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Digital Currencies and Monetary Policy: Implications for Central Banks in Africa

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Abstract
This explores the implications of digital currencies for monetary policy and central banking in Africa, focusing on both opportunities and challenges. The rapid rise of digital currencies—ranging from Central Bank Digital Currencies (CBDCs) to cryptocurrencies and stablecoins—has significant consequences for African economies, where financial systems are evolving alongside digital innovations. Several African central banks, such as the Central Bank of Nigeria with its eNaira, are experimenting with or researching CBDCs to enhance financial inclusion, improve payment systems, and safeguard monetary sovereignty. This examines how digital currencies may influence key monetary policy transmission mechanisms, including interest rates, credit supply, and exchange rates. While CBDCs could strengthen monetary policy effectiveness by enabling direct monetary interventions and improving policy transmission, they also pose risks, such as disintermediation of the banking sector and challenges to money supply control. Furthermore, the rise of private cryptocurrencies could undermine monetary sovereignty by increasing currency substitution and capital flight risks. This also discusses the financial stability implications of digital currencies, including cybersecurity risks, operational vulnerabilities, and systemic risks arising from crypto-asset markets. It highlights the need for robust regulatory frameworks to manage these risks effectively while ensuring technological innovation is not stifled.In addition to risks, digital currencies offer significant opportunities for African economies, particularly in promoting financial inclusion and reducing cross-border payment costs. Strategic recommendations include phased CBDC implementation, investments in digital infrastructure, strengthened cybersecurity, regulatory reforms, and regional cooperation among African central banks. This concludes that a proactive and collaborative approach is essential for African central banks to harness the benefits of digital currencies while mitigating risks to monetary policy and financial stability. Digital currencies are poised to reshape Africa's financial landscape, requiring adaptive, forward-looking policy responses.

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1. Introduction

The global financial landscape is undergoing rapid transformation with the emergence and proliferation of digital currencies. These digital forms of money encompass a wide array of instruments, including Central Bank Digital Currencies (CBDCs), stablecoins, and cryptocurrencies (Mustapha *et al*., 2018; Oyedokun *et al*., 2019).

Cryptocurrencies such as Bitcoin and Ethereum have gained substantial traction over the past decade, driven by decentralized technology and speculative investment (Olaoye *et al*., 2016; SHARMA *et al*., 2019). Meanwhile, stablecoins, which are pegged to traditional assets like fiat currencies or commodities, have grown as a medium for cross-border payments and digital transactions due to their perceived price stability. In response to the growing influence of private digital currencies, several central banks worldwide are actively exploring or piloting CBDCs to retain control over monetary systems and foster more secure and efficient payment infrastructures (Oduola *et al*., 2014; Akinluwade *et al*., 2015).

Africa has not remained on the sidelines of this global trend. Many African central banks are increasingly assessing the potential adoption of digital currencies, with countries such as Nigeria, Ghana, and South Africa leading the charge. Nigeria launched the eNaira, Africa's first operational CBDC, in 2021 to promote financial inclusion, enhance payment efficiency, and strengthen monetary policy tools. Ghana's eCedi project and South Africa's Project Khokha exemplify similar initiatives that reflect the continent's growing interest in digital currencies (ADEWOYIN *et al*., 2020; OGUNNOWO *et al*., 2020). Given Africa's relatively large unbanked population, high remittance costs, and growing fintech sector, digital currencies offer a promising avenue for advancing financial inclusion, improving payment systems, and supporting economic growth. However, this shift also introduces new complexities regarding monetary policy effectiveness and financial stability, particularly within the context of Africa's unique economic, social, and regulatory environments (Mgbame *et al*., 2020; ADEWOYIN *et al*., 2020).

Thisseeks to critically examine the implications of digital currencies on monetary policy and financial stability within African economies. While much of the existing discourse has focused on the technological and operational aspects of digital currencies, less attention has been given to their macroeconomic consequences, particularly in Africa (FAGBORE *et al*., 2020; Akinrinoye *et al*., 2020). Given the continent's diverse financial structures, varying levels of digital infrastructure, and dependency on external financial flows, the introduction of digital currencies could present both opportunities and significant challenges (Egbuhuzor *et al*., 2021; Adesemoye *et al*., 2021).

Specifically, this aims to analyze how CBDCs and other digital currencies may influence traditional monetary policy transmission mechanisms—such as interest rates, credit supply, and money demand—within African economies. Additionally, the research assesses the potential risks posed by digital currencies, including threats to financial intermediation, cybersecurity vulnerabilities, and illicit financial flows. Conversely, this also explores opportunities such as enhanced monetary policy effectiveness, improved cross-border payment systems, and accelerated financial inclusion. By providing a comprehensive analysis, this intends to offer insights that will inform policymakers, regulators, and financial institutions on how best to navigate the digital currency transition (Adewoyin *et al*., 2021; Dienagha *et al*., 2021).

To guide the analysis, this addresses two central questions. First, how do digital currencies affect monetary transmission mechanisms in African economies? This involves examining whether CBDCs and other digital currencies amplify or weaken the traditional channels through which monetary policy decisions influence macroeconomic variables such as inflation, output, and employment. This investigates the extent to which digital currencies alter the behavior of households, businesses, and financial intermediaries, and whether they introduce new transmission channels that central banks must consider (ADEWOYIN *et al*., 2021; Ogunnowo *et al*., 2021).

Second, what are the key risks and opportunities that digital currencies present for African central banks? This question explores both the benefits—such as stronger monetary control, reduced transaction costs, and expanded financial access—and the associated risks, including macroeconomic volatility, disintermediation of banks, and regulatory blind spots. Special attention is given to the African context, where fragile financial institutions, limited regulatory capacity, and political instability may exacerbate certain risks or hinder effective policy responses.

By addressing these questions, thiscontributes to the growing body of research on digital currencies and provides targeted recommendations for African central banks as they chart their digital financial futures.

2. Methodology

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology was applied to guide the systematic review of existing literature on digital currencies and their implications for monetary policy, focusing specifically on the context of African central banks. The review followed a structured and transparent process involving four main stages: identification, screening, eligibility, and inclusion.

In the identification phase, a comprehensive search strategy was employed across multiple electronic databases, including Scopus, Web of Science, JSTOR, and Google Scholar. The search included studies published between 2010 and 2025 to capture both foundational and recent literature, considering the rapidly evolving nature of digital currencies. Key search terms included "digital currencies," "cryptocurrencies," "Central Bank Digital Currencies," "CBDCs," "stablecoins," "monetary policy," "financial stability," "Africa," and "central banks." Boolean operators (AND, OR) were used to refine and broaden the search as appropriate. Additional sources were identified through manual searches of reference lists and relevant reports from international financial institutions such as the International Monetary Fund (IMF), Bank for International Settlements (BIS), and African Development Bank (AfDB).

During the screening phase, duplicate records were removed, followed by a review of titles and abstracts to exclude studies that were unrelated to the research focus. Studies focusing solely on technological design without any monetary or financial policy analysis were excluded. Furthermore, studies not addressing the African context or lacking empirical or theoretical analysis of monetary implications were removed from further consideration.

In the eligibility phase, full-text articles of potentially relevant studies were retrieved and assessed based on pre-defined inclusion criteria. Studies were included if they provided empirical data, theoretical models, or policy analysis related to the monetary impacts of digital currencies in Africa. Papers were also required to be published in English to ensure consistency in analysis. Both peer-reviewed journal articles and high-quality grey literature,

such as reports from central banks and reputable think tanks, were considered to capture a broad perspective.

The inclusion phase resulted in the selection of studies that m*et all* criteria for detailed analysis. These studies were systematically analyzed and synthesized to address key themes such as monetary policy transmission, financial stability, financial inclusion, regulatory challenges, and cross-border payment systems. The final body of literature included both qualitative and quantitative research, allowing for a balanced and comprehensive assessment.

Throughout the process, the PRISMA flow diagram was used to document each stage of the review, ensuring transparency and reproducibility. This systematic review methodology enables a robust and evidence-based understanding of how digital currencies may reshape monetary policy and financial stability considerations for African central banks, laying the foundation for subsequent policy analysis and recommendations.

2.1 Overview of Digital Currencies

Digital currencies have emerged as a significant innovation within the global financial system, fundamentally reshaping payment systems, monetary operations, and financial intermediation. These currencies exist in electronic form and are typically designed for use in digital transactions, offering an alternative to traditional cash-based systems (ADEWOYIN *et al*., 2021; Ogunnowo *et al*., 2021). The evolution of digital currencies can be categorized into three main types: Central Bank Digital Currencies (CBDCs), cryptocurrencies, and stablecoins. Each type varies in terms of its issuer, technological design, and implications for financial stability and monetary policy as shown in figure 1.

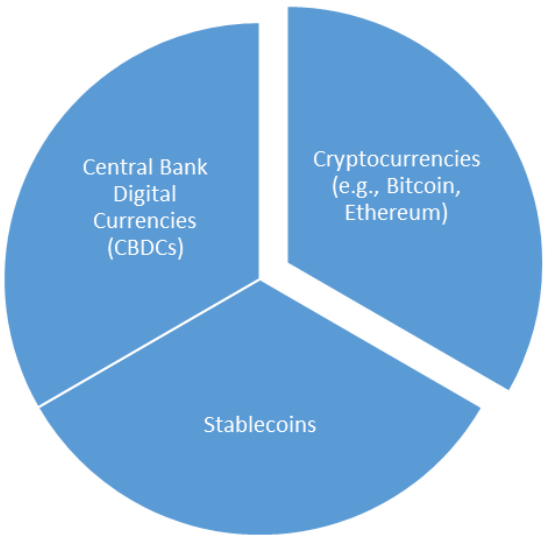

Fig 1: Types of Digital Currencies

Central Bank Digital Currencies (CBDCs) represent a digital form of fiat currency issued and regulated by central banks. Unlike private digital currencies, CBDCs are legal tender and are backed by the full faith and credit of the issuing authority. CBDCs are designed to provide a secure and stable means of payment that complements physical cash while enhancing the efficiency of payment systems. They are categorized into retail CBDCs, which are intended for use by the general public for everyday transactions, and wholesale CBDCs, which are limited to financial institutions for interbank settlements. Key motivations for CBDC development include strengthening monetary policy transmission, improving financial inclusion, enhancing payment security, and reducing the costs associated with physical cash management. Globally, several central banks are actively exploring CBDCs through pilot projects and feasibility studies, with countries such as China, Sweden, and the Bahamas making significant progress.

Cryptocurrencies are decentralized digital assets that operate without direct oversight from any central authority. They rely on distributed ledger technology, particularly blockchain, to record and validate transactions. Bitcoin, the first and most well-known cryptocurrency, introduced the concept of a peer-to-peer digital payment system that eliminates the need for intermediaries such as banks. Ethereum expanded this concept by integrating programmable smart contracts, allowing for more complex decentralized applications. Cryptocurrencies are often viewed as speculative investment assets due to their price volatility, though they are also used for payments, remittances, and as stores of value in some contexts (Okolo *et al*., 2021; Ojika *et al*., 2021). However, their decentralized nature raises concerns about financial stability, regulatory oversight, and the potential for illicit activities such as money laundering and cybercrime.

Stablecoins are a hybrid category of digital currencies that aim to reduce price volatility by pegging their value to traditional assets such as fiat currencies, commodities, or algorithmic formulas. Examples include Tether (USDT), which is backed by U.S. dollar reserves, and algorithmic stablecoins like DAI, which maintain their value through decentralized protocols. Stablecoins seek to combine the transactional advantages of digital currencies with the stability of traditional money, making them attractive for payments, remittances, and decentralized finance (DeFi) applications. Nonetheless, stablecoins also present regulatory challenges, especially regarding transparency, reserve adequacy, and systemic risks to financial markets.

Globally, digital currencies have gained considerable momentum, driven by advancements in financial technologies, changing consumer preferences, and the pursuit of financial inclusion. Several countries have advanced CBDC initiatives to varying degrees. China's digital yuan project is among the most prominent, involving large-scale pilot programs in multiple cities and integration with e-commerce platforms. The Bahamas launched the Sand Dollar, making it the first nation to fully deploy a CBDC. Similarly, the European Central Bank and the U.S. Federal Reserve have initiated research programs to explore the feasibility of CBDCs.

In Africa, the development of digital currencies is marked by a growing interest in CBDCs as tools for addressing long-standing economic challenges such as financial exclusion, inefficient payment systems, and high remittance costs. Nigeria is at the forefront, having launched the eNaira in October 2021, making it the first African country to implement a CBDC. The eNaira aims to improve access to financial services, support government disbursement programs, and enhance payment efficiency. Ghana has also made notable progress with its eCedi project, which is currently in the pilot phase and focuses on promoting financial inclusion and improving domestic payment systems. South Africa, through Project Khokha, has explored wholesale CBDC applications for interbank settlements, reflecting a focus on enhancing financial market

infrastructure.

Regional differences in the adoption of digital currencies across Africa are influenced by factors such as levels of financial inclusion, digital infrastructure, regulatory readiness, and macroeconomic conditions. Countries with more advanced digital ecosystems, such as Kenya, Nigeria, and South Africa, have demonstrated higher levels of engagement with digital currencies (Daraojimba *et al*., 2021; Orieno *et al*., 2021). Conversely, many low-income countries in Africa remain cautious, largely due to concerns about cybersecurity, monetary sovereignty, and limited technological capacity.

Despite these differences, there is a common recognition among African central banks of the potential benefits that digital currencies can offer, particularly in terms of improving payment systems and promoting inclusive growth. However, African countries also face unique challenges such as limited internet penetration, low digital literacy, and underdeveloped financial markets, which may constrain the widespread adoption of digital currencies. Moreover, geopolitical and economic risks, including exchange rate volatility and capital flight, further complicate the implementation of digital currency policies in the region.

Digital currencies—whether CBDCs, cryptocurrencies, or stablecoins—are reshaping the global financial landscape, with significant implications for African economies. While CBDCs offer opportunities for enhancing monetary policy effectiveness and financial inclusion, cryptocurrencies and stablecoins introduce both opportunities and risks that require careful regulatory consideration. Africa's evolving digital currency landscape highlights the need for context-specific approaches that align with regional financial realities and policy objectives (Onaghinor *et al*., 2021; Mustapha *et al*., 2021).

2.2 Implications for Monetary Policy

The rapid emergence of digital currencies presents profound implications for monetary policy, particularly in the context of African economies. Central banks across the continent are carefully evaluating how Central Bank Digital Currencies (CBDCs), cryptocurrencies, and stablecoins could affect their monetary frameworks and policy tools (Onifade *et al*., 2021; Onaghinor *et al*., 2021). Given Africa's structural economic characteristics—such as high informality, underdeveloped financial markets, and widespread financial exclusion—the introduction of digital currencies could significantly alter the transmission mechanisms of monetary policy, the control over money supply, and the overall effectiveness of monetary interventions.

One of the most significant implications of digital currencies lies in their potential to reshape monetary policy transmission mechanisms. Traditionally, central banks influence macroeconomic conditions through interest rate channels, credit channels, and exchange rate adjustments. The introduction of CBDCs, in particular, can modify these channels.

The interest rate channel may be strengthened or weakened depending on the design of the digital currency. If CBDCs offer interest-bearing features, they could directly compete with commercial bank deposits, giving central banks an additional tool to influence interest rates and savings behavior. By adjusting the remuneration rate on CBDCs, central banks could directly affect consumption, investment, and money demand, potentially improving the pass-through of policy rate changes (Onaghinor *et al*., 2021; Onifade *et al*., 2021). However, if CBDCs do not offer interest, their effect on the interest rate channel may be more muted, especially in economies where cash remains dominant.

The credit channel could face disruption through the disintermediation of commercial banks. If households and businesses increasingly shift their deposits from traditional banks to CBDCs, banks may lose a key source of funding for lending activities. This shift could reduce the effectiveness of conventional credit supply mechanisms, as banks may struggle to maintain loan portfolios, potentially tightening credit conditions. However, well-designed CBDCs with built-in limits or tiered remuneration can mitigate this risk by discouraging excessive migration from bank deposits.

Digital currencies also have implications for exchange rate dynamics, particularly in open African economies. Cross-border use of digital currencies, including CBDCs and stablecoins, could affect capital flows and currency substitution. For example, widespread use of foreign stablecoins in African countries with weak currencies could undermine the effectiveness of domestic monetary policy by reducing demand for local currency and complicating exchange rate management. However, CBDCs with cross-border capabilities could enhance the efficiency of currency markets, reduce remittance costs, and improve the predictability of foreign exchange inflows, potentially stabilizing exchange rate volatility in the long term.

Digital currencies also affect central banks' ability to control the money supply. A key concern is the potential disintermediation of banking systems. If CBDCs become widely adopted without proper safeguards, they may divert deposits from commercial banks to the central bank, reducing the availability of funds for lending and investment. This structural shift could diminish the role of traditional banks in monetary creation, limiting the effectiveness of policies that rely on banking-sector liquidity, such as reserve requirements and open market operations (Akpe *et al*., 2021; Abayomi *et al*., 2021).

Moreover, the demand for traditional forms of money—such as physical cash and commercial bank deposits—may decline with the adoption of digital currencies. CBDCs offer a digital substitute for cash, which may reduce the use of physical currency in circulation. While this could reduce costs associated with cash handling and enhance transparency, it also necessitates careful management of liquidity conditions to avoid unintended contractions in money supply. Furthermore, the proliferation of privately issued digital currencies such as stablecoins and cryptocurrencies could introduce additional complexities, as these instruments operate outside the direct control of central banks and may weaken the transmission of monetary policy signals.

Nonetheless, CBDCs could offer improved tools for monetary control. They provide central banks with greater real-time visibility into monetary aggregates, enabling more precise calibration of policy interventions. By leveraging digital payment infrastructure and transaction data, central banks can enhance their monitoring of liquidity conditions and detect emerging financial risks more effectively.

Despite the risks, digital currencies also present opportunities to enhance the effectiveness of monetary policy, especially in the African context. One of the most frequently cited benefits of CBDCs is their potential to foster greater financial inclusion. Africa has one of the highest proportions of unbanked populations globally, with many individuals

lacking access to formal banking services. CBDCs, if properly designed and integrated with mobile payment platforms, could enable broader participation in the formal financial system, improving the transmission of monetary policy to previously excluded segments of the population (Chianumba *et al*., 2021; ODETUNDE *et al*., 2021).

Additionally, digital currencies can improve the efficiency and security of payment systems. Faster and cheaper digital payments can reduce transaction costs, facilitate domestic commerce, and promote more stable money demand. Enhanced payment systems also enable more effective targeting of monetary and fiscal policies, such as direct transfers to households or firms in response to economic shocks.

Digital currencies provide central banks with unprecedented access to transactional data, which can greatly improve economic forecasting and policy formulation. Access to granular, real-time data allows for better assessment of spending patterns, liquidity trends, and credit conditions. This enhanced informational capacity enables more timely and targeted monetary interventions, reducing policy lags and improving the responsiveness of monetary frameworks.

In the African context, where many economies face volatile capital flows, high inflation, and underdeveloped financial sectors, these benefits are particularly relevant. CBDCs can provide a more stable and efficient monetary anchor, helping to build monetary credibility and foster macroeconomic stability. However, realizing these benefits depends on careful design choices, robust regulatory frameworks, and coordinated efforts with the banking sector to minimize disintermediation risks (SHARMA *et al*., 2021; ODETUNDE *et al*., 2021).

Digital currencies are poised to fundamentally alter the monetary policy landscape in Africa. While they introduce challenges to traditional transmission mechanisms and money supply management, they also offer new tools to enhance monetary policy effectiveness. Central banks must strike a careful balance between leveraging the benefits of digital currencies—such as financial inclusion, payment efficiency, and data-driven policymaking—and mitigating the risks of disintermediation, currency substitution, and reduced monetary control. In Africa, where structural financial challenges remain prevalent, digital currencies present a transformative but complex opportunity that demands cautious, context-specific policy approaches.

2.3 Financial Stability Considerations

The rise of digital currencies introduces both opportunities and risks for financial stability, particularly within the context of African economies. While digital currencies such as Central Bank Digital Currencies (CBDCs), stablecoins, and cryptocurrencies may offer improvements in payment efficiency and financial inclusion, they also present considerable challenges to the resilience of financial systems. The introduction and widespread adoption of these currencies could create vulnerabilities related to cybersecurity, capital flows, and the structure of banking systems (Adewale *et al*., 2021; Nwabekee *et al*., 2021). As African central banks explore digital currencies, understanding these risks and adopting effective mitigation measures will be essential to safeguard financial stability.

One of the most prominent risks associated with digital currencies is the threat of cybersecurity and operational failures. Digital currencies, by their very nature, depend heavily on complex digital infrastructures, including distributed ledger technologies, cryptographic protocols, and mobile payment platforms. These systems are inherently exposed to cyberattacks, hacking, and technical failures. A successful cyberattack on a CBDC platform or a major stablecoin issuer could undermine trust in the broader financial system, trigger systemic liquidity shortages, or lead to sudden shifts in payment behaviors (Arner *et al*., 2020; Kokkinisand Miglionico, 2020). In African economies where cybersecurity frameworks are often underdeveloped, the risks of system outages, data breaches, or ransomware attacks are particularly acute. Furthermore, operational risks such as software glitches, processing errors, and infrastructure failures can also disrupt financial services, eroding public confidence in digital payment systems.

Another major risk is the potential for capital flight and currency substitution, often referred to as "crypto-dollarization." In African countries with histories of currency instability, high inflation, or weak monetary governance, the use of foreign digital currencies, especially stablecoins pegged to strong currencies like the U.S. dollar, can quickly escalate. This phenomenon poses serious risks to monetary sovereignty, as individuals and businesses may shift away from local currencies toward more stable digital alternatives. Widespread crypto-dollarization reduces the effectiveness of domestic monetary policy and increases vulnerability to external shocks (Halliday, 2021; Adewale *et al*., 2021). Moreover, capital flight facilitated through anonymous or pseudonymous cryptocurrencies could exacerbate balance of payments pressures, further destabilizing fragile economies.

Banking sector disintermediation also represents a significant financial stability risk. The introduction of CBDCs could cause individuals and firms to shift deposits from commercial banks to central bank-issued digital currencies, particularly during periods of economic uncertainty. This could weaken the funding base of banks, constrain their lending capacities, and lead to tighter credit conditions in the economy. In extreme cases, the availability of CBDCs could even trigger digital bank runs, where depositors rapidly convert bank deposits into CBDCs due to fears of insolvency or financial crisis (Engert*et al*., 2018; Šiaudinis, 2019). Given the importance of banks in channeling credit to the real economy, such disintermediation effects could have severe macroeconomic consequences.

To address these financial stability risks, African central banks will need to implement robust mitigation measures, combining regulatory safeguards with innovative design features for digital currencies. Regulatory frameworks must be adapted to cover digital currencies comprehensively, including provisions for licensing, capital requirements, consumer protection, and cybersecurity standards. For instance, regulations should require stablecoin issuers to maintain adequate reserves and undergo regular audits to ensure liquidity and solvency. Similarly, clear legal frameworks are needed to govern the use of cryptocurrencies, particularly regarding anti-money laundering (AML) and combating the financing of terrorism (CFT) compliance.

Specific measures to address cybersecurity risks include mandating robust security protocols, enforcing regular system testing, and promoting collaboration between central banks, technology providers, and cybersecurity agencies. Central banks should invest in advanced encryption technologies, multi-factor authentication mechanisms, and incident response strategies to safeguard digital payment

infrastructure. Additionally, regional cooperation among African countries can help build collective resilience by sharing best practices and coordinating cross-border cybersecurity responses (Akinrinoye *et al*., 2021; Kufile *et al*., 2021).

Central banks also have a range of technical tools and design choices at their disposal to limit financial stability risks related to CBDCs. One widely discussed measure is the implementation of holding limits, which cap the amount of CBDCs that individuals and firms can hold at any given time. This can reduce the risk of large-scale deposit shifts from commercial banks during normal times. Another strategy is the use of tiered remuneration schemes, whereby larger CBDC balances are subjected to lower or even negative interest rates, thereby discouraging excessive accumulation of CBDCs and maintaining the attractiveness of traditional bank deposits.

In addressing the risks of capital flight and currency substitution, central banks can restrict cross-border access to CBDCs or require stringent know-your-customer (KYC) procedures for digital wallets. Some countries may also adopt exchange controls or transactional limits to prevent the rapid outflow of digital assets. At the same time, policymakers must weigh these restrictions carefully to avoid undermining the usability of CBDCs for legitimate cross-border transactions, such as remittances.

Furthermore, central banks can enhance collaboration with the banking sector to ensure the coexistence of CBDCs and commercial bank money. Policies that incentivize banks to innovate in digital financial services, such as through partnerships with fintech firms or digital credit solutions, can help mitigate disintermediation risks. Moreover, CBDC designs that promote interoperability with existing banking systems can foster synergy rather than competition between different forms of money (Fredson *et al*., 2021).

Ultimately, a gradual, well-phased rollout of CBDCs is essential to allow sufficient time for risk monitoring and policy adjustments. Pilot programs and limited-scale implementations can serve as testing grounds for identifying operational weaknesses and unintended consequences before large-scale deployment. Through these pilots, central banks can gather data to fine-tune technical specifications, adjust monetary policy tools, and strengthen regulatory frameworks.

Digital currencies present a complex array of risks and opportunities for financial stability, particularly within African economies facing diverse economic challenges. Key risks such as cybersecurity threats, capital flight, currency substitution, and banking disintermediation necessitate proactive policy responses and innovative regulatory measures. By employing a mix of legal safeguards, robust technological standards, and carefully calibrated CBDC design features, central banks can mitigate these risks while harnessing the benefits of digital financial innovations. For African countries, the success of digital currencies in enhancing financial stability will depend on coordinated efforts across the public and private sectors, strong institutional capacity, and regional collaboration to address shared vulnerabilities in an increasingly digital financial ecosystem.

2.4 Opportunities for African Economies

The growing interest in digital currencies presents significant opportunities for African economies. Central Bank Digital Currencies (CBDCs), stablecoins, and cryptocurrencies offer new avenues for addressing long-standing structural issues such as financial exclusion, inefficient payment systems, and dependence on foreign currencies as shown in figure 2. While risks associated with digital currencies remain, the potential benefits—particularly in Africa's unique economic context—are substantial (Fredson *et al*., 2021). By leveraging digital currencies, African countries can advance financial inclusion, improve payment efficiency, and strengthen monetary sovereignty.

One of the most compelling opportunities that digital currencies offer African economies is the potential to significantly advance financial inclusion. Sub-Saharan Africa is home to one of the highest percentages of unbanked populations globally, with an estimated 45% of adults lacking access to formal banking services. Barriers such as limited physical banking infrastructure, high account maintenance fees, and documentation requirements have historically excluded large segments of the population from the formal financial system.

Digital currencies, particularly CBDCs, have the potential to bridge this gap. By offering digital wallets that do not require traditional bank accounts, CBDCs can enable broader access to secure, low-cost financial services. In many African countries, mobile money platforms such as M-Pesa in Kenya and MTN Mobile Money in Ghana have already demonstrated the power of digital tools in promoting financial inclusion. CBDCs could build on this success by integrating with existing mobile payment systems to offer a broader range of financial services, including savings, credit, and government transfers.

Moreover, CBDCs can reduce the transaction costs associated with small-value payments, enabling low-income individuals and informal sector workers to participate more fully in the formal economy. For example, the Nigerian eNaira allows users to make transactions without requiring a traditional bank account, targeting financially excluded groups. By promoting digital literacy alongside CBDC deployment, governments can further ensure that vulnerable populations benefit from these innovations, thereby reducing poverty and inequality (Allen*et al*., 2020; Kiff*et al*., 2020).

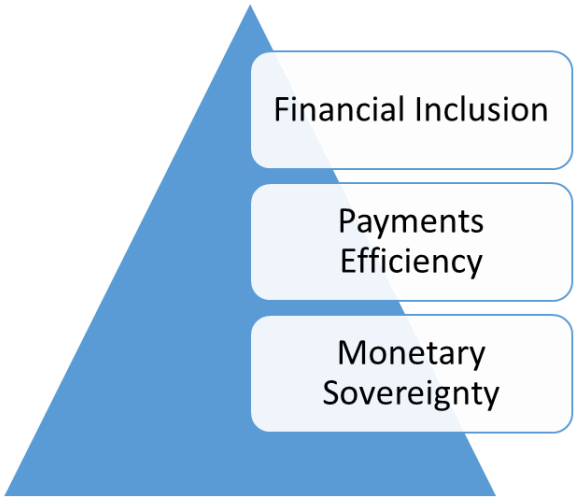

Fig 2: Opportunities for African Economies

Digital currencies also hold significant potential for improving payment efficiency in Africa, especially in the areas of cross-border transactions and domestic remittances.

The African continent faces some of the highest remittance costs globally, with average fees exceeding 7% of transaction value—far above the United Nations Sustainable Development Goal target of 3%. These high costs stem from fragmented payment systems, limited competition, and regulatory hurdles.

CBDCs and stablecoins can drastically reduce these costs by streamlining cross-border payment processes. Digital currencies can enable instantaneous settlement, eliminating the need for intermediaries such as correspondent banks and money transfer operators. This not only lowers fees but also reduces transaction times from several days to a matter of seconds or minutes. The use of digital currencies for cross-border trade settlements can also mitigate foreign exchange risks, reducing the need for costly currency conversions.

African regional initiatives, such as the Pan-African Payment and Settlement System (PAPSS), aim to facilitate trade and payments across African countries using local currencies. Integrating CBDCs into such regional platforms could further enhance their effectiveness by providing a secure, efficient medium of exchange that operates across borders. Additionally, stablecoins pegged to regional or global currencies may offer similar benefits for remittances and international trade, provided that regulatory frameworks are in place to ensure their stability and security.

Domestic payment efficiency also stands to improve through digital currencies. In many African countries, cash remains the dominant payment method, leading to high costs of cash handling, risks of theft, and inefficiencies in government payments. CBDCs can reduce these costs by enabling digital transactions even in remote areas with limited banking infrastructure. Government-to-person (G2P) payments, such as social welfare programs and agricultural subsidies, can be delivered more effectively through CBDCs, ensuring timely disbursements and reducing leakages due to fraud or corruption.

In addition to financial inclusion and payment efficiency, digital currencies offer African economies an important opportunity to strengthen monetary sovereignty (Sapovadia, 2018). Many African countries face structural challenges related to their dependence on foreign currencies and external payment systems. This dependence can limit the effectiveness of domestic monetary policies and expose economies to external shocks.

One key risk is the phenomenon of currency substitution, where households and businesses prefer to use foreign currencies—often U.S. dollars or euros—over domestic currencies. This "dollarization" reduces central banks' control over money supply and monetary policy tools, undermining efforts to manage inflation and stabilize the economy. The growing use of foreign stablecoins and cryptocurrencies may exacerbate this problem by facilitating easier access to foreign-denominated digital assets.

CBDCs offer a strategic tool for reversing this trend by providing a credible, accessible digital alternative that reinforces the use of domestic currency. By promoting widespread adoption of CBDCs for domestic transactions and cross-border payments, central banks can enhance the demand for local currencies, thus strengthening monetary sovereignty. Moreover, the ability to program CBDCs for specific uses—such as limiting their use to domestic transactions—offers additional tools to manage currency substitution risks.

Reducing reliance on foreign payment systems is another benefit of digital currencies for Africa. Many African cross-border transactions currently rely on payment networks operated by foreign banks and institutions, which can introduce delays, high costs, and exposure to geopolitical risks. CBDCs can provide African central banks with direct control over digital payment infrastructures, reducing external dependencies and enhancing the resilience of domestic financial systems.

Furthermore, digital currencies can increase the transparency of financial flows, making it easier for central banks to monitor cross-border capital movements and implement capital controls when necessary (Barr *et al*., 2020). This enhanced visibility allows policymakers to respond more effectively to financial shocks and maintain macroeconomic stability.

Digital currencies offer African economies transformative opportunities to advance financial inclusion, improve payment efficiency, and strengthen monetary sovereignty. By leveraging CBDCs and integrating them with existing mobile payment platforms, African central banks can provide accessible, low-cost financial services to millions of unbanked individuals. Digital currencies can also address longstanding inefficiencies in cross-border payments and domestic transactions, lowering costs and increasing speed, with particular benefits for trade and remittances. Moreover, the use of digital currencies can reinforce the role of local currencies, reduce dependence on foreign payment systems, and enhance central banks' ability to implement effective monetary policies.

However, realizing these opportunities requires careful policy design, robust technological infrastructure, and effective regulatory oversight. Governments and central banks must collaborate with fintech firms, payment providers, and international organizations to ensure that digital currency initiatives are inclusive, secure, and economically beneficial (Kelly *et al*., 2017; Blakstad *et al*., 2018). In the African context, where financial exclusion and payment inefficiencies remain significant barriers to development, digital currencies represent a promising tool for building more resilient, inclusive, and sovereign financial systems.

2.5 Policy and Regulatory Challenges

The rise of digital currencies presents substantial policy and regulatory challenges for African economies. While digital currencies—such as Central Bank Digital Currencies (CBDCs), cryptocurrencies, and stablecoins—offer the potential to enhance financial inclusion, payment efficiency, and monetary sovereignty, they also pose complex legal and regulatory risks. African policymakers face the difficult task of designing frameworks that can effectively govern digital currencies without stifling innovation or undermining financial stability (Brummerand Yadav, 2018; Pazarbasioglu *et al*., 2020). This task is particularly complex given the diversity of African economies, varying levels of technological advancement, and regional economic integration efforts. Key challenges include the establishment of clear legal frameworks, effective cross-border coordination, and balancing digital innovation with systemic risk mitigation.

One of the foremost challenges in regulating digital currencies is the absence of clear legal definitions and regulatory classifications. In many African jurisdictions, digital currencies remain outside the scope of existing

financial laws, creating legal uncertainty for consumers, financial institutions, and regulators alike. This regulatory ambiguity hampers the ability of central banks and financial authorities to effectively monitor and control digital currency activities, increasing the risk of fraud, illicit financial flows, and consumer exploitation.

Defining the legal status of digital currencies is an essential first step toward establishing robust regulatory oversight. Policymakers must determine whether digital currencies should be classified as legal tender, digital assets, securities, commodities, or a new category altogether. This classification will have far-reaching implications for taxation, anti-money laundering (AML) compliance, consumer protection, and monetary policy. For instance, CBDCs typically require specific legal provisions to recognize them as official legal tender, ensuring their use for settling debts and transactions across the economy.

Cryptocurrencies and stablecoins, on the other hand, present distinct regulatory challenges. Given their decentralized nature and speculative characteristics, cryptocurrencies often fall outside traditional financial regulatory frameworks. In many African countries, regulators have issued warnings about the risks associated with cryptocurrencies but have yet to establish comprehensive laws governing their use (Wilhelm, 2019; Jovanić, 2020). This regulatory gap increases the likelihood of crypto-related scams, market manipulation, and financial instability. Therefore, there is an urgent need for tailored legislation that addresses the unique risks of crypto-assets, including provisions for licensing, capital requirements, and cybersecurity standards.

Additionally, regulatory clarity is essential for ensuring interoperability between digital currencies and existing financial infrastructure. Without clear rules on digital wallet operations, transaction reporting, and digital identity verification, it will be difficult to integrate digital currencies into formal payment systems securely and efficiently.

Given the transnational nature of digital currencies, cross-border regulatory coordination is a critical policy challenge for Africa. Digital currencies, especially stablecoins and cryptocurrencies, can easily move across borders, bypassing domestic capital controls and regulatory frameworks. Without coordinated action among African countries, regulatory arbitrage may arise, where digital currency operators exploit differences in national regulations to evade oversight or engage in illicit activities.

Harmonization of digital currency policies across regional economic blocs such as the Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), and the East African Community (EAC) is vital. These regional organizations already coordinate on issues such as trade, migration, and infrastructure, making them natural platforms for advancing digital currency cooperation. By aligning legal definitions, supervisory approaches, and licensing requirements, African countries can create a more predictable and secure environment for cross-border digital transactions.

Regional collaboration can also facilitate the development of shared technological infrastructure for digital currencies. For example, linking national CBDC platforms through regional payment systems such as the Pan-African Payment and Settlement System (PAPSS) could improve the efficiency and security of intra-African trade and remittances. Furthermore, regional data-sharing agreements and joint supervisory initiatives can help identify and mitigate cross-border financial risks arising from digital currencies.

International cooperation with global financial standard-setters such as the International Monetary Fund (IMF), Financial Stability Board (FSB), and Bank for International Settlements (BIS) is also essential. African regulators can benefit from global best practices and technical assistance in areas such as cybersecurity, anti-money laundering compliance, and digital identity frameworks (Bayatmakou, 2018; Gifford *et al*., 2018).

A critical challenge for African policymakers is finding the right balance between promoting digital financial innovation and ensuring financial stability. Digital currencies have the potential to unlock new business models, improve financial inclusion, and enhance payment efficiency. However, unregulated or poorly managed digital currency markets can introduce systemic risks, such as banking sector disintermediation, market volatility, and cyber threats.

To foster innovation while mitigating risks, African regulators must adopt flexible, technology-neutral regulatory approaches. Regulatory sandboxes—controlled environments where fintech firms can test new products under regulatory oversight—are increasingly being used in Africa to support safe experimentation with digital currencies. Countries such as Nigeria, Kenya, and South Africa have established sandbox programs that allow regulators to closely monitor emerging digital financial services while protecting consumers and ensuring compliance with core financial regulations.

Risk-based regulation is another key strategy. Rather than applying blanket restrictions on digital currencies, regulators can tailor their oversight according to the risks posed by different types of digital assets. For example, stricter rules may be imposed on stablecoins with systemic implications, while allowing more flexibility for limited-use digital tokens used in specific sectors, such as agriculture or transport.

Central banks can also use CBDC design features to balance innovation and stability. By setting transaction limits, imposing tiered interest rates, or restricting CBDC use for specific types of payments, central banks can mitigate risks related to banking sector disintermediation and monetary policy disruption. Moreover, interoperability between CBDCs and commercial bank money can help preserve the role of banks in credit provision while ensuring the safe adoption of digital currency innovations.

Policymakers must also prioritize financial literacy and consumer protection measures to ensure that the benefits of digital currencies are widely accessible and that users are aware of potential risks. Public education campaigns, transparent disclosures, and strong data protection laws will be essential components of any comprehensive digital currency strategy.

The regulatory and policy challenges associated with digital currencies are particularly complex in the African context, where diverse economic structures, varying regulatory capacities, and regional integration efforts intersect. African countries must develop clear legal frameworks that define the status of digital currencies and establish comprehensive oversight mechanisms for crypto-assets and stablecoins. Effective cross-border coordination within regional economic communities and with international organizations will be essential to managing cross-border risks and promoting digital financial integration (Hataleyand Leuprecht, 2018; Sycheva *et al*., 2019).

At the same time, regulators must carefully balance the

promotion of digital innovation with the need to preserve financial stability. Flexible, risk-based regulatory approaches, regulatory sandboxes, and careful CBDC design can help achieve this balance. By proactively addressing these challenges, African policymakers can harness the benefits of digital currencies while safeguarding financial systems, ultimately contributing to more resilient, inclusive, and innovative economies.

2.6 Strategic Recommendations for African Central Banks

As digital currencies gain traction globally, African central banks are increasingly exploring their adoption to enhance monetary policy effectiveness, improve payment systems, and promote financial inclusion as shown in figure 3. However, given the unique structural, economic, and institutional challenges that many African countries face, it is imperative that central banks adopt strategic and carefully sequenced approaches to the exploration and deployment of digital currencies, particularly Central Bank Digital Currencies (CBDCs). Effective implementation requires more than technological innovation; it demands investment in digital infrastructure, cybersecurity, technical expertise, and comprehensive regulatory frameworks (Ngand Kwok, 2017; Gruber, 2019). The following strategic recommendations are proposed to guide African central banks in their digital currency initiatives.

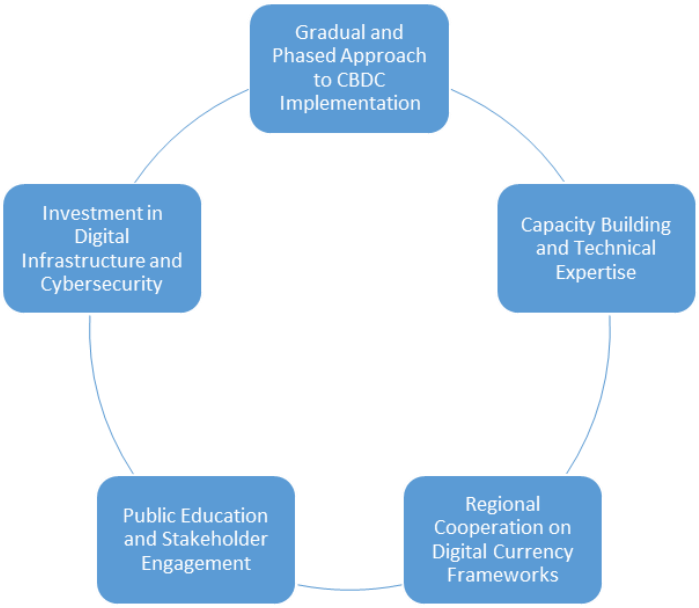

Fig 3: Strategic Recommendations for African Central Banks

A gradual, phased approach to CBDC implementation is critical for minimizing risks and ensuring operational readiness. African central banks should begin with extensive research and feasibility studies to assess the potential macroeconomic impacts of CBDCs, including effects on monetary policy, financial stability, and the banking sector. Initial phases should focus on pilot programs with limited scope, targeting specific use cases such as government-to-person (G2P) payments, cross-border remittances, or low-value retail payments.

Pilot projects allow central banks to test the technical robustness, user experience, and operational security of CBDC platforms in a controlled environment. For instance, Nigeria's phased implementation of the eNaira started with a limited launch targeting digital wallets for peer-to-peer transactions and later expanded to merchants and government payments. Such an incremental approach enables central banks to identify technical weaknesses, unintended economic effects, and regulatory gaps before large-scale rollouts.

Additionally, African central banks should adopt flexible CBDC designs that can evolve based on pilot results and stakeholder feedback. Features such as holding limits, tiered interest rates, and transaction thresholds can be adjusted as needed to mitigate risks of financial disintermediation or excessive capital outflows. Gradual implementation also provides time for banks, fintechs, and other financial intermediaries to adapt their operations and develop complementary services.

Robust digital infrastructure is a prerequisite for the successful deployment of digital currencies. Many African countries face infrastructure deficits in areas such as internet connectivity, mobile network coverage, and digital payment systems. Without reliable infrastructure, CBDCs risk exacerbating financial exclusion rather than alleviating it. Therefore, African central banks must advocate for and participate in national strategies aimed at expanding digital infrastructure.

Investment in cybersecurity is equally essential. Digital currencies are highly dependent on secure digital environments, making them susceptible to cyber threats such as hacking, phishing attacks, and distributed denial-of-service (DDoS) attacks. A single successful cyberattack on a CBDC system could undermine public trust, cause financial losses, and trigger systemic financial disruptions.

To address these risks, central banks should establish robust cybersecurity frameworks that incorporate advanced encryption techniques, secure coding practices, regular vulnerability assessments, and incident response protocols. Partnerships with cybersecurity firms and regional centers of excellence can help African countries build stronger defenses against cyber threats. Moreover, central banks should participate in international cybersecurity initiatives to remain

up-to-date on emerging risks and best practices.

The successful implementation of digital currencies also hinges on the availability of skilled personnel within central banks and regulatory agencies. Many African central banks currently lack sufficient in-house expertise in areas such as distributed ledger technology, cryptography, digital payment systems, and data analytics (Opare and Kim, 2020; Wewege*et al*., 2020). Without adequate technical knowledge, central banks may struggle to design, implement, and supervise digital currency systems effectively.

To address this gap, African central banks should prioritize capacity building through targeted training programs, technical workshops, and international knowledge-sharing initiatives. Collaboration with international financial institutions such as the International Monetary Fund (IMF), World Bank, and Bank for International Settlements (BIS) can facilitate access to specialized training resources and advisory services. Academic partnerships with universities and research institutions can also support the development of local expertise in fintech and digital finance.

Furthermore, central banks should establish dedicated digital currency units or task forces composed of multidisciplinary teams, including economists, payment experts, legal specialists, and IT professionals. These units can oversee research, pilot testing, and the regulatory design of CBDC initiatives.

Public education and stakeholder engagement are critical components of any digital currency strategy. Misunderstandings about digital currencies can lead to public resistance, low adoption rates, or misuse of new financial instruments (Halaburda*et al*., 2019; Fuller and Markelevich, 2020). African central banks must proactively communicate the objectives, benefits, and risks of CBDCs to the general public, financial institutions, and businesses.

Public awareness campaigns should leverage multiple communication channels—including traditional media, social media, and community outreach—to explain how digital currencies work, how they can be used safely, and how they differ from volatile crypto-assets. Transparent communication about data privacy protections and cybersecurity safeguards is especially important to build public trust.

Engaging financial institutions, fintech companies, mobile network operators, and merchants is equally vital. Central banks should conduct regular consultations with key stakeholders throughout the design and implementation process to ensure that CBDC systems are interoperable, user-friendly, and aligned with market needs. Open dialogue with the private sector can also foster innovation and encourage the development of complementary services that enhance CBDC utility.

Given Africa's highly interconnected financial systems and shared policy challenges, regional cooperation is crucial for the effective regulation and implementation of digital currencies. Regional economic communities such as the Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), and the East African Community (EAC) offer platforms for harmonizing digital currency policies and promoting cross-border interoperability (Mohammed and Magai, 2019; Rasaq*et al*., 2020).

African central banks should collaborate on developing common regulatory standards, including legal definitions of digital currencies, anti-money laundering (AML) and combating the financing of terrorism (CFT) guidelines, and consumer protection frameworks. Shared cybersecurity protocols and joint supervisory mechanisms can enhance resilience to cross-border financial risks.

Moreover, regional initiatives such as the Pan-African Payment and Settlement System (PAPSS) could benefit from integration with CBDC platforms, enabling seamless cross-border payments using digital currencies. Regional pilot programs for cross-border CBDC transactions could help test the feasibility of such systems and build momentum for broader collaboration.

Digital currencies present transformative opportunities for African economies but also pose significant risks that require deliberate and coordinated policy responses. By adopting a gradual and phased implementation strategy, investing in digital infrastructure and cybersecurity, building technical expertise, engaging stakeholders, and fostering regional cooperation, African central banks can maximize the benefits of digital currencies while minimizing associated risks. These strategic actions will not only support the safe adoption of CBDCs but also contribute to building more inclusive, resilient, and efficient financial systems across Africa. In doing so, African central banks can position themselves at the forefront of global digital financial innovation while ensuring monetary and financial stability in their domestic economies (Shipalana, 2019; Pazarbasioglu*et al*., 2020).

3. Conclusion

This analysis highlights that digital currencies present a complex interplay of opportunities and risks for monetary policy and financial stability across Africa. The rapid emergence of Central Bank Digital Currencies (CBDCs), stablecoins, and cryptocurrencies has significant implications for monetary policy transmission, money supply control, and financial inclusion. On one hand, digital currencies can enhance monetary policy effectiveness by expanding financial inclusion, improving payment efficiency, and increasing transparency. They offer promising solutions for reducing transaction costs, facilitating faster cross-border payments, and strengthening monetary sovereignty. On the other hand, these innovations introduce notable risks, including cybersecurity threats, banking disintermediation, and the potential for currency substitution and capital flight. Additionally, inadequate legal frameworks and fragmented regulatory approaches could exacerbate financial instability and undermine central bank authority.

Looking ahead, African economies must adopt proactive, flexible, and collaborative strategies to manage the evolving digital currency landscape. The region's unique economic structures, combined with high levels of financial exclusion and growing digital adoption, make it imperative for policymakers to tailor approaches that balance innovation with financial stability. Regional cooperation—through platforms such as ECOWAS, SADC, and the African Union—will be essential to harmonize regulatory frameworks and develop interoperable digital currency infrastructures.

This calls on African central banks to intensify their efforts in research, pilot testing, and stakeholder engagement related to digital currencies. Investing in technical capacity, cybersecurity, and digital infrastructure will be critical. Furthermore, cross-border collaboration should be prioritized to address regulatory gaps, mitigate systemic risks, and foster digital financial integration. Through coordinated, evidence-

based actions, African central banks can harness the benefits of digital currencies while preserving monetary sovereignty, ensuring financial stability, and promoting inclusive economic growth in the digital era.

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