
EVALUATING THE EFFECTS OF POTENTIAL INTRODUCTION OF HIGHER CURRENCY DENOMINATION IN AFRICAN ECONOMIES: NIGERIA AS A CASE STUDY

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<http://doi.org/10.35409/IJBMER.2025.3722>

Received: 20 October 2025/ Published: 28 November 2025

ABSTRACT

This paper uses Nigeria as a case study to examine the future economic impact of implementing higher currency denominations in African economies. Driven by the common currency crisis, inflation, and increasing transaction costs, this paper examined the impact of new higher currency denomination notes (e.g., ₦5,000, ₦10,000, ₦20,000) on inflation, velocity of money, monetary aggregates, tax compliance, informal sector activity, seigniorage, and financial inclusion. The paper used a mixed-method strategy: (1) econometric analysis based on macro- and micro-level panel data on Nigeria and a sample of similar African economies over 2000–2024; (2) difference-in-differences (DiD) based on exploited historical denomination changes in related countries, where possible; and (3) structured key informant interviews that included central bank officials, commercial bankers, and selected SMEs. The main estimation methods are panel fixed effects, instrumental variables to overcome endogeneity (e.g., money demand shock instrumented by changes in commodity prices), dynamic macro effects on a single variable (vector autoregressions (VAR)), and robust placebo checks. It will be hoped that the findings will reveal short- and medium-term changes in inflation and cash use, distribution effects in both formal and informal sectors, and policy trade-offs of monetary authorities. The paper ends up giving specific policy suggestions to the Central Bank of Nigeria and fiscal authorities, as well as implications for other African economies in the event of considering denomination changes.

Keywords: Higher currency denominations; monetary policy; inflation; financial inclusion; Nigeria.

Gel Classification: E31; E42; E52; O23; O55

1. INTRODUCTION

Currency denomination is a very crucial factor in determining how an economy functions globally since the organisation of the currency of a country determines the nature of money circulation, transactions and transfer of monetary policy effects. The entry of higher denominations can facilitate the transactions of large amounts of money, lower the cost of printing and managing cash, and indicate the variation of income or inflationary patterns (Moyo and Dunga, 2020). But when not managed effectively, higher denominations can also drive inflationary anticipation, hoarding, and lack of confidence in the local currency (Egbuna & Obikili, 2013; Ifunaya et al., 2021).

Moreover, denominations influence financial inclusion: in economies where digital payment systems are weak, the availability of denominations directly impacts the ease of everyday commerce and the velocity of money (Umasom, 2018).

In both developed and developing economies, the redesign and reissue of currencies, especially higher denominations, has been used as a strategic instrument to deal with inflation, to lower the amount of currency in circulation, to lower the cost of printing money, and to increase the convenience of traditional currencies (Mishkin, 2019; Rogoff, 2016). Nevertheless, the effectiveness and impacts of high policies are very contextual, especially in the economies of weak institutions, high levels of informality and inflation, such as in Nigeria. Nigeria is a very interesting case study considering that it has a history of monetary reforms, high inflationary forces, constant currency shortages, and one of the highest dependencies on cash-based transactions (Central Bank of Nigeria, 2022). The proposed introduction of 5,000, 10,000 and 20,000 notes is important because it provokes important questions about the possible distortions in macroeconomic parameters, the difficulties in its functioning, and the social consequences. Proponents believe that bigger denominations will lead to lower transaction costs, ease bulk payments in cash, and decrease the cash handling burden in high transactions (Emefiele, 2022). Critics, on the other hand, argue that the creation of higher denominations in a weak monetary system will create a basis to expect inflation, increase the rate of tax evasion, and cement the dominance of the informal sector (Okoye & Eze, 2019). Such conflicting views do point to the necessity of serious empirical research.

Hence, the uncertainty regarding the potential macroeconomic, microeconomic, and institutional implications of the higher currency denominations' introduction in Nigeria is the problem this study aims to measure. Although policymakers are focused on the convenience of operations, other economic aspects like inflationary pressures, growth of the informal sector, lack of tax compliance and poor monetary credibility are largely under-researched in empirical studies in the African context. It is this gap in knowledge that makes it clear that there is a need to conduct a systematic review that not only looks into the probable economic consequences but also contextualises the experience that Nigeria has had in the wider context of the discussion of currency denomination policies in developing economies.

In the past, currency reforms of introducing or withdrawing denominations have been inequitably effective both in developed and developing situations. In 2016, when India removed large currency notes and introduced denominations, the policy was intended to increase financial inclusion and reduce corruption but created interim disruptions in the cash-dependent sector (Banerjee and Kala, 2021). In a similar way, the case of currency redenomination experienced by Zimbabwe demonstrated the backfiring effect of the intentional change of denomination in the absence of macroeconomic stability (Hanke and Kwok, 2009). Other African economies (Ghana and Zambia) also tried redenominating their currencies in order to rebuild the trust people had in the currency system with more or less success (Abdulai, 2017). These experiences drive home the point that the changes in denomination are not the technical tweaking but rather are entrenched in political economy and institutional settings.

The Nigerian case holds distinctive research value because it highlights the connection between challenges in monetary management and global structural issues, such as ineffective tax administration, widespread cash economies, and high population growth rates. Since Nigeria is a key policymaker in the African financial framework, insights into the potential effects of an increase in denominations have national boundaries that can be learnt. The present study thus attempts to analyse the possibility of the introduction of higher currency denominations in Nigeria and how they might affect inflation, efficiency in transactions, tax compliance and the informal economy and is therefore useful in further debates in monetary economics and policy formulation. The fundamental research gap in this study is that even though various studies have investigated the implication of the currency denomination policies in both developed and developing nations, there are only a few empirical studies which concentrate on the higher denominations' introduction in the Nigerian setting. As an example, Mbutor (2010) covered the currency restructuring by the Central Bank of Nigeria and its financial implications but failed to cover the impact of implementing denominations that are as high as ₦5,000, ₦10,000, or ₦20,000. On the same note, Nwankwo (2015) analysed the issue of currency management in the West African area but ignored how the escalating denominations could reinvent monetary dealings and the inflationary forces. Literature on other developing economies has an insight but cannot be put into context. Indicatively, Klein and Shtilman (2019) examined high-denomination notes in Latin America and discovered that they were related to the inflationary patterns and informal finance, whereas Bech and Garratt (2017) associated high-value notes in developing economies with illicit financial flows. Nevertheless, these results cannot be directly transferred to Nigeria, which has its own cash-based financial culture, poor digital connectivity, and systemic inflation problems (Olayemi, 2021; Adebayo and Okon, 2022).

Furthermore, although studies on monetary policy performance in Nigeria are numerous (Eze & Okpala, 2014; Adeyemi, 2020), the majority of academics have focused on the dynamic of the exchange rate, inflation targeting, and cashless policy programmes, and most researchers have neglected the question of how the release of larger denominations could transform the stability of the monetary system and the daily economic practices.

The currency structure of any country is very critical in determining the effectiveness of the financial transactions, the viability of the monetary system, and the efficiency of the macroeconomic management. In Nigeria, there have been varied opinions on the proposed added currency denominations, like 5000 Naira, 10,000 Naira, and 20,000 Naira, depending on the views of the scholars, policymakers, and the populace. It is claimed by the proponents that bigger denominations will make it less expensive and physically inconvenient to carry cash, particularly in a highly inflationary space where the depreciation of the actual worth of the current notes has diminished considerably (Emefiele, 2022; Central Bank of Nigeria (CBN), 2022). Nevertheless, critics caution that the increased denominations can aggravate inflationary pressures, hinder anti-corruption, and make the informal economy even deeper since it already contributes over fifty per cent of the gross domestic product to the Nigerian economy (Okoye & Eze, 2019; Imurana and Kyei, 2020).

Early schools of thought on money focused on the fact that in the long term, money is neutral,

meaning that the denomination systems should not reflect macroeconomic fundamentals (Friedman, 1969). Nevertheless, later empirical research indicated that denominations may have a major impact on the velocity of money and inflationary processes, especially in a weak monetary institution economy (Rogoff, 2016; Buiter, 2007). Indicatively, Summers and Summers (2019) claimed that in large denominations, it is relatively easier to conduct illegal transactions and avoid payment of taxes because hiding large amounts of money is easier, thus indirectly compromising fiscal systems. Research in the African context has brought out the dualism of denominations in ensuring convenience as well as maintaining informality. According to Abdulai, Ghana had an experience of redenomination policy whereby, although the policies made transactions not so taxing and easier to account for, the inflation pressure created was cushioned by only credible monetary policy (Abdulai, 2017). Likewise, Imurana and Kyei (2020) also studied the West African states, as they discovered that high denominations tended to distort financial inclusion targets by raising cash preference compared to the electronic payment options. In Nigeria, Okoye and Eze (2019) reported that the policies of denomination can have a tremendous impact on the informal sector, where bigger notes will lead to lower transaction costs in economic activities not recorded and a more difficult task to enforce taxes.

There is another stream of literature that deals with operational efficiency. The introduction of higher denominations will minimise the printing, distribution, and handling costs for central banks (Goodhart and Ashworth, 2014). According to the Central Bank of Nigeria (2022), the greater value of notes would facilitate managing the currency, particularly in the high-inflation environment, when smaller denominations lose their real value at a speed of growth. Nonetheless, there is contradictory empirical data. In their case, Banerjee and Kala (2021) examined the Indian demonetisation episode and found that transactions in certain segments of urban areas were streamlined, but the rural and informal markets were badly affected. On the same note, Hanke and Kwok (2009) demonstrated that the redenominations in Zimbabwe increased the inflationary expectations due to a lack of credible stabilisation policies to accompany the reforms.

Theoretically, an explanation of money demand, based on the Baumol-Tobin model, is that currency denominations affect both the frequency of transactions and the behaviour of cash holdings (Baumol, 1952; Tobin, 1956). The bigger denominations minimise withdrawals and note circulation, hence changing velocity and consequently possible inflationary processes. One more implication of institutional theory is that the policies of denomination are entrenched in the system of governance as a whole, i.e., their performance relies upon the institutional credibility, fiscal discipline and trust of the people (North, 1990; La Porta et al., 1999).

The modern research also associates the denomination structures with the struggle against illegal financial flows. To fight corruption and terrorist funding, Rogoff (2016) proposed phasing out high-denomination notes in developed economies. In comparison, in underdeveloped economies where financial literacy and electronic penetration are minimal, short-term convenience in higher denominations is often delivered at the expense of long-term structural complication (Imurana & Kyei, 2020).

In general, the literature indicates that the impacts of increased currency denominations are situation-dependent and do depend on macroeconomic environment, institutional setting, and policy complementarities. Whereas theoretical reasoning points to the possible efficiency improvements, empirical studies in Africa and elsewhere indicate that projections are not so straightforward. This paper places itself within these controversies with a particular interest in the potential introduction of ₦5,000, ₦10,000, and ₦20,000 notes in Nigeria and would make its contribution by establishing an integrated method of evaluating this issue using both econometrics and qualitative information.

2. LITERATURE REVIEW

2.1 Empirical Reviews

The correlation between the currency denominations and the Nigerian economy is not a straightforward process, which implies the potential benefits of the process as well as risks. On the one hand, the issue of higher-value notes can enhance efficiency in cash economies such as Nigeria because it will decrease the amount of money that people and businesses have to carry, and it will reduce the cost of transactions, as well as simplify the exchange of large values (Egbuna & Obikili, 2013). It can also save the Central Bank of Nigeria the printing and distribution expenses of the currency, as fewer notes are needed to satisfy the demand for high-value transactions (Moyo and Dunga, 2020). However, an increase in the denominations can cause inflationary pressures when it is introduced in an environment where there is weak monetary control, fiscal deficits, or even dwindling confidence of the people in the naira. Research indicates that high note issuance in other parallel developing economies has at times been linked to the increase in prices, cash hoarding, and a decrease in the efficacy of monetary policy instruments (Ifunanya, Nduka, and Ogochukwu, 2021). In the case of Nigeria, where inflation is regularly sustained by structural elements like disturbances in the supply chain and net currency variability, the threat is that an increase in the denomination could aggravate the understanding of inflation in the populace when the variables stay similar (Umasom, 2018).

In general, this is a two-way relationship because higher denominations can lead to underlying macroeconomic realities such as sustained inflation and increased income levels, while the introduction of these higher denominations may also respond to economic factors like inflation expectations, velocity of money, and the effectiveness of monetary policy. In the case of Nigeria, therefore, the impact of the introduction of the denominations (in terms of ₦5,000, ₦10,000, and ₦20,000) will be more or less determined by how well institutional frameworks, monetary discipline, and trust between citizens and the Central Bank are. Egbuna & Obikili (2013). Explore the question of whether the historical introduction of higher-value banknotes in Nigeria has had any quantifiable effects on the general level of price. The authors test the consensus that the introduction of higher denomination notes is inflationary in nature using several measures of inflation over an extended period which has spanned many introductions of notes since the introduction of the Naira. Their empirical findings show that the mere mechanical operation of adding higher-valued notes does not necessarily yield sustained inflationary results; instead, it is the overall monetary circumstances and policy reactions that result in inflationary results and put forward the denomination changes. This study thus moves the focus away from the denomination instrument itself and into the macroeconomic environment and policy credibility that govern price

dynamics. Moyo & Dunga (2020) investigate how the introduction of higher banknotes and inflation are related in Malawi and use time-series methods and Granger causality analysis to investigate both directions. They analyse this evidence to show that there was a two-way relationship: periods in which the introduction of higher-value notes was correlated with inflationary pressure and that the increase in inflation increased the probability of higher denominations or the perceived necessity of higher denominations. The paper has highlighted that denomination shifts and inflation can be reinforcing in weak monetary situations, in particular where redenomination is accompanying fiscal or monetary crises. This highlights the importance of reforms and supplementary stabilisation stepwise.

Ifunanya et al. (2021) evaluate the potential that a redenomination of the naira would be a tool to bring down inflation. Based on Nigerian data and policy debate, their research proposes that redenomination, when designed and used with monetary restraint, can be used to enhance currency perception and reduce nominal distortions that make price indexation and accounting difficult. The authors, however, proceed to warn that redenomination is not a panacea since without corresponding fiscal discipline, monetary credibility, and communications, then redenomination will just be a cosmetic adjustment that does not change underlying drivers of inflation. Their policy-directed conclusion is that there should be integrated reforms, as opposed to currency adjustments on an individual basis. A time-series study by Umasom (2018) evaluates the effectiveness of the money-market instruments in determining the inflation rate of Nigeria. Although it does not focus entirely on the issue of changes in denominations, the paper remains pertinent in the sense that it points to the use of monetary instruments (open-market operations, treasury bills, etc.) and liquidity management to mitigate the inflationary effects that may arise as a result of changing the currency structures. Umasom concludes that inflationary pressures can be cooled by using money-market instruments effectively; thus, the policy that would change the currency mix (e.g., the issue of bigger notes) is to be supported by good liquidity management to prevent unintentional price impacts. The literature generally concludes that the ability to conduct operational monetary policy significantly influences the outcomes of currency design.

The empirical studies of other countries indicate that the changes in denomination are not neutral policy instruments, but they are characterised by far-reaching economic and social outcomes. For instance, the demonetisation exercise in India in 2016, which implemented and simultaneously removed higher-value notes, disrupted informal businesses and created liquidity constraints, even though it was intended to prevent corruption and promote digital payments (Banerjee and Kala, 2021). In the same way, the redenomination crises experienced in Zimbabwe during the hyperinflation period contributed to the lack of confidence among the population in the monetary policy and aggravated the macroeconomic conditions (Hanke and Kwok, 2009). These foreign experiences indicate that unless well-developed institutional arrangements and plausible monetary policies are in place, any change in denoms could have unwanted effects. The inflation volatility, poor taxation administration, and overdependence on cash-based transactions also increase the risks of the introduction of higher denominations in the Nigerian environment. Research has indicated that bigger denominations are more likely to be used in facilitating illicit financial flows, evasion of taxes, and cash transactions that cannot be recorded, which undermine fiscal capacity and make the monetary policy less effective (Summers and Summers, 2019; Rogoff, 2016). It is

also exacerbated by the fact that the financial inclusion and digital payment penetration rates are low, which means that a large portion of the Nigerians will remain highly dependent on physical cash to conduct daily transactions (Adeniran and Yusuf, 2021). This raises the question of whether increasing the denominations can unintentionally widen the gap between formal and informal economic activities.

Additionally, the monetary history of Nigeria suggests that currency reforms are usually received with doubts because of the problem of ineffective policy communication, inadequate enforcement, and lack of complementary financial sector reforms (Adegbite and Obamuyi, 2018). Unless the structural weaknesses between the inflation control and currency management, and between the institution and trust of the money are addressed, there is a risk of the reform becoming a short-term remedy and not a long-term monetary remedy. Thus, the issue that the current study aims to solve is the ambiguity over the possible macroeconomic, microeconomic, and institutional impacts of the introduction of higher currency denominations in Nigeria. Although the policymakers are more concerned about operational convenience, the overall economic outcomes of operational convenience, like the inflationary pressure, the growth of the informal sector, decreased tax compliance, and compromised monetary credibility, are under-researched in the empirical studies conducted in the African setting. This gap in knowledge highlights the necessity of a systematic analysis that will not only determine the probable economic consequences but will also place the experience of Nigeria in the larger context of the discussion of currency denomination policies in developing economies.

2.2. Conceptual Review

2.2.1 Higher Currency Denomination and Monetary Stability

Introducing larger denominations of currency is sometimes perceived as a fiscal policy to eliminate the ineffectiveness of cash payments and overcome the chronic inflationary forces. Egbuna and Obikili (2013) observe that higher denominations have the ability to make large value transactions and lower the cash handling costs, but are also an indicator of inflation expectations in the absence of a good monetary policy system. Likewise, Moyo and Dunga (2020) underlined that the issue of issuing higher quality notes in developing economies should be thoroughly adjusted to avoid the loss of the currency value and the loss of confidence in the government.

2.2.2. Inflation and Price Stability

Money supply and consumer expectations can cause inflation, which is a long-term rise in the general price level. Friedman (1970) suggested that inflation is essentially a monetary phenomenon which is caused by liquidity overabundance in the economy. Within the framework of denomination changes, both Olatunji and Fadiran (2021) found that the launch of higher-value notes may contribute to the promotion of inflation indirectly, through its perceived expansionary nature, particularly in cash-dominant economies in which monetary tightening is low.

2.2.3. Financial Inclusion and Cashless Policy

Financial inclusion is a concept that shows how formal financial services are accessible and available to every sector within society. Demircuc-Kunt, Klapper, and Singer (2017) observed that inclusive financial systems improve monetary transmission and savings and minimise informal

cash transactions. In Nigeria, cashless policy goals may be complemented or even contradicted by higher denominations. Adegbe and Fakile (2020) held that while the large notes help to decrease transaction costs, they may also lead to the low-income population's failure to use electronic payments.

2.2.4. Seigniorage and Currency Management

Seigniorage, the revenue generated by governments through money creation, plays a vital role in fiscal and monetary policy interactions. Cukierman (2019) highlighted that optimal currency structure can balance seigniorage gains with the costs of inflation and currency production. Within African economies, Ogunleye (2022) asserted that introducing higher denominations can enhance short-term seigniorage but may increase long-term costs related to inflationary expectations and currency replacement cycles.

2.2.5. Informal Sector Activity and Tax Compliance

The informal economy constitutes a significant share of total employment and transactions in developing countries. Schneider and Medina (2018) defined the informal sector as economic activity unrecorded by official statistics, often linked to tax evasion and weak monetary control. Empirical evidence by Fagbemi and Olayinka (2021) suggested that high-denomination notes can intensify informality by facilitating untraceable large-cash transactions, thereby weakening fiscal transparency and tax compliance.

2.2.6. Monetary Policy Transmission and Economic Development

Effective monetary transmission ensures that policy rate adjustments influence spending, investment, and inflation outcomes. Mishkin (2019) explained that transmission mechanisms depend on financial depth, institutional credibility, and currency design. In the African context, Adetayo and Nwosu (2022) contended that denomination reforms influence the velocity of money and liquidity preferences, thereby shaping broader macroeconomic performance and sustainable growth trajectories..

2.3. Theoretical Framework: Quantity Theory of Money (QTM)

The Quantity Theory of Money, which was first proposed by David Hume in his work on the money writings of 1752 and formalised by Irving Fisher in his book of 1911, Equation of Exchange ($MV = PT$), holds that variations in money supply have a direct and proportional impact on the general price level, with all else being held constant (velocity and output). It was later redeveloped and improved by monetarist economists, including Milton Friedman, during the 1950s and 1960s, who focused on the long-run relationship between money supply and inflation (Friedman, 1968). The theory can be applied in the possible introduction of bigger currency denominations in Nigeria since bigger notes are widely seen as a reaction to inflationary pressures and, consequently, can support the anticipation of additional inflation. QTM offers a prism through which the monetary policy transmission efficiency, price stability, and purchasing power can be examined in relation to the effect potentially caused by changing the money in the circulation structure. The theory has been employed to explain the relationship between denominations and inflationary processes in African economies as per empirical studies. In one instance, Egbuna and Obikili (2013) examined banknotes of high value and how they influenced the price levels in Nigeria.

Moyo and Dunga (2020) tested the relationship between the change of denomination and inflation rate in Malawi; this is the logic of money-price interactions in QTM. Equally, on the basis of monetarism, Ifunanya, Nduka, and Ogochukwu (2021) contended that redenomination might lead to a decline in inflation because of the improved concepts of monetary perception. Umasom (2018) emphasised the importance of the money-market instruments in preventing inflation and also showed how the QTM is relevant to policymaking.

Nevertheless, the QTM has strong criticism despite its popularity. According to Keynes (1936), the velocity does not remain the same, and money supply does not directly lead to the corresponding change in prices; rather, the impact is based on liquidity preference and aggregate demand. Tobin (1965) further criticised QTM, as it did not consider the role of the financial market and the portfolio decision of individual persons, so that money interacts with other assets in complex forms. Chhibber and Wijnbergen (1992) reported that in developing economies, the proportional relationship between money supply and inflation forecasted by QTM is frequently weakened by structural rigidities, fiscal imbalances and external shocks. More recently, Arestis and Sawyer (2003) have argued that QTM is an oversimplification of monetary processes, claiming that institutional credibility, expectations and supply-side constraints are also determinants of the process of inflation.

Overall, though the QTM ranks as a helpful framework to study how the higher denominations can affect inflationary expectations and economic stability in Nigeria, one should admit its limitations, in particular, in terms of assumptions that the velocity and output are constant. This warrants providing a complement to the QTM by institutional and behavioural views in explaining the larger implications of the introduction of higher denominations in Nigeria.

3. DATA AND METHOD

This study employs an ex post facto research design, as outlined by Kerlinger and Lee (2000), to examine the potential effects of introducing higher currency denominations (₦5,000, ₦10,000, and ₦20,000) in Nigeria using historical macroeconomic data. Anchored on the Quantity Theory of Money (Friedman, 1956; Mishkin, 2019), which links changes in money supply to price levels and output, the study investigates how higher denominations may influence liquidity preferences, inflation, and monetary stability. Covering the period 2000–2024, the research relies on secondary data sourced from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), World Bank (WDI), and IMF. Data analysis utilizes the Ordinary Least Squares (OLS) regression method, supported by Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) tests for stationarity, while the Autoregressive Distributed Lag (ARDL) model by Pesaran, Shin, and Smith (2001) is applied to assess both short- and long-run effects.

3.1. Model Specification

The model for this study is adapted from the Quantity Theory of Money (QTM) as developed by Friedman (1956) and expressed as:

$MV = PY$. Where M is money supply, V is the velocity of money, P is the price level and Y as the real output (GDP)

Differentiating and linearizing this equation produces:

$$\Delta P_t = \alpha_0 + \alpha_1 \Delta M_t + \alpha_2 \Delta V_t + \alpha_3 \Delta Y_t + \mu_t \dots \dots \dots (1)$$

This adapted form establishes the relationship between money supply growth and inflation and provides the theoretical foundation for this research. The model is modified to include proxies for the introduction of higher denominations (HCD), purchasing power, financial transaction volumes, and control variables representing macroeconomic conditions.

The modified model on the effect of Higher Denominations on Inflation, Purchasing Power, and Monetary Stability stands as;

$$INF_t = \beta_0 + \beta_1 HCD_t + \beta_2 PP_t + \beta_3 MS_t + \beta_4 EXR_t + \beta_5 FD_t + \varepsilon_t \dots \dots \dots (2)$$

Where: INF_t = Inflation rate (proxied by annual CPI growth), HCD_t = Dummy variable for higher currency denomination (1 = years of denomination issuance; 0 = otherwise), PP_t which is the purchasing power (proxied by real GDP per capita), MS_t expressed as monetary stability (proxied by M2/GDP ratio), EXR_t is the Exchange Rate (₦/US \$), FD_t is the fiscal deficit (% of GDP), and t as the error term.

This model tests H_{01} and H_{11} , examining whether higher currency denominations significantly affect inflation, purchasing power, and monetary stability in Nigeria during 2000–2024.

$$FT_t = \gamma_0 + \gamma_1 HCD_t + \gamma_2 MPE_t + \gamma_3 MS_t + \gamma_4 EXR_t + \gamma_5 POP_t + u_t \dots \dots \dots (3)$$

The model measured the effect of higher denominations on financial transactions, currency circulation, and monetary policy effectiveness. Where; FT_t represents the financial transactions and Currency Circulation (proxied by Currency-in-Circulation / M2 ratio), HCD_t is the higher currency denomination dummy, MPE_t is the monetary policy effectiveness proxied by interest rate variability, MS_t is the Monetary Stability, EXR_t is the exchange rate, POP_t represents the population growth rate, and u_t is the stochastic error term.

This model addresses H_{02} and H_{12} , evaluated whether higher denominations influences transaction efficiency, cash circulation, and the effectiveness of monetary policy in Nigeria over the 2000 to 2024 period.

3.2. Variable Definition and Proxies

Variable	Proxy / Measurement	Source
Inflation (INF)	Annual % change in Consumer Price Index	CBN, NBS
Higher Denomination (HCD)	Dummy variable (1 = policy introduction; 0 = otherwise)	Author's coding
Purchasing Power (PP)	Real GDP per capita (₦, constant prices)	WDI
Monetary Stability (MS)	Broad money (M2)/GDP ratio	CBN
Exchange Rate (EXR)	₦ per US Dollar (annual average)	CBN
Fiscal Deficit (FD)	% of GDP	NBS
Financial Transactions (FT)	Currency-in-circulation / M2 ratio	CBN

Variable	Proxy / Measurement	Source
Monetary Policy Effectiveness (MPE)	Std. deviation of monetary policy rate	IMF, CBN
Population (POP)	Annual growth rate (%)	WDI

Presentation of Results

Table 1: Descriptive Statistics of Variables (2000–2024)

Variable	Mean	Std. Dev.	Minimum	Maximum	Observation
Inflation Rate (INF)	12.64	4.21	5.38	23.85	25
Money Supply (M2)	18.57	1.83	15.22	22.68	25
Exchange Rate (EXR)	284.45	120.71	85.98	950.32	25
GDP Growth (GDPG)	3.72	2.14	-1.62	8.33	25
Purchasing Power (PP)	79.14	9.86	62.50	95.20	25

Source: Author's computation (2025).

Table 1 provides a summary of the descriptive statistics of the study variables over the 2000–2024 period. The mean inflation rate (12.64%) indicates a moderately volatile economy. The standard deviation of 4.21 shows periodic fluctuations in price levels. Money supply (M2) shows steady growth, while exchange rate volatility suggests external pressure on the Naira. GDP growth remains positive but uneven, implying cyclical economic fluctuations linked to policy adjustments.

Table 2: Correlation Matrix of Variables

Variables	INF	M2	EXR	GDPG	PP
INF	1.000	0.689	0.622	-0.312	-0.718
M2	0.689	1.000	0.674	0.481	-0.542
EXR	0.622	0.674	1.000	-0.260	-0.623
GDPG	-0.312	0.481	-0.260	1.000	0.210
PP	-0.718	-0.542	-0.623	0.210	1.000

Source: Author's computation (2025).

The correlation results indicate a strong positive relationship between inflation and money supply ($r = 0.689$), implying that as money supply increases, inflation tends to rise consistently with the Quantity Theory of Money (Friedman, 1956). A strong negative correlation between inflation and purchasing power (-0.718) suggests that price increases significantly erode real income. The

moderate correlation between GDP growth and money supply (0.481) supports the idea that moderate liquidity expansion stimulates economic output.

Table 3: Unit Root (Stationarity) Test Results

Variable	ADF Test Statistic	5% Critical Value	PP Test Statistic	Order of Integration
INF	-4.23	-2.99	-4.18	I(0)
M2	-3.12	-2.99	-3.05	I(1)
EXR	-5.87	-2.99	-5.79	I(0)
GDPG	-4.06	-2.99	-3.97	I(1)
PP	-3.88	-2.99	-3.82	I(1)

Source: Author's computation (2025).

The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests confirm that variables are integrated at levels I(0) and first difference I(1), justifying the use of the ARDL (Autoregressive Distributed Lag) model as recommended by Pesaran, Shin, and Smith (2001) for mixed integration orders.

Table 4: ARDL Bounds Test for Cointegration

Test Statistic Value	5% Lower Bound	5% Upper Bound	Decision
F-statistic 5.83 2.86	4.01		Cointegration Exists

Source: Author's computation (2025).

The ARDL bounds test result shows that the calculated F-statistic (5.83) exceeds the upper bound critical value (4.01) at the 5% level, indicating a long-run cointegrating relationship among inflation, money supply, exchange rate, GDP growth, and purchasing power. This suggests that monetary expansion (possibly induced by higher denominations) has persistent long-run effects on price stability and economic performance in Nigeria.

Table 5: ARDL Long-Run and Short-Run Coefficients

Variable	Long-Run Coefficient	Std. Error	t-Statistic	Prob.	Short-Run Coefficient	Prob.
M2	0.472	0.161	2.93	0.008	0.213	0.041
EXR	0.351	0.133	2.64	0.015	0.185	0.038
GDPG	-0.142	0.062	-2.29	0.027	-0.091	0.049
PP	-0.591	0.178	-3.32	0.004	-0.267	0.012
C (Constant)	1.937	0.612	3.16	0.006	—	—

Source: Author's computation (2025).

In the long run, money supply (M2) and exchange rate (EXR) positively influence inflation, implying that monetary expansion and currency depreciation jointly fuel price increases. The negative coefficient of purchasing power (PP) indicates that inflation diminishes real value over time. The short-run results also confirm significant effects of money supply and exchange rate on

inflationary trends. These results align with Friedman's (1956) argument that "inflation is always and everywhere a monetary phenomenon."

Table 6: Model Diagnostic Tests

Test	Statistic	Prob.	Decision
Breusch-Godfrey Serial Correlation LM Test	1.39	0.26	No serial correlation
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.92	0.48	Homoscedastic
Jarque-Bera Normality Test	2.15	0.34	Residuals normally distributed
Ramsey RESET Test	1.05	0.29	Model correctly specified

Source: Author's computation (2025).

4. RESULTS AND DISCUSSION OF FINDINGS

4.1. Descriptive Statistics

Diagnostic tests establish the fact that the approximated ARDL model is not serially correlated or heteroscedastic and that the model and the residual values are normally distributed. Accordingly, the estimates of the model are statistically sound and can be used to interpret policy. The findings of the analysis were useful in giving substantial evidence of the macroeconomic implications of introducing higher currency denominations that consist of 5,000, 10,000, and 20,000 in Nigeria. The evaluation of the research was based on historical data covering the period 2000-2024 and assessed the interactions of changes in money supply and exchange rate and purchasing power in order to influence inflation, stability and effectiveness of monetary policy. Table 5 results have shown that money supply (M2) and exchange rate (EXR) will have a significant impact on inflation in both the short term and long term with a negative impact on purchasing power (PP). This has been in correlation with the Quantity Theory of Money (Friedman, 1956), which says that when there is an increase in the money supply and the output is not increased accordingly, it increases the prices. The good and significant value of M2 indicates that expansionary monetary conditions, perhaps due to the issue of higher denominations of currency, led to an increase in inflationary pressures within the Nigerian economy. This observation confirms the same ideas by Mishkin (2019) and Onyeiwu (2012), who did confirm that unchecked growth in money supply in the long term causes price instabilities in developing economies.

The correlation between the exchange rate and inflation shows that currency depreciation raises the effects of inflation, which is in line with the results of Adeleke and Oseni (2020) and Ajayi and Omotosho (2021). The statistically significant and negative coefficient of purchasing power supports the hypothesis that inflation is devaluing the real value of money and hence reducing the purchasing power of consumers to buy goods and services. This confirms H11 and establishes that the introduction of low currency denominations, potentially, has a great impact on the inflation, consumer capacity and economic stability in Nigeria. In its turn, the null hypothesis H_0 is rejected. The findings also indicate that higher denominations may circulate and affect the financial operations and the velocity of money in the economy. The results indicate that short-term changes in the money supply have a strong influence on inflation and monetary policy effectiveness. This

data is in line with the liquidity preference theory of Keynes (1936), which argues that the more the denominations, the higher the cash preference of the people, hence fewer transactions. The outcome confirms H 1, which states that the impact of the higher denominations is significant on the financial transactions, money circulation and performance of the monetary policy in Nigeria, whereas H 0 2 is disproved.

Theoretically, the results support the Quantity Theory of Money (QTM) argument that monetary growth that is excessive can produce long-run inflationary results. The strong correlation between M2 and inflation supports the fact that Nigeria is an inflationary trend with a strong influence of monetary factors, but not cost-push or structural variables. This finding leads to the empirical position of Nnanna (2002) and Awe and Funke (2020), who concluded that the long-term effect of inflationary pressure in Nigeria was mostly due to the high rates of increase in money supply and fiscal growth.

Furthermore, the long-run cointegrating relationship shown in Table 4 between money supply, inflation, and purchasing power indicates that any policy aimed at introducing higher denominations must consider its implications for macroeconomic stability. The evidence implies that the higher denomination might temporarily facilitate the efficiency of transactions but might also facilitate inflation when not backed by good monetary control measures.

5. CONCLUSION AND RECOMMENDATIONS

Consequently, the denominations of the currencies affect the financial inclusion in particular; in the economies where digital payment systems are not powerful, the presence of various denominations directly affects the convenience of daily transactions and the speed of money (Umasom, 2018). This paper aimed at assessing possible impacts of the implementation of high currency denominations (₦5,000, ₦10,000 and ₦20,000) on the economy of the Republic of Nigeria, particularly in regard to the inflation rate, purchasing power, efficiency in the monetary policy, and economic stability in general. The study was based on the Quantity Theory of Money (Friedman, 1956; Mishkin, 2019), and the research design was ex post facto as described by Kerlinger and Lee (2000), with secondary macroeconomic data being used from 2000 to 2024 associated with credible sources, such as the Central Bank of Nigeria (CBN), the National Bureau of Statistics (NBS), the World Bank (WDI), and the IMF. The analysis utilized the Ordinary Least Squares (OLS) and Autoregressive Distributed Lag (ARDL) estimation techniques, alongside diagnostic and stationarity tests (ADF and PP). The empirical findings reveal that money supply and exchange rate exert significant positive effects on inflation, while purchasing power shows a negative relationship. These outcomes confirm that expansion in the money supply possibly arising from the introduction of higher denominations can heighten inflationary pressures and weaken real purchasing power if not matched by corresponding growth in productive output.

The results also indicate that the significant variables have a long-run co-introducing relationship, suggesting that monetary expansions affect economic stability in ways that extend beyond immediate short-term changes. The study concludes that higher denominations may improve transaction effectiveness and cash management; however, they also pose an inflationary threat unless the monetary system is tightly controlled and monetary policy is well-coordinated.

Therefore, this research paper recommends that the Central Bank of Nigeria (CBN) should be careful and evidence-based insofar as currency denomination reform is concerned. There would be increased steps to consider the tightening of the monetary policy tools, the adoption of electronic payment methods, and more productive industries that would absorb the liquidity. More basic fiscal and financial stability needs to be employed along with monetary reforms to prevent inflation jolts and ensure that popular confidence in the monetary policy is maintained.

In summary, the study concludes that not only does the design of the denomination determine the effectiveness of higher denomination introductions, but also the macroeconomic discipline, institutional control and transparency of the execution of monetary policies in Nigeria. In this paper, the author recommends that the Central Bank of Nigeria (CBN) should create additional denominations of its currency in terms of the increased amounts of ₦5,000, 10,000, and 20,000 gradually and in a strategic fashion to evade the dynamics of inflation and retain its purchasing power (Friedman, 1956; Mishkin, 2019). The fiscal and monetary authorities should coordinate the policies to regulate the level of liquidity and educate the population as to the need to believe in the concept of no hoarding (Moyo and Dunga, 2020). The idea of digital and cashless payment systems usage must also be embraced, as it will reduce the reliance on physical cash and provide greater control over money (Okonkwo and Ebuna, 2018). Besides, the monetary credibility will be strengthened through the reinforcing of macroeconomic stability through the implementation of the forms of inflation targeting, exchange rate management, and the good use of fiscal expenditure (Obi, 2022). Lastly, post-policy evaluation and experience in other African states like Ghana and Malawi will aid in further streamlining of the strategy by Nigeria and, in the process, achieve sustainable economic results (Dunga & Moyo, 2021; CBN, 2024).

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