	0.62	0.49	0	1	-0.48	-1.76
AWARE	0.78	0.42	0	1	-1.32	-0.25
EMPSTAT	0.54	0.50	0	1	-0.16	-1.98
HSIZE	5.2	2.1	1	12	0.75	0.88
EDU	1.8	0.9	0	3	-0.12	-0.95
URB	0.65	0.48	0	1	-0.62	-1.62

The results in Table 6 reveal that the HINC average monthly income of ₦85,400 (±₦32,150) and skewness = 1.25 indicate significant income inequality. This implies that a large portion of households earn below average, confirming the regressive nature of abrupt monetary shocks. This validates Pigou's Welfare Theory (1920), which posits that economic disruptions disproportionately burden low-income groups and increase their vulnerability. HCONS at ₦63,200 (±₦18,750), with moderate right skewness (0.68). This reflects short-term consumption smoothing, as predicted by Deaton's (1997) Permanent Income Hypothesis. Policy-induced liquidity shocks result in households prioritizing essential goods such as food and housing at the expense of healthcare, education, and asset accumulation. HSAV with ₦12,300 (±₦8,450), high skewness (1.85), and leptokurtosis (4.32) reveals financial volatility, which depletes households' emergency reserves, especially in rural areas. This result supports Fisher's Quantity Theory (1911), highlighting how a contraction in money supply forces households to reduce or exhaust savings. Similarly, Afolabi and Okonkwo (2023) reported widespread financial erosion during the redesign period.

AFS, with only 62% of households having access to financial services, revealed persistent financial exclusion, particularly in rural areas. This supports financial inclusion theory (Demirgüç-Kunt et al., 2018), suggesting that weak financial infrastructure limits the efficacy of monetary reforms. Similarly, the CBN (2023) reported that only 45% of Nigerians used formal banking during redesign. AWARE is highly skewed to the left (-1.32), indicating significant rural-urban gaps in communication reach. This highlights the weak policy dissemination, particularly in low-connectivity regions. Distinct from India's structured awareness campaigns during demonetization (Ghosh, 2017), Nigeria's fragmented approach limits households' preparedness

and adaptability (Ezeanyeji & Uche, 2023). EMPSTAT, with only 54% of the respondents employed, and a flat (platykurtic) distribution (-1.98), labor market fragility is evident. This supports Keynes' (1936) liquidity preference theory: cash scarcity constrains economic activity, especially in the informal sector. The National Bureau of Statistics (2023) revealed a 22% decline in employment during the redesign period, further deepening welfare risks. HSIZE of 5.2 and right skewness (0.75) indicate that larger families faced more significant welfare stress.

EDU of 1.8 (between primary and secondary) with a platykurtic shape (-0.95) suggests widespread educational disparity. This limits the adoption of digital payment and policy compliance. Zins and Weill (2016) demonstrate that an increase in educational level boosts digital financial usage by 19%, underscoring the need for targeted financial literacy initiatives. URB, with urban residents constituting 65% of the sample, indicates rural underrepresentation. Nevertheless, rural areas have experienced longer delays in accessing redesigned currencies. Aroghene and Imene (2023) report that rural households waited 2.3 times longer than their urban counterparts to access cash, indicating severe spatial inequality in policy outcomes.

Table 7: Correlation Matrix

	HINC	**HCONS**	**HSAV**	**AFS**	**AWARE**	**EMPSTAT**	**HSIZE**	**EDU**	**URB**
HINC	1.00	.72***	.65***	.58***	.31**	.69***	-.18*	.52***	.61***
HCONS		1.00	.48***	.42***	.25*	.51***	-.12	.38***	.45***
HSAV			1.00	.63***	.37**	.44***	-.22*	.57***	.59***
AFS				1.00	.51***	.33**	-.15	.64***	.72***
AWARE					1.00	.28*	-.08	.41***	.55***
EMPSTAT						1.00	-.13	.47***	.38***
HSIZE							1.00	-.21*	-.32**
EDU								1.00	.66***
URB									1.00

The correlation analysis results in Table 7 reveal a strong positive nexus between household welfare indicators (income, consumption, savings) and financial access (0.58-0.63), urban location (0.59-0.61), and education (0.52-0.57), while showing negative associations with household size (-0.18 to -0.22), This confirms that financially included educated urban households with fewer members weathered the currency redesign impacts better, highlighting significant spatial and socioeconomic disparities in policy effects.

Model Estimation Results

The study examines the effect of the currency redesign policy on household welfare in the FCT using three key welfare indicators: income, consumption, and savings. This reveals a

nuanced and statistically significant nexus between access to financial services, socio-demographic characteristics, and welfare outcomes. The magnitude and direction of the coefficients across the models offer empirical clarity on the severity and distribution of the policy's impact.

Table 8: H_1: Household Income (HINC)- Currency Redesign Policy nexus

Variables	B	t-value	Sig.	VIF
AFS	0.32***	4.15	.000	1.82
AWARE	0.18*	2.01	.046	1.45
EMPSTAT	0.41***	5.32	.000	1.67
EDU	0.27**	3.12	.002	1.93
URB	0.35***	4.28	.000	2.15
HSIZE	-0.14*	-2.11	.036	1.24
Constant		6.85	.000	
		Model Fit		
R^2	0.61	Adj. R^2	0.58	
F	(7,192) =28.74***			

Table 9: H_2: Household Consumption (HCONS)- Currency Redesign Policy nexus

Variables	B	t-value	Sig.	VIF
AFS	0.25**	3.02	.003	1.82
AWARE	0.15	1.78	.077	1.45
EMPSTAT	0.33***	4.01	.000	1.67
EDU	0.19*	2.14	.033	1.93
URB	0.28***	3.45	.001	2.15
HSIZE	-0.22**	-2.89	.004	1.24
Constant		7.12	.000	
		Model Fit		
R^2	0.53	Adj. R^2	0.50	
F	(7,192) =21.33***			

Table 10: H_3: Household Savings (HSAV)- Currency Redesign Policy nexus

Variables	B	t-value	Sig.	VIF
AFS	0.38***	4.85	.000	1.82
AWARE	0.21*	2.43	.016	1.45
EMPSTAT	0.24**	2.89	.004	1.67
EDU	0.31***	3.78	.000	1.93
URB	0.42***	5.12	.000	2.15
HSIZE	-0.17*	-2.22	.027	1.24
Constant		5.98	.000	
		Model Fit		
R^2	0.47	Adj. R^2	0.44	
F	(7,192) =18.92***			

Table 11: Model Diagnostics Summary

Test	Result	Interpretation
Multicollinearity	Max VIF=2.15	No concerning collinearity
Heteroskedasticity	BP p=.18	Homoscedasticity confirmed
Normality (Q-Q)	Residuals ±2.5 SD	Normally distributed errors
Specification (RESET)	p=.21	Correct functional form

The model diagnostics results in Table 11 show that the study models were robust and correctly specified. The VIFs values were below the threshold of concern (maximum VIF = 2.15), confirming the absence of multicollinearity. The Breusch-Pagan test (p = .18) shows that the model is homoscedastic, while the Q-Q plot shows residuals within ±2.5 standard deviations, which supports normality. Additionally, the Ramsey RESET test (p = .21) shows that the models are correctly specified, with no evidence of omitted variable bias or functional form misspecification.

RESULTS AND DISCUSSION

The study results from Tables 8 to 10 on the effect of the currency redesign policy on household welfare in the FCT using three key welfare indicators: income, consumption, and savings. This reveals a nuanced and statistically significant nexus between access to financial services, socio-demographic characteristics, and welfare outcomes. The magnitude and direction of the coefficients across the models offer empirical clarity on the severity and distribution of the policy's impact.

Across the models, AFS positively and significantly impacts household income by 32%, consumption by 25%, and savings by 38%. This implies that households with access to formal financial services are protected from unethical financial activities, which in turn enhances their welfare during cash shortages, consistent with EFInA's (2022) findings that financially included Nigerians are 58% more resilient to policy shocks. This aligns with Kenya's experience, in which mobile money users have adapted better to currency reforms (Aroghene & Imene, 2023). These results confirm financial inclusion theory (Demirgüç-Kunt et al., 2018; Zins & Weill, 2016; Udo et al, 2023; Samuel et al, 2023), which posits that financial services buffer against liquidity shocks by enabling income continuity. Households with access to financial technology platforms, such as mobile banking, ATMs, or POS, were better positioned to maintain transactional capacity and reduce exposure to income shocks during the cash scarcity period (EFInA, 2022). These results align with those of Ghosh (2017) and Udo et al. (2023), who noted that digital finance enables consumption smoothing during cash flow disruptions.

URB residency positively and significantly impacts household residents in urban locations through their income by 35%, consumption by 28%, and savings by 42%, confirming Pigou's Welfare Economics on spatial inequality. These results imply that household residents in urban areas have superior access to the banking infrastructure and digital platforms. In contrast, rural households that are typically financially excluded face delays in accessing banking infrastructure, digital platforms, and new notes, which decreases their income outcomes. This mirrors the findings of Afolabi and Okonkwo (2023) and the World Bank (2023), who highlight geographic inequities during Nigeria's currency redesign implementation. This reflects the asymmetric impact of infrastructural access on savings behavior during liquidity disruptions, reinforcing the findings of EFInA (2022) and the World Bank (2023).

EMPSTAT positively influenced household income by 41%, consumption by 33%, and savings by 24%. This implies that employed households experienced a 41% increase in income level compared with unemployed households. This aligns with the empirical findings of Oyelami et al. (2023) and Chodorow-Reich et al. (2020), who report sharp income declines among informal and unemployed workers during liquidity disruptions. The result underscores the protective role of labor market participation and links it to the Keynesian theory of effective demand, where employment sustains income and spending capacity.

EDU positively and significantly affects household welfare through income by 27%, 19% on consumption, and 24% on savings, revealing that educated households are more likely to earn higher income**,** maintain healthy consumption levels**,** due to better adaptability and financial knowledge, and retain income or grow savings for investment. These results support Keynes' liquidity preference theory. Formal sector workers who received digital salaries were insulated from cash shortages. This corroborates the NBS (2023) data, showing that informal workers suffered 22% greater income losses (Ezeanyeji & Uche, 2023). Education enhanced digital literacy and awareness of alternative financial tools, aligning with Deaton (1997) and Atkinson and Stiglitz (1980), resulting in investment in human capital improving welfare adaptability under economic shocks.

Across the model, HSIZE negatively and significantly impacts household welfare with coefficients (-0.14* to -0.22**), aligning with Varian's Welfare Loss Theory (2010). This implies that a 1% increase in household size decreases household income by 14%, consumption by 22%, and savings by 17%. This decline reveals resource dilution due to the increased financial pressure during the transition and monetary shocks. These results are consistent with Varian's (2010) results on deadweight welfare loss due to policy inefficiency.

Across the model, AWARE positively and significantly impacts household indicators, such as income by 18%, consumption by 5%, and savings by 21%. This implies that households

with access to information on the currency redesign policy increase their income by 18% due to proactive financial adjustment and savings by 21% through early strategic behavior, such as digital transfers or delayed withdrawals. The weak impact on consumption of 15% revealed that awareness alone, without access or preparedness, has a limited effect on household spending.

Theoretically, the results of this study reveal robust empirical validation of the Keynesian Liquidity Preference Theory, arguing that limited access to cash and digital alternatives constrains consumption and savings, particularly among large, rural, and unbanked households. The study's results support the Quantity Theory of Money, noting that a 1% decline in currency circulation reduces household transactions and influences overall economic welfare. Additionally, from a Welfare Economics perspective (Pigou, 1920; Atkinson & Stiglitz, 1980), the study revealed that a 1% decline in income, consumption, and savings, especially among large and rural households, constitutes a significant welfare loss.

The inefficiencies generated by the poor rollout of the redesign policy created the "deadweight losses," particularly for low-income, cash-dependent populations (Varian 2010). Empirically, the study results align with India's 2016 demonetization experience, where rural and informal sector incomes declined by 22% because of abrupt cash scarcity (Chodorow-Reich et al., 2020). Similarly, Aroghene and Imene (2023) noted that countries such as Ghana and Kenya implemented successful redesigns only after establishing a strong digital infrastructure, in contrast to Nigeria's rushed implementation amidst weak financial networks. Across the models, the magnitude of the coefficients reveals that despite the currency redesign initiatives of integrating advanced security features to curb counterfeiting, protect household welfare, and restore confidence in Nigeria's monetary system, it imposed a significant short-term welfare loss, particularly among the poor, financially excluded, and rural households.

CONCLUSION

This study assessed the effect of a currency redesign policy on household welfare in the FCT, addressing a critical gap in the existing literature that predominantly focuses on macroeconomic outcomes while neglecting micro-level welfare impacts. The study results revealed that while the policy aimed to enhance monetary stability and protect household welfare and financial inclusion, its abrupt implementation exacerbated socioeconomic vulnerabilities, disproportionately affecting low-income, rural, and financially excluded households. The results reveal AFS significantly buffered welfare shocks by 32% for income and 38% for savings, while URB fared better at 35–0.42% due to superior digital infrastructure. Conversely, larger households (HSIZE) faced severe welfare declines of 14% to 22%, confirming Varian's (2010) deadweight loss theory. The novelty of this study lies in its micro-

level empirical approach, which uses OLS regression on post-policy survey data to quantify welfare effects, a methodological advancement over prior descriptive or macroeconomic analyses. It also contributes to policy-relevant insights by demonstrating how structural inequalities (urban-rural divides, financial exclusion) mediated policy impacts, a dimension overlooked in CBN's rollout strategy.

RECOMMENDATIONS

1. Phased Policy Implementation: Future currency reforms should adopt gradual timelines (6–12 months) to allow rural and informal sectors to adapt to and learn from India's demonetization pitfalls.
2. Targeted Financial Inclusion: Expand rural agent banking and mobile money platforms to bridge the 38% financial access gap, leveraging Kenya's M-Pesa model.
3. Digital Literacy Programs: Integrate financial education into school curricula and community campaigns to enhance digital payment adoption, replicating Ghana's success.
4. Stakeholder coordination: Strengthen CBN's collaboration with state governments and telecom providers to ensure equitable cash distribution and digital infrastructure readiness.
5. Further research: Future research should explore long-term, gender-specific, and informal sector impacts.

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