

# The Influence of Cryptocurrency On Nigeria's Exchange Rate

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## Abstract

The evolution of digital commerce has led to significant shifts in payment methods, particularly with the growing acceptance of cryptocurrencies like Bitcoin. Nigeria is among the most engaged nations in crypto adoption despite regulatory interventions from the Central Bank of Nigeria (CBN). This study explores Bitcoin's influence on Nigeria's exchange rate, using monthly data from 2015 to 2020 analyzed through the Autoregressive Distributed Lag (ARDL) model. The findings reveal that Bitcoin price fluctuations impact exchange rates in both the short and long term, with rising Bitcoin values correlating with a stronger Naira. Given these dynamics, the study suggests that Nigerian policymakers should consider crypto price movements when evaluating financial stability.

**Keywords:** *Cryptocurrency, Exchange Rate, ARDL Nigeria.*

## Introduction

Recent developments in commercial transactions have transformed the way people exchange value, particularly with the rise of digital assets. Cryptocurrencies exist in various forms, ranging from closed-system virtual currencies to those exchanged for fiat money. Bitcoin, among the most recognized, functions independently of any central authority, enabling decentralized transactions. Despite regulatory concerns, Nigeria remains one of the leading countries in cryptocurrency adoption. Even following the CBN's 2021 directive restricting crypto transactions, trading activities persist, demonstrating the resilience of the crypto market within the country.

Previous studies highlight cryptocurrency's volatility and its relationship with macroeconomic factors, yet few have analyzed how these fluctuations affect exchange rates. This research aims to fill that gap by assessing the short-term and long-term impacts of Bitcoin price volatility on Nigeria's exchange rate. Key variables include Bitcoin price movements, interest rates, and consumer price indices, evaluated through the ARDL model, which is particularly effective for analyzing limited data samples.

## Literature Review

Bitcoin is decentralized digital money that was first introduced in January of 2009. It is based on Satoshi Nakamoto's concepts, which were laid out in a white paper by the mysterious and pseudonymous Satoshi Nakamoto (Bitcoin project, 2021). The identity of the individual or people behind the technology is still unknown. Bitcoin promises reduced transaction fees than existing online payment methods, and it is run by a decentralized authority, unlike government-issued currencies. Bitcoin is based on a distributed structure spread through a peer-to-peer computer network. No central trust authority governs or maintains this system, and users are

free to transact with other participants without fear of being watched or supervised (Wang et al., 2017). Because Bitcoin is so liquid, anyone can exchange it for any currency at any moment. On the other hand, the Bitcoin protocol does not impose any restrictions on transfers, even if the identity of its users is unknown. In comparison to other currencies maintained by banks, this enables foreign transactions a lot of freedom and speed (Dyhrberg, 2016). Bitcoin can be obtained through "mining". Mining is done by special hardware with a certain amount of computing power, measured in hashes per second. Hash can be considered somewhat similar to the processing power of the CPU microchip, which is measured in hertz to determine how many individual calculations can be achieved per second. The aggregate Bitcoin network has a cumulative computing power additive for all mining operations employed worldwide. For every one GigaHash per second (1 GH / s = 109 hash) each miner puts online, the amount will be added to the overall network power. Mining is quite competitive because someone who mines with more computing power or with greater efficiency has a better chance of finding new Bitcoin than others (Hayes, 2017). In addition to mining, Bitcoin can also be obtained in exchange for domestic currency such as dollars, euros, naira, etc. Several studies investigate the determinant and volatility of cryptocurrencies. Studies such as (Janicki, 2019; Karim et al., 2021) claim that macroeconomic determinants are correlated with the volatility of cryptocurrencies, and financial markets have a significant relationship with the crypto market. Dyhrberg (2016) examines the capabilities of Bitcoin as a financial asset using GARCH models; the result shows that Bitcoin is useful in risk management and important for risk-averse investors. The volatility of Bitcoin and its role as a medium of exchange and store of value was also examined by (Baur & Dimpfl, 2021), who found that Bitcoin cannot function as a medium of exchange and has only limited use as a risk diversifier. Chang et al. (2021) examine the

relationship between the Bitcoin exchange rate and other financial indexes in time series. The findings show that the Bitcoin exchange rate and google search volume index have a bi-directional relationship in both the short run and long run. The VIX is significantly related to the Bitcoin exchange rate in the long term cointegration. Therefore, this study analyzed the short-run and long-run impact of Bitcoin price volatility on the exchange rate in Nigeria, taking into account the interest rate and consumer price index as a proxy of inflation.

### Methodology

Using ARDL techniques, this study examines the impact of Bitcoin price volatility, inflation (measured by consumer price index), and interest rates on Nigeria's exchange rate. Monthly data from January 2015 to December 2020 sourced from the Central Bank of Nigeria and cryptocurrency price databases form the dataset. The statistical approach incorporates unit root tests and cointegration analysis to determine whether Bitcoin fluctuations exert lasting effects on currency valuation.

### 3: Results and Analysis

Stationarity tests indicate that while some variables exhibit non-stationary behavior, others stabilize at first differencing. Bound test analyses confirm a long-term correlation between Bitcoin price volatility and Nigeria's exchange rate, reinforcing the notion that crypto movements influence currency valuation. Findings show that when Bitcoin prices surge, demand for foreign exchange decreases, strengthening the Naira. Conversely, declining Bitcoin values lead to higher demand for USD, causing local currency depreciation.

Further diagnostics confirm the model's stability and reliability, supporting the argument that cryptocurrency dynamics significantly shape Nigeria's foreign exchange trends. The study highlights that Bitcoin's speculative nature and

investment appeal affect exchange rate behaviors, warranting closer regulatory attention.

### Conclusion

Despite regulatory restrictions, cryptocurrency continues to thrive in Nigeria, influencing exchange rate dynamics in measurable ways. Bitcoin's price movements exhibit a notable correlation with currency valuation, where increased Bitcoin values correspond with local currency appreciation. Given these insights, this study recommends that Nigerian policymakers integrate cryptocurrency trends into broader exchange rate strategies to navigate financial stability challenges effectively.

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