
Central Bank Digital Currency and the Cashless Economy: The African Experience

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Abstract:

Purpose: The article introduces the essence of central bank digital currency (CBDC), their advantages and potential risks associated with their implementation. Using the example of African countries testing CBDC to accelerate the transition toward fully cashless systems, special attention is given to the issue of public reaction.

Design/Methodology/Approach: Critical analysis of the literature, case studies, synthesis and logical reasoning.

Findings: The experience of African countries – especially Nigeria – shows that the widespread adoption of digital currencies and the transition to 100 percent cashless economies, will be difficult. The benefits of adopting CBDC may be outweighed by negative aspects, especially the lack of trust and acceptance by citizens.

Practical Implications: A discussion of the transformation of the banking and financial sector, drawing on the experiences of other countries, can increase citizens' awareness of the short- and long-term consequences of change. It can also prompt policymakers to consider not only political benefits, but also – and perhaps most importantly – the public interest.

Originality/Value: The article deepens the discussion on the effects of the monetary revolution taking place before our eyes. Politicians focus on highlighting the advantages of digital currencies. The example of Nigeria, on the other hand, proves that people are well aware of the dangers of depriving them of cash, and thus freedom and privacy. An attempt to impose top-down control over the monetary sphere could trigger unrest and violent social protests with political and economic, and even systemic, consequences that are difficult to predict.

Keywords: CBDC, monetary system, cashless economy, Africa.

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1. Introduction

The concept of a fully cashless economy has until recently remained in the realm of rather theoretical considerations. It seemed that it would be difficult to implement primarily because of technological limitations and the huge financial outlay required to design and implement a new payment service system.

Also standing in the way of the introduction of this – as many considered – utopian vision, were the fears of people too attached to cash, unprepared to function in the digital world, distrustful of such a radical change in their daily lives.

The experience of the European countries forming a monetary union has shown that giving up one's own national currency can be difficult and be met with great dissatisfaction by a part of society, as was the case in Germany, for example.

However, the idea of moving away from cash altogether has not been abandoned, and for several years now most countries around the world have been testing a completely new solution to allow economies and societies to function without banknotes and coins. This solution is based on an innovative form of money – central bank digital currency (CBDC). The consequences of its widespread adoption are difficult to determine clearly today, as the detailed solutions to this reform are still in the draft or testing stages (Thalassinos *et al.*, 2021; 2022; Thalassinos and Rupeika-Apoga, 2020).

Nevertheless, it seems that despite the passage of years and the advancing 4.0 revolution, concerns about technological limitations, financial outlays and lack of public acceptance remain unchanged and constitute a serious barrier to the realization of the idea of a 100% cashless economy (Trigkas *et al.*, 2021; Tzavaras *et al.*, 2021).

The purpose of the article is to introduce the essence of central bank digital currencies, their advantages and potential risks that may be associated with their implementation. More detailed aspects of CBDC execution are presented using the example of Africa, which is one of the world leaders in the implementation of innovative banking and money services.

It is there that such innovative solutions as mobile money, stablecoins and cryptocurrencies have gained huge interest. It is no surprise, then, that many African countries have stepped up to test CBDC to accelerate the realization of the announced transition toward fully cashless systems.

It is in this region, specifically in Nigeria, which was the first to impose the need for its citizens to use only digital currency, that it is clear that a lack of trust and public acceptance of the monetary revolution underway could significantly delay this march toward cashless economies.

2. CBDC – Essence, Rationale for Introduction, Potential Risks

As defined by the Bank of International Settlements, CBDC is a new form of sovereign money issued by central banks "denominated in an existing unit of account, which serves both as a medium of exchange and a store of value" (Central Bank Digital Currencies, 2018, p. 3). To a large extent, CBDC will replicate the functions of paper money and have the same basic characteristics as durability, portability, divisibility, uniformity, limited supply and acceptability (Prospects and Challenges..., 2022, p. 1).

The central bank's digital money will function only virtually using Distributed Ledger Technology (DLT) and will be held in accounts established for each citizen at the central bank (Central Bank Digital Money, 2021, p. 8). It will be different from the already well-known electronic money (a virtual record in bank accounts), as it will be based on cryptographic security for authenticity and directly secured by central bank deposits or government pledges. CBDC is to be state money fully supervised by the monetary authority deciding on the volume of its issuance, so it is to be characterized by a stable value.

In addition to the possibility of eliminating large and unpredictable fluctuations in the purchasing power of the national currency, other advantages of CBDC are as follows (Denecker *et al.*, 2022; Prospects and Challenges..., 2022; Rich, n.d.; Szpunar, Żuk, 2021; What Is a Central Bank..., n.d.):

- Emission in a technologically safe system.
- Transparency (fight against money laundering, terrorism, tax evasion, corruption, fraud).
- Greater control over the monetary sphere and the precision of its regulation.
- Reinforcement of monetary policy transmission channels.
- Reduced speculation on private digital money and risk of financial crises.
- Reduced risk of the formation of private monopolies in the payment services market.
- Stimulation of innovation, technological development and competitiveness in payments.
- Modernization of the existing, often outdated and slow payment system through digitization.
- Combating financial exclusion (increasing access to payment services without the need for a bank account, such as through cell phones and digital wallets).
- Increased efficiency, diversity and functionality of the payment system (lower transaction costs, faster processing and recording times).
- Reduced cost of maintaining the complex financial system, creation and transportation of cash money.

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- Efficient and inexpensive transfer of various types of benefits to citizens (e.g. basic income, compensation after natural disasters, aid during epidemics and economic crises).
 - Automate tax payments (e.g., payment of sales tax directly to the tax authorities at the point where the purchase is made).
 - The issuance of a common digital currency by several countries to use it for fast and cheap international settlements.

These numerous advantages highlighted by governments and monetary authorities interested in spreading CBDC as quickly as possible (for political and systemic reasons) are countered by equally numerous disadvantages and risks associated with the digital transition (Debuyscher, 2021; Denecker *et al.*, 2022; Rich, n.d.):

- Central banks could begin to take over the existing functions of commercial banks, such as setting up deposits. This would prompt commercial banks to offer better terms to attract and retain existing customers. This, in turn, would mean an increase in lending rates and commissions to compensate for the increased costs. Ultimately, all consumers and entrepreneurs would be affected.
- Central banks could take over all the major functions of commercial banks, making the latter begin to disappear from the banking system. This would mean the creation of a complete state monopoly in the monetary sector.
- The central bank, with the ability to monitor all payments made, will at the same time have insight into what, where, when, how many times, in what quantities citizens purchase. This implies a serious violation of the right to privacy, including the ability to block certain transactions (e.g., the purchase of alcohol), or to apply financial (or other) "penalties" and "rewards" for behavior undesirable and expected by the authorities.
- The risk of introducing a limit on the CBDC that each citizen can hold in his or her account and/or introducing a specific expiration date for money. The purpose of the latter would be to discourage citizens from saving and thus sustain an appropriate (according to the government) level of aggregate demand. Money not spent within the required time would lose value gradually (e.g. x% in each subsequent month) or disappear immediately from the citizen's account. The obvious consequence would be that people would be deprived of their long-term savings, which not only provide a sense of security, allowing them to accumulate resources to make major purchases without the use of credit (e.g. real estate), but also constitute an asset that is passed on to future generations.
- Increased cyber attacks, including those of a terrorist nature, leaks of personal data, against which there will be no way to protect oneself by giving up e-banking services and using cash instead, because it simply won't exist.
- Increased environmental damage resulting from the need to expand the IT infrastructure, consuming huge amounts of energy and emitting large amounts of heat from the equipment that makes up the entire cashless service system.

- A significant loss of trust in state authorities, which citizens may accuse of seeking excessive (or even total) control over their private lives. This may turn into difficulties in implementing any other change or reform, which the public may perceive only in terms of further restrictions on their freedom.
- Lack of adequate knowledge, digital competence and infrastructure, which will further exacerbate the financial exclusion of certain social groups. This time, however, people will have no cash alternative. They will be left without the ability to purchase the most elementary goods and services.
- Contrary to claims of increased system stability, one jurisdiction's CBDC can affect another jurisdiction's monetary policy or financial stability. An example of this would be undesirable exchange rate volatility. There can also be "digital dollarization", when a digital currency is used in addition to or instead of another country's national currency, which typically occurs when a country's own currency loses its usefulness as a medium of exchange due to hyperinflation or instability.

The aforementioned problems may prove all the more threatening because the public is not informed about them to the same extent as about the advantages of the new monetary system. In addition, many experts point out that in countries where the payment system works well, its operating costs are low, it provides a high level of security, diversity and functionality for users, and at the same time cash is still widely used for settlements, it is difficult to point out unequivocally the benefits of the potential launch of CBDC (Szpunar and Żuk, 2021).

The example of one African country, Nigeria, shows how difficult the introduction of CBDC can be and how much resistance from the public it may face.

3. Market for Innovative Banking and Money Services in Africa

African countries, particularly in East and West Africa, are leading the way in introducing mobile payment innovations, as a result of efforts to address inadequate infrastructure to guarantee citizens free access to banking services. According to World Bank estimates, 2 billion people worldwide do not have bank accounts, with as many as a third of them living in sub-Saharan Africa (Rich, n.d.).

It was mobile money, or digital payments via cell phone that do not require a bank account, that sparked the transformation of payment services in Africa at the turn of the century, with East African countries such as Kenya at the forefront of mobile money use. Subsequently, banks and then large technology companies and fintechs began to introduce new means of payment, and digital assets emerged, including cryptocurrencies and stablecoins (Alberola and Mattei, 2023).

In the case of Africa, there is sometimes even talk of a "cryptocurrency craze" (Raji, 2022). More and more Africans have begun to move away from their local currencies and turn to cryptocurrencies in order to preserve the purchasing power of

their cash holdings in the face of galloping inflation, to guarantee the security of their transactions, as well as to reduce the cost of international transactions (commissions are significantly lower when using cryptocurrencies).

In addition, cryptocurrencies based on blockchain technology further reduce the risk that a failure at one point in the system will render it completely inoperable (Kazzaz, 2023). Cryptocurrencies proved particularly useful during the Covid-19 pandemic, as they allowed African businesses to continue to transact internationally despite the complete blockade of domestic banks (Raji, 2022).

Cryptocurrencies became so popular that in 2022 Nigeria, Morocco (despite being outlawed since 2017) and Kenya were among the top 20 countries in the world with the highest Bitcoin popularity (Kaaruu, 2023), and the Central African Republic – as the second country in the world after El Salvador – recognized Bitcoin as an official means of payment (Hoijs and Goko, 2022).

Despite these undoubted advantages of privately-issued money, many central banks in Africa (and beyond) have moved to regulate the cryptocurrency market. This has happened in Morocco, Botswana, Ghana, Kenya, South Africa, Tanzania, Uganda and Zimbabwe, among others (Raji, 2022). The primary argument for restricting the use of cryptocurrencies, or even banning them altogether, is the volatility of these assets and, according to many monetary officials, their speculative nature.

It is stressed that the lack of top-down control over the private money market must lead to another financial disaster on a huge scale. According to central bank officials, these regulations and systemic restrictions are all the more necessary because many cryptocurrency wallets used in Africa are held with Caribbean providers (Kazzaz, 2023), i.e., completely outside the control of national monetary authorities.

Given the negative features of cryptocurrencies and the systemic and political benefits associated with the introduction of CBDC, it is this direction of monetary system development that has begun to become increasingly popular with authorities in many African countries. One example is Kenya, a country that, as mentioned, is a leader not only in the region, but also in the world, in the use of mobile money. As of December 2021, Kenya had 68.03 million mobile money accounts, mostly in M-Pesa.

Nevertheless, the Central Bank of Kenya is considering the possibility of introducing CBDC. This would primarily aim to reduce transaction costs, improve the efficiency of cross-border payments through regional and global integration and cooperation, and promote innovation, where an open CBDC platform could enable businesses to introduce modern payment service solutions (Mureithi, 2022). Another country, namely South Africa, is experimenting with a wholesale CBDC that can only be used by financial institutions for interbank transfers. .

The country is also participating in a cross-border pilot program with the central banks of Australia, Malaysia and Singapore. The Bank of Ghana, on the other hand, is testing a general-purpose or retail CBDC, e-Cedi, which can be used by anyone with a digital wallet application or a contactless smart card that works offline.

The tendency to develop CBDC rather than mobile payment systems and the cryptocurrency market not only in Kenya, South Africa or Ghana, but in Africa as a whole is confirmed by Alberola and Mattei (2022; 2023). According to the authors' research, by issuing CBDC, African banks mainly want to accelerate the transition of their countries towards fully cashless economies; promote financial inclusion (digital money transactions will be free or for a small fee, also offline, i.e., without Internet access, without a bank account and with only a simple cell phone); improve the effectiveness of monetary policy, as the transmission mechanism is weak in the region; increase competition; reduce the cost of money distribution.

It is also emphasized (Fuje, Quayyum, and Ouattara, 2022) that CBDC can be used to distribute payments quickly (e.g., during sudden crises such as pandemics or natural disasters) and reduce the cost of making international transfers (in sub-Saharan Africa, the average cost of sending and receiving money is almost 8% of the amount of the transfer).

At the same time, however, research presented by Alberola and Mattei (2022; 2023) suggests that African central banks are much more concerned than monetary authorities in other regions about cybersecurity threats and the difficulty of maintaining a CBDC-based system. This is because its complexity and the need to ensure its safe and reliable operation requires a lot of money, technological sophistication and access to digital infrastructure such as telephone or Internet connectivity. African central banks also see a major threat in public reluctance to accept CBDC. This concern is particularly evident in North Africa, where digital payments are not as common.

4. Problems with the Introduction of CBDC – The Case of Nigeria

Concerns about public acceptance of such a far-reaching reform of the monetary system, which Alberola and Mattei (2022; 2023) highlighted in their research, were quite quickly confirmed in practice, with Nigeria being a prime example. The country was the first in Africa to issue its own digital currency, eNaira, in October 2021 (Fuje *et al.*, 2022). It functions primarily as a retail currency.

The Central Bank of Nigeria is the issuer of eNaira and the entity that manages the entire portfolio of the country's CBDC, and much of the transactions take place on the eNaira app, which is controlled and managed by the central bank. As a result, the role of other financial institutions has been heavily reduced (Raji, 2022).

The Central Bank of Nigeria, however, is facing two major problems regarding the dissemination of eNaira. First, there are technological problems. As Kazzaz (2023) points out, "*(...) of the nearly one million wallets opened, only eight percent are active. The average transaction size is about \$115 (NGN 53,000), more than 50% of a middle-class monthly salary, making its current use unlikely among low-income Nigerians. The reason for the technology switch is yet to be public, however, it may be related to the desire to increase their control over the domestic money supply as the CBN simultaneously undergoes a demonetization effort.*"

The second problem facing Nigeria's central bank in trying to persuade the public to accept eNaira is a widespread lack of confidence in the monetary reform underway (Anthony, 2023). Initially, attempts were made to encourage Nigerian citizens to use CBDC with all sorts of benefits, such as a discounted cab fare if payments were made using CBDC.

When it became apparent that people still preferred to use cash, the authorities began not so much to encourage, but to force Nigerians to switch to the cashless system. In December 2022, the Central Bank of Nigeria began limiting cash withdrawals to 100,000 naira (\$225) per week for individuals and 500,000 naira (\$1123) per week for entrepreneurs. At the same time, the central bank limited the amount of cash money going to commercial banks.

The effect of this, however, was counterproductive. Nigerian citizens took to the streets in fierce opposition to the changes. People demanded the reinstatement of paper money and the abandonment of the measures announced by the monetary authorities to transition to a 100% cashless economy. As Anthony (2023) states, the country's experience strongly suggests that the average citizen understands that CBDC poses a serious threat to financial freedom without providing any special benefits in return.

5. Conclusions

According to the Central Bank Digital Currency Tracker (n.d.), 130 countries representing 98% of the world's GDP are conducting studies and/or activities on CBDC implementation. This compares with only 35 countries in May 2020. Currently, 11 countries have already implemented a fully digital currency: The Bahamas, Jamaica, Anguilla, Eastern Caribbean (7 countries), Nigeria. Only 2 countries (Ecuador and Senegal) have abandoned the continuation of the project, and 16 countries show lack of any activity in the area of CBDC introduction (Iceland, Bermuda, Belize, Sint Maarten, Costa Rica, Curaçao, Venezuela, Uruguay, Denmark, Benin, Eritrea, Kuwait, North Korea, Palestine and Gaza Strip, Lebanon).

In other countries, work on an entirely new monetary architecture is at various, often very advanced, stages.

Africa is a region that has for many years shown a very strong interest in various types of innovations in the sphere of banking and money services. Due to demographic, social, economic, or infrastructural issues, it is in Africa that there is a great need for technological solutions that offer easy, fast, universal and low-cost access to domestic and foreign settlement channels.

It is for this reason that many African countries have become world leaders in the implementation of solutions such as mobile money, stablecoins and cryptocurrencies. Not surprisingly, then, the project to introduce domestic CBDC and transition to fully cashless economies, which has been consistently pursued for several years, has also gained much approval in the African region.

The arguments for adopting domestic CBDC are similar in African countries to those made in other regions of the world promoting financial inclusion by providing easy and safer access to money for unbanked and underbanked populations; introducing competition and resilience in the domestic payments market, which might need incentives to provide cheaper and better access to money; increasing efficiency in payments and lowering transaction costs; creating programmable money and improving transparency in money flows; providing for the seamless and easy flow of monetary and fiscal policy (Central Bank Digital Currency Tracker, n.d.).

However, the experience of the first African country to introduce CBDC while abandoning cash money – Nigeria – clearly shows that the negative aspects prevail over these undoubted benefits, one in particular, namely the lack of trust and public acceptance of the monetary revolution taking place.

The example of Nigeria is a warning to the governments of other countries seeking to impose solutions on their citizens that could deprive them of their freedom, privacy and the security of their personal data. People are realizing that total supervision of digital money issuance and monetary circulation by the central bank leads in practice to sanctioning the principles of a centrally managed economy and full control over the decisions and actions taken by every citizen.

As Anthony (2023) noted: "CBDCs may be popular among central bankers, but money is ultimately a tool for the people. So long as the risks outweigh the benefits, it's unlikely any CBDC will gain traction in Africa or elsewhere." In designing the "new monetary deal" the country's authorities should take into account the risk of strong public resistance.

Moreover, protest against the authorities' actions in one sphere – in this case, monetary – could easily spread to other policy decisions. Thus, the attempt to modernize the banking and financial sector could become the beginning of far-reaching political, economic and even systemic changes.

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