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Abstract

Nigeria is the first African country to issue a central bank digital currency (CBDC) or fiat digital currency. This paper discussed the features, opportunities and risks of the central bank digital currency (CBDC) in Nigeria, also known as the eNaira or e-Naira. The opportunities which CBDC present to Nigeria include, improved monetary policy transmission, efficient payments and increased financial inclusion. Some of the identified risks include rising digital illiteracy, increased propensity for cyber-attacks, data theft, and the uncertain role of banks in a full-fledged CBDC economy. This article contributes to the literature by evaluating the pros and cons of fiat digital currency such as a central bank digital currency.

Keywords: central bank digital currency, eNaira, blockchain, CBN eNaira, cryptocurrency, central bank, CBDC, bitcoin, payment system, fiat digital currency, distributed ledger, Nigeria.

JEL code: E51, E58, N17, O55.

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1. Introduction

A Central Bank Digital Currency (CBDC) is a fiat currency in electronic form issued by a Central Bank. Debates about CBDCs emerged in the global scene during the meteoric rise of private cryptocurrencies, such as bitcoin, in 2019. Increased use of cryptocurrencies by citizens led governments to begin to think about a fiat digital currency, and determine whether there is sufficient merit to create a central bank digital currency.

Today, some Central Banks have reached an advanced stage in testing CBDCs. For example, China has issued a CBDC. Countries like Sweden, Bahamas, France, Philippines, Japan, Turkey, Switzerland and Ghana are testing their capability to issue a CBDC. Meanwhile, other countries, like the US, have not found a compelling need to issue a CBDC yet. Some Central Banks issued, or plan to issue, a CBDC as a counter-reaction to the increased use of cryptocurrencies in the economy. Other Central Banks plan to issue CBDC as a money equivalent to be used alongside with paper money and any permitted private cryptocurrency such as bitcoin.

In Nigeria, the Central Bank barred financial institutions from facilitating cryptocurrency transactions on the 5th of February 2021. The Central Bank asked financial institutions to close all cryptocurrency-related accounts. Subsequently, the Central Bank in mid-2021 announced that it will issue a pilot central bank digital currency in October, 2021. The digital currency project was called 'Project Giant' by the Nigerian Central Bank. The Central Bank's move to create a CBDC arose from four sources: (i) the issuance of CBDC by other Central Banks, (ii) the embrace of cryptocurrencies by Nigerian citizens, (iii) the potential for increased criminal activity when cryptocurrencies are used to make payments, and (iv) the need to harness the numerous benefits of a trusted, government-issued digital currency for the Nigerian economy.

Given the local circumstances in Nigeria, and the widespread interest in digital cryptocurrencies by economic agents, especially by individuals and businesses, questions have begun to arise about the risks and opportunities of CBDC in Nigeria, how the Nigeria CBDC or eNaira will be used in Nigeria, whether it will be well-received by

citizens, and how it can solve some of the problems associated with paper Naira. In this paper, I address the first question on the opportunities and risks of CBDC.

This paper contributes to the emerging literature on central bank digital currencies. It contextualizes the Nigerian CBDC experiment, and offer arguments in support of a CBDC while identifying risks associated with the CBDC. This paper also contributes to the monetary economics literature. CBDCs are considered to be a distinct type of fiat money, which is different from the historical forms of money such as commodity money or paper money. This article also contributes to the literature by evaluating the pros and cons of a fiat digital currency.

The rest of the paper is organized as follows. Section 2 presents a review of the existing literature. Section 3 describes some features of Nigeria's CBDC. Section 4 highlights the opportunities or benefits of the central bank digital currency for Nigeria. Section 5 highlights the risks of the central bank digital currency. Section 6 concludes.

2. Literature review

Ozili (2019) show that blockchain is a ledger that record transactions involving digital currencies. Bordo and Levin (2017) show that CBDCs are useful for transparent conduct of monetary policy. They show that CBDC can serve as a costless medium of exchange, secure store of value, and stable unit of account. Engert and Fung (2017) show that the relevance of CBDC in facilitating retail payments depends on the specific attributes of the CBDC such as whether the CBDC bears interest or is non-interest bearing. Barontini and Holden (2019), in a survey of studies on CBDC show that many Central Banks are progressing from conceptual work into experimentation, proofs-of-concept, and are in cooperation with other Central Banks. Only few Central Banks are proceeding to the pilot stage with CBDCs, and even fewer Central Banks see the issuance of a CBDC as a short or medium term goal. Grym et al (2017) show that CBDC will not only enable the general public to hold CBDC, it will also have significant implications for other areas of Central Bank policy. Andolfatto (2021) investigates the impact of CBDC on banks, and find that interest-bearing CBDC will increase financial inclusion, diminish the demand for cash and

expand the depositor base of banks if the added competition compels banks to raise their deposit rates. Davoodalhosseini (2021) investigates the optimal monetary policy when only cash, only CBDC, or both cash and CBDC are available to agents in Canada. He finds that a more efficient allocation can be implemented by using CBDC than with cash if the cost of using CBDC is not too high. Also, the welfare gains of introducing CBDC are estimated at 0.64% for Canada. Wadsworth (2018) finds that the pros and cons of a Central Bank issued digital currency are mixed across each of the different Central Bank functions. Ozili (2021) describes how the creation of a central bank digital currency can lead to the collapse of digital currencies including cryptocurrencies and bitcoins. Ozili show that Central Banks will leverage on their monetary powers and the trust that citizens have in government-backed money. This will give Central Banks strong incentives to issue a central bank digital currency. He further stressed that the issuance of a central bank digital currency can erode trust in cryptocurrencies, and can lead to the collapse of cryptocurrencies although not immediately.

3. Features of the Nigerian central bank digital currency – the eNaira

3.1. Design of the Nigerian digital currency, the eNaira

- The eNaira platform can be found at: https://enaira.gov.ng/
- Nigeria operates a two-tier retail CBDC model.
- The eNaira is designed to enhance the structure of participating financial institutions instead of replacing them. Contrary to the theoretical CBDC model which requires eliminating intermediaries, the Nigerian model of CBDC retains financial institutions as intermediaries between the Central Bank and customers.
- The eNaira is designed to be a legal tender in Nigeria.
- The eNaira is designed to have a non-interest-bearing status.
- The eNaira is designed to have a transaction limit for customers.
- The eNaira is designed to have a value-based transaction limit.
- The eNaira data is stored securely on a cloud server.
- The eNaira will be held in an account-based wallet (speed App).

- All data and personally identifiable information will not be stored on the blockchain ledger for security reasons.
- The eNaira leaves behind an audit trail for financial transactions that cannot be erased.
- The eNaira is offered via a tiered AML/KYC approach. It uses the National Identification Number and the Bank Verification Number (BVN) as unique identifiers.
- The eNaira can be used without an internet-enabled phone.
- The eNaira is designed to offer settlement finality.
- The eNaira is designed to be delivered through a collaboration between the CBN and participating financial institutions. Financial Institutions will act as the bridge between customers and the CBN so that financial institutions can offer customer support services on inquiries about the eNaira.

3.2. Consumer Wallet Tier Structure

Tier	Category	Transaction Limit	Making Payments	Regulatory validation
0	Non-Account Holders	Daily Transaction Limit: N20,000 Cumulative total: N120,000	Telephone Number (whose NIN is yet to be validated by NIMC)	Must provide passport photograph, name, place and date of birth; gender; address; telephone number
1	Non-Account Holders	Daily Transaction Limit: N50,000 Cumulative total: N300,000	Telephone Number (NIN already validated by NIMC)	Must provide passport photograph, name, place and date of birth; gender; address; telephone number
2	Account Holders	Daily Transaction Limit: N200,000 Cumulative total: N500,000	BVN	Must provide BVN, Tier 1 requirement plus evidence of ID
3	Account Holders	Daily Transaction Limit N1,000,000 Cumulative total: N5,000,000	BVN	Full KYC requirement as stipulated in the CBN AML/CFT Regulations

3.3. Participants in the digital currency program

1. The Central Bank: As the sole monetary authority, the Central Bank of Nigeria will oversee the issuance, distribution, redistribution, monitoring and destruction of the first product component of the digital currency or eNaira. This means that, at the initial stages of the digital currency program, only the Central Bank will issue, redeem, distribute, monitor or destroy the digital currency.

2. Licensed financial institutions: Another participant in the Nigerian digital currency program is licensed financial institutions. They will be allowed to request specific quantities of the central bank digital currency. They will manage the digital currency across their bank branches in different parts of the country. Licensed banks in Nigeria will invite their customers to register for the eNaira. They will provide reporting and accountability to the Central Bank on the distribution and use of digital currency. Licensed financial institutions will also be required to maintain high levels of Know-Your-Customer (KYC) identity and Anti-Money Laundering (AML) capabilities using sophisticated monitoring software or tools.

3. Government agencies: Government agencies will be able to enroll into the central bank digital currency program. This will allow government agencies to process all digital currency payments received or sent to other government agencies, citizens and businesses in an efficient and convenient manner.

4. Merchants: Merchants will be allowed to provide remote payment solutions at low cost for digital currency transactions. The point of sale (POS) device issued to merchants will have online transfer capabilities, transactions analyses and reconciliation features for customers.

5. Retail Consumers: Retail customers will have an eNaira wallet and a security token. The e-wallet architecture has innovative features, including user-friendly designs and advanced privacy and security features. Users will be able to pay for goods and utilities with the tap of a button, thereby, providing convenience to users. Retail customers will be able to purchase specific quantities of the eNaira using the Naira they already have in

their bank accounts. After purchase, the Naira account of customers will be debited while the eNaira wallet of customers will be credited with the value purchased.

3.4. Policy objectives of the eNaira

The policy objectives of the eNaira are:

- To facilitate micro-payment
- To offer a low-cost transactional platform, and
- To become a catalyst for the digital economy

4. Opportunities or benefits of the eNaira

A central bank issued digital currency (CBDC) has several opportunities for the Nigerian economy. They include the following:

- it will enhance the transmission of monetary policy
- the government will be able to send direct payments to citizens using the eNaira
- it can further improve the drive towards cashless policy
- it will offer cash alternatives and reduce the dependence on cash
- it will promote diversified payment options in the country
- it can make cross-border payments faster and cheaper
- it will increase financial inclusion because consumers do not need to have a bank account to hold CBDC.
- it will improve trust and efficiency in the management of the Nigerian currency
- it will reduce the cost of cash management by reducing the cost of handling cash, reducing the cost of printing cash, and reducing the cost of cash destruction, thereby saving cost for the government.
- It will reduce settlement risk
- it will simplify cross-border transactions
- it will reduce illegal activities such as fraud and money laundering. This is because digital payments and transfers using the eNaira will be easier to identify and trace

back to the unique ID of the originator, thereby reducing fraud risk and money laundering risk. It will also prevent funds from being hidden and transferred outside the financial system.

- the eNaira will create easy access to financial services at remote areas that have suffered financial exclusion for many years
- tax evasion will become history in Nigeria when eNaira is used to make payments for goods and services. The eNaira will make taxable assets traceable and will enforce transparency in the taxation system, thereby increasing tax revenue to the government.
- eNaira will make diaspora payments cheap and safe.

5. Risks

It will become necessary for the Central Bank to address some challenges, monitor CBDC risks on a real-time basis, and mitigate risks as they emerge.

Some areas to focus on include:

1. **Rising digital illiteracy**: There is rising digital illiteracy among the old and young population. These segments of the population, especially in the rural North, do not fully understand digital technology, and may find it difficult to understand what digital currencies are. This will limit their ability to use a CBDC to the fullest to improve their welfare. To address this issue, there is need to introduce an extensive digital literacy program in the country, and also introduce an awareness program on how individuals can use CBDCs.

2. **Protecting users**: The Central Bank needs to ensure that the eNaira CBDC platform is able to: (i) protect the mobile data of all users of the eNaira, (ii) protect the bank application that users use to manage their eNaira holdings, and (iii) protect the mobile application and the backend server connectivity.

3. **Greater propensity for cyber-attacks**: The Central Bank needs to encourage users to adopt additional state-of-the-art mobile security tools to protect their mobile data and application in order to avoid becoming targets of criminal organizations.

4. **Data theft risks**: On the blockchain and CBDC platform, the Central Bank will need to adopt a multilayer defense system to avoid data breaches. The CBDC should have in-built systems that guard against malicious keyloggers, mobile malware, remote screen capturing, and careless screen sharing that can be used by organized crime networks to steal the eNaira.

5. **Uncertain future for banks in a full-fledged CBDC economy**: In the future, digital currencies will encourage person to person (P2P) transactions that do not require a financial intermediary. This means that the significance of financial institutions in a full-fledged CBDC economy may diminish and can lead to loss of significant income for financial institutions. In the case of Nigeria, the Central Bank may need to review the operationalization of the eNaira to ensure that a CBDC economy does not have an adverse effect on licensed banks and other financial institutions in Nigeria.

6. Conclusion

This paper discussed the opportunities and risks of central bank digital currency in Nigeria. The opportunities which CBDC present to Nigeria include, improved monetary policy transmission, efficient payments and increased financial inclusion, amongst others. Some of the identified risks include rising digital illiteracy, increased propensity for cyber-attacks, data theft, and the uncertain role of banks in a full-fledged CBDC economy. Despite these risks, CBDC solves many problems than it creates. The risks it poses will provide an opportunity for the Central Bank of Nigeria to learn, and improve its CBDC protection capabilities to make it better and more efficient for use in the Nigerian economy.

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