Crossing Currencies: Africa's CBDC Path and China's Blueprint

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ABSTRACT

This note explores the implementation and regulation of retail Central Bank Digital Currencies ("CBDCs") in Africa, focusing on their integration with the continent's dominant telecommunication-driven financial systems. Unlike advanced economies with relatively robust banking infrastructure, African economies rely heavily on mobile money platforms to effectuate financial inclusion. Drawing on case studies such as Nigeria's eNaira and China's e-CNY, this note examines the current and potential regulatory, technological, and infrastructural challenges unique to retail CBDC implementation in Africa. It demonstrates the need for a centralized CBDC model that leverages existing mobile payment ecosystems while ensuring sufficient oversight by the central bank. This note concludes with recommendations for regulatory frameworks, public-private partnerships, and regional cooperation necessary for successfully deploying such a CBDC model on the African continent.

INTRODUCTION

The emergence of Central Bank Digital Currencies (CBDCs) marks a transformative shift in global financial systems, with major economies such as the United States, China, and the Eurozone exploring their potential to revolutionize monetary systems.[1] A retail CBDC is a digital currency issued by a country's central bank and widely available to the general public.[2] To demonstrate, imagine a world where paper dollars and cents are no longer in circulation, and instead, a blockchain-based currency fully controlled by the Federal Reserve serves as the dollar. The idea of digital currencies controlled by central banks offers several benefits, including enhanced financial inclusion, reduced illicit transactions, and streamlined cross-border payments.[3]

Though the United States has yet to officially launch a CBDC, the Federal Reserve's 2022 analysis outlines potential advantages, including faster transactions, safer digital payments, and greater financial inclusion.[4] Meanwhile, China's digital yuan (e-CNY)[5], Nigeria's electronic Naira (eNaira)[6], and the European Central Bank's digital euro (D-Euro)[7] are examples of intermediated CBDC developments.[8] The e-CNY has an

1 Oluwaleke Ebenezer Akindipe, Debbie Akhimie & Olanrewaju Olonade, *Awareness and Understanding of eNaira in Nigeria*, 19 ACTA UNIV. DANUBIUS ECONOMICA 5, 23 (2023) ("For instance, the US wants to determine whether CBDC can improve the payment system. The European Central Bank (ECB) has stressed how a digital euro may strengthen the digital economy while preserving European stability and sovereignty").

2 *Central Bank Digital Currency (CBDC): Frequently Asked Questions*, FED. RSRV. https://www.federalreserve.gov/cbdc-faqs.htm [https://perma.cc/8E24-5QVR] (last updated Nov. 16, 2022) ("'Central bank money' refers to money that is a liability of the central bank. In the United States, there are currently two types of central bank money: physical currency issued by the Federal Reserve and digital balances held by commercial banks at the Federal Reserve.").

3 PETRSON K. OZILI, ENAIRA CENTRAL BANK DIGITAL CURRENCY FOR FINANCIAL INCLUSION IN NIGERIA 3-4 (M.P.R.A. Paper No. 11,5781, 2023), https://mpra.ub.uni-muenchen.de/115781/1/MPRA_paper_115781.pdf [https://perma.cc/5EQB-KLTL]; Eve Lee, *Central Bank Digital Currencies Tools for an Inclusive Future?*, BELFER CTR. FOR SCIENCE & INT'L AFFS. 2-5 (Sep. 2020), https://www.belfercenter.org/publication/central-bank-digital-currencies-tools-inclusive-future [https://perma.cc/E8J6-UY9D].

4 BD. OF GOVS. OF FED. RSRV. SYS., MONEY AND PAYMENTS: THE U.S. DOLLAR IN THE AGE OF DIGITAL TRANSFORMATION 3 (Federal Reserve Discussion Paper, 2022) [https://perma.cc/AY8Y-WBTC]; *but see* Norbert J. Michel, *Central Bank Digital Currencies Are About Control—They Should Be Stopped*, FORBES (Apr. 12, 2022), https://www.forbes.com/sites/norbertmichel/2022/04/12/central-bank-digital-currencies-are-about-control—they-should-be-stopped/ [https://perma.cc/AD7N-DUJH]; NICHOLAS ANTHONY ET AL., SOUND FINANCIAL POLICY: PRINCIPLED RECOMMENDATIONS FOR THE 119TH CONGRESS 10 (Cato Inst., 2025).

5 RAJESH BANSAL & SOMYA SINGH, CHINA'S DIGITAL YUAN: AN ALTERNATIVE TO THE DOLLAR-DOMINATED FINANCIAL SYSTEM, (Carnegie Endowment for Int'l Peace, 2021).

6 OZILI, *supra* note 3.

7 BANK FOR INTERNATIONAL SETTLEMENTS, CENTRAL BANK DIGITAL CURRENCIES: FOUNDATIONAL PRINCIPLES AND CORE FEATURES (Oct. 2020).

8 Nicholas Anthony & Norbert Michel, *A Breakdown of the Different CBDC Models*, CATO AT LIBERTY (Feb. 10, 2023), https://www.cato.org/blog/breakdown-different-cbdc-models [https://perma.cc/F2PT-C8DQ] ("Currently, there are three core variations of retail CBDCs: the direct CBDC, the intermediated or indirect CBDC, and the synthetic CBDC . . . A 'direct CBDC' would be a CBDC that is available to everyone and managed directly by the central bank . . . An 'intermediated

extensive pilot program across major cities in China, with millions of users and billions of yuan in transactions.[9] The D-Euro could have an inherent cross-border advantage, given the Eurozone's cross-state cohesion and the bloc's plans to harness it.[10] The e-Naira is the first in Africa and seeks to incorporate nuances into Nigeria's financial ecosystem.[11]

Conceptually, intermediated CBDCs can mirror the traditional banking structure: a central bank working with various commercial banks.[12] This mirroring makes it easy to understand and propagate, but it has potential flaws, including the assumption that a country has a functional, widely adopted banking system. But what if an economy lacks a functional banking system? Or perhaps that economy has a functional but not widely adopted system? Unfortunately, there is no mirroring the nonexistent.

Africa's economies can be examined as primary examples of these questions. Africa's financial landscape has been primarily driven by private sector innovations in the telecom-led form.[13] It is not uncommon for people to have no bank account, instead keeping and transferring their money through various financial services on their phones.[14] This system would be similar to PayPal or Venmo, but run by T-Mobile or AT&T. For such economies, the underlying presuppositions of intermediated CBDCs—the banking structure to be mimicked—do not apply. As a result, an alternative model of digital currencies might better suit the needs of African economies.

Indeed, African financial ecosystems prominently rely on mobile money and telecom-driven financial platforms,[15] and these systems have outpaced traditional banks in providing financial inclusion, particularly in rural areas.

CBDC' or 'indirect CBDC' is probably best understood as an attempt to appease the private sector by lessening the risk of disrupting, or disintermediating, the current financial system . . . A 'synthetic CBDC' really isn't a CBDC at all.").

9 BANSAL & SINGH, *supra* note 5.

10 Joachim Nagel, *Introducing a Digital Euro: The Cross-Border Dimension,* DEUTSCHE BUNDESBANK EUROSYSTEM (Oct. 14, 2024), https://www.bundesbank.de/en/press/speeches/introducing-a-digital-euro-the-cross-border-dimension-942142 [https://perma.cc/93VF-DQ39] ("The primary goal of a digital euro is meet the domestic needs of the euro area. To some extent, however, this goal already includes a significant cross-border dimension.").

11 OZILI, *supra* note 3, at 37; Akindipe, Akhimie & Olonade, *supra* note 1, at 37.

12 *Demystifying Tokenized Currencies*, GIESECKE+DEVRIENT SPOTLIGHT (Dec. 7, 2023), https://www.gi-de.com/en/spotlight/currency-technology/demystifying-tokenized-currencies [https://perma.cc/5ZLA-68SS] ("While retail CBDCs will be issued by the central bank or monetary authority, they will be distributed by commercial banks, financial service providers, and merchants – just like cash").

13 *See generally Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa,* WORLD BANK (Apr. 17, 2024), https://www.worldbank.org/en/publication/globalfindex/brief/data-from-the-global-findex-2021-the-impact-of-mobile-money-in-sub-saharan-africa [https://perma.cc/VM99-VV67] (explaining in detail the impact of mobile money systems in Africa); *see also* RISHI RAITHATHA & GIANLUCA STORCHI, THE STATE OF THE INDUSTRY REPORT ON MOBILE MONEY 3, 16 (GSMA 2024).

14 RAITHATHA & STORCHI, *supra* note 13, at 7-8.

15 *Id.*

This note therefore argues that an alternative model of Central Bank Digital Currency will better suit the needs of African economies: a two-tier retail CBDC system modeled after the e-CNY.[16] This note assumes that this model is preferable because it is less likely to disrupt the current financial ecosystem and will be faster, cheaper, and more efficient to facilitate buy-in if CBDCs are to become widely adopted in Africa. The alternative this note advances does not copy China's model but instead recognizes it as instructive. Crucially, the digital finance players in Africa are private, whereas those in China are strongly tied to the state.[17] This distinction matters as we think about inherent control and how it changes the scope and possibilities of regulation.

African CBDCs are also expected to face regulatory challenges common to all CBDCs (regarding taxation, fraud, and more),[18] given that so far, African countries seem to have similar strategies and goals for CBDCs, such as promoting cross-border use in regional economic communities (e.g., through the African Continental Free Trade Area, or AfCFTA).[19] It is safe to assume that CBDCs in Africa will face distinct challenges stemming from the varied landscapes in which they operate. China's two-tier deployment of the e-CNY provides some answers.

First, China's focus on regulatory safeguards around the e-CNY, including data security and privacy protocols, is relevant to African nations with similarly evolving digital frameworks.[20] China's model is also critical because of the need for regulatory support in Africa, underscored by concerns around data privacy, financial integrity, and digital literacy.[21] As highlighted in recent IMF reports, African economies are at a critical juncture, where strategic regulation is necessary to balance innovation with inclusion, enabling CBDCs to expand access to financial services for the unbanked and underbanked.[22]

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16 Pangyue Cheng, *Decoding the Rise of Central Bank Digital Currency in China: Designs, Problems, and Prospects*, 24 J. BANKING REG. 156, 161 (2023).

17 BANSAL & SINGH, *supra* note 5, at 9-10; Jeffrey Melnik, *China's "National Champions": Alibaba, Tencent, and Huawei*, 24 EDUC. ABOUT ASIA 28, 31 (2019).

18 Peterson K. Ozili, *Assessing Global and Local Interest in eNaira CBDC and Cryptocurrency Information: Implications for Financial Stability*, 3 J. INTERNET & DIG. ECON. 1, 4 (2023) [hereinafter Ozili, *Assessing Global and Local Interest in eNaira*].

19 Jookyung Ree, *Nigeria's eNaira, One Year After* 6 (IMF Working Paper WP/23/104, 2023), https://www.imf.org/-/media/files/publications/wp/2023/english/wpiea2023104-print-pdf.pdf [https://perma.cc/J985-EZX3]; *see also* Suoye Igoni et al., *Evolution of eNaira for Re-engineering the Nigerian Emerging Economy*, 5 J. ECON., FIN. & MGMT. STUD. 2866, 2867 (2022).

20 *See generally* BANSAL & SINGH, *supra* note 5 (explaining various regulatory frameworks the PBOC intends to apply to the e-CNY).

21 Ree, *supra* note 19, at 9; *see also* Igoni et. al., *supra* note 19, at 2873.

22 Peterson K. Ozili, *CBDC, Fintech and Cryptocurrency for Financial Inclusion and Financial Stability*, 25 DIG. POL'Y REG. & GOV. 40, 43 (2023) [hereinafter Ozili, *CBDC, Fintech and Cryptocurrency*].

China's digital yuan also sets a precedent for countries aiming to decrease reliance on the U.S. dollar for international transactions and to reshape cross-border payment infrastructure.[23] Given China's geopolitical goals, its CBDC development integrates robust public infrastructure with day-to-day spending and strategic event placement. For example, the e-CNY has been used at events like the Olympics to increase visibility and acceptance among local and international users.[24] Generally, China plans to leverage the e-CNY to reinforce economic stability and financial autonomy.[25] China's e-CNY pilot underscores a centralized model that integrates seamlessly with the existing financial infrastructure, enhancing the People's Bank of China's ("PBOC") control over the monetary system while ensuring user accessibility and compliance with data protection and cybersecurity laws.[26]

Accordingly, this note focuses on the rise of CBDCs in Africa, particularly in the context of implementation alongside telecommunication companies. It also takes a comparative look at China as a reference for how African economies can implement regulatory frameworks for CBDCs in their unique environment.

Part I briefly introduces Chartalism, a theory asserting that money derives its value from government mandates and tax obligations. By grounding the discussion in monetary theory, this section sets the stage for understanding the significance of Central Bank Digital Currencies (CBDCs) in modern financial systems, especially as later paragraphs hint at aligning media of exchange with broader national goals.

Part II provides a primer on CBDCs, outlining their defining characteristics, technological foundations, and intended policy objectives. This section examines global CBDC initiatives, including China's e-CNY and the Bahamas' Sand Dollar, assessing their implications for monetary sovereignty, financial stability, and cross-border transactions. It also highlights the key motivations for CBDC adoption, including financial inclusion, payment system efficiency, and government control over monetary flows.

Part III shifts focus to Africa. Unlike economies with entrenched banking infrastructure, most of Africa's financial systems are dominated by mobile money platforms such as Kenya's M-Pesa and Ghana's MTN

23 BANSAL & SINGH, *supra* note 5, at 3-4.

24 Roger Huang, *A 2025 Overview of the E-CNY, China's Digital Yuan*, FORBES (July 15, 2024), https://www.forbes.com/sites/digital-assets/2024/07/15/a-2024-overview-of-the-e-cny-chinas-digital-yuan/ [https://perma.cc/9YQ9-MG2Q] ("Specific merchants accept the e-CNY, and it is implemented in public transit systems in major cities like Beijing. During the Winter Olympics, it was one of three forms of payment accepted").

25 Franklin Allen et al., *Fintech, Cryptocurrencies, and CBDC: Financial Structural Transformation in China*, 124 J. INT'L MONEY & FIN. 102625, 7-8 (2022).

26 Cheng, *supra* note 16, at 162.

Mobile Money. This section evaluates the role of telecom-driven financial ecosystems in Africa.

Part IV explores cryptocurrencies as an alternative. It examines the volatility, regulatory uncertainties, and infrastructural constraints that make them an unviable surrogate.

Part V critically assesses Nigeria's eNaira, the first retail CBDC in Africa. Despite initial optimism, the eNaira has encountered low adoption rates due to public distrust, competition with established mobile money providers, and insufficient digital literacy. This section extracts lessons from Nigeria's experience to inform future CBDC initiatives on the continent.

Part VI examines China's e-CNY as a reference point for structuring CBDCs in Africa. It outlines China's two-tiered system, where the central bank issues digital currency while commercial banks and mobile payment providers such as Alipay and WeChat Pay facilitate its distribution. This section considers whether a similar model—integrating CBDCs with Africa's telecom-led financial networks—could enhance regulatory oversight while ensuring mass adoption.

Part VII analyzes the regulatory challenges of implementing CBDCs in Africa, addressing concerns over data privacy, cybersecurity, and monetary policy control. It then explores the "privacy problem" and the "regular issues" with CBDCs as they are expected to manifest in Africa. It finally assesses a "laundry list" of solutions that can be drawn from China's implementation model.

I. WHAT MONEY MEANS

Modern monetary systems are grounded in chartalist theory. Chartalism is a theory holding that currency derives its value from government mandates and tax obligations. Governments create value for their currencies not merely through intrinsic worth but by requiring their use in the payment of taxes and obligations.[27] This foundation underscores why central banks retain a privileged role in monetary design and why proposals for new forms of currency—whether digital or private—require their involvement. Defining chartalism matters as we think about the players in CBDC adoption: the governments and partnerships that make the medium possible, and the citizens that make them mainstream. It highlights that questions of

27 CHRISTINE DESAN, MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM 1 (Oxford Univ. 1st ed. 2014) ("Made by engaging the same people who use it, money is no neutral technology. It is instead a constitutional (small "c") effort in a very particular sense: money is a mode of mobilizing resources, one that communities design for that end and individuals appropriate for their own purposes. It defines authority and distributes material as it operates."); GEORG FRIEDRICH KNAPP, THE STATE THEORY OF MONEY 25–26, 44 (H.M. Lucas & J. Bonar trans., 1924); Ree, *supra* note 19, at 12.

legitimacy, governance, and enforcement remain central to the evolution of payment systems.

II. WHAT ARE CBDCS? A PRIMER ON GLOBAL CBDCS

A central bank digital currency (CBDC) is a digital liability of a central bank, designed to function as legal tender.[28] Unlike decentralized cryptocurrencies, CBDCs are state-backed instruments that can combine the efficiency of digital transactions with the stability of sovereign money and the government's ability to control policy.[29] Over the past decade, digital currencies have moved from speculative projects to actual economic use.[30] Countries like China[31] and the Bahamas have introduced pilot programs, with the Bahamas leading the charge by launching its "Sand Dollar" in 2020.[32] The Eurozone, Nigeria, and South Africa are not far behind in developing CBDCs.[33] The United States, however, has considered developing its own but not yet done so.[34] The introduction of Central Bank Digital Currencies (CBDCs) as government-backed digital money highlights a critical trend; it represents a significant and seemingly inevitable financial innovation of the 21st century.[35] CBDCs are being piloted by roughly 25% of central banks, while about 80% of central banks find the value in the idea, underscoring the seriousness with which nations approach digital currency as a modern economic solution.[36]

CBDCs are appealing because they promise many advantages over existing payment systems, particularly in terms of monetary policy control and financial stability.[37] A CBDC can be used to enhance the central bank's control over the monetary supply and manage inflation by providing ready access to encrypted blockchain signatures for money.[38] Moreover, it can

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28 INT'L MONETARY FUND, STAFF DISCUSSION NOTE, SELECTED LEGAL CONSIDERATIONS FOR CENTRAL BANK DIGITAL CURRENCIES 3 (2025).

29 *Id.*; Ree, *supra* note 19, at 7.

30 Lee, *supra* note 3, at 1 ("Central Bank Digital Currencies (CBDCs) have rapidly evolved from a sci-fi concept to a plausible alternative to cash that is being studied by central banks all over the world.").

31 BANSAL & SINGH, *supra* note 5.

32 *See generally Digital Bahamian Dollar*, SAND DOLLAR, https://www.sanddollar.bs [https://perma.cc/65N5-U642].

33 S. AFR. RSRV. BANK, PROJECT KHOKHA 2: FULL REP. 1, 25 (Apr. 6, 2022).

34 MONEY AND PAYMENTS: THE U.S. DOLLAR IN THE AGE OF DIGITAL TRANSFORMATION, *supra* note 4, at 3; *see generally* Michel, *supra* note 4 (reporting that CBDCS are about control and should be stopped); *see also* Anthony & Michel, *supra* note 8 ("For instance, Federal Reserve Governor Michelle Bowman said, "My expectation is that FedNow addresses the issues that some have raised about the need for a CBDC."").

35 LEE, *supra* note 3, at 1-2.

36 Anneke Kosse & Ilaria Mattei, *Making Headway: Results of the 2022 BIS Survey on Central Bank Digital Currencies and Crypto*, BIS PAPERS NO. 136, 5, 9 (2023).

37 Steven L. Schwarcz, *Regulating Digital Currencies: Towards an Analytical Framework*, 102 B.U.L. Rev. 1037, 1040, 1052 (2022).

38 BANSAL & SINGH, *supra* note 5, at 6.

provide a safer, more reliable alternative to cryptocurrencies, which are prone to volatility and lack regulatory oversight.[39]

However, countries adopting Central Bank Digital Currencies can expect to face several challenges.[40] These include low adoption rates stemming from public skepticism and a lack of awareness and management of cross-border transactions.[41] Such challenges are especially prevalent in regions reliant on remittances, which, in the absence of clear regulatory frameworks, could be exposed to increased risks of illicit financial flows.[42] Other challenges include privacy concerns, as CBDCs enable transaction tracking, risking a balance between transparency and individual data protection.[43] Further, countries would have to account for regional cooperation.[44] Finally, enforcement and compliance mechanisms must ensure privacy for small-scale transactions while maintaining strong oversight.[45]

III. DIGITAL FINANCE IN THE AFRICAN FINANCIAL LANDSCAPE

Across Africa's 54 countries, the financial landscape comprises a mix of traditional banks and informal systems. Across these systems, however, financial inclusion[46] remains a significant challenge. The potential of CBDCs to address this issue cannot be overstated.[47] Over 57% of the adult population in sub-Saharan Africa remains unbanked.[48] To an extent, then, the appeal of CBDCs on the continent lies in their potential to circumvent traditional banking infrastructure and provide access to digital currency through mobile phones, a device with significant penetration even in rural areas.[49] As noted, properly applied, CBDCs could integrate with or

39 Schwarcz, *supra* note 37, at 1043.

40 Kosse & Mattei, *supra* note 36, at 11; Olivier Denecker et al., *Central Bank Digital Currencies: An Active Role for Commercial Banks*, MCKINSEY & CO. (Oct. 13, 2022), https://www.mckinsey.com/industries/financial-services/our-insights/central-bank-digital-currencies-an-active-role-for-commercial-banks [https://perma.cc/EG62-UTRN].

41 *Id.*

42 BANSAL & SINGH, *supra* note 5, at 15; *see also* Fernando Alvarez, David Argente & Diana Van Patten, *Are Cryptocurrencies Currencies? Bitcoin as Legal Tender in El Salvador*, 382 SCI. 1, 4 (2023).

43 BANSAL & SINGH, *supra* note 5, at 5-6; Adekemi Omotubora, *Same Naira, More Possibilities! Assessing the Legal Status of the eNaira and Its Potential for Privacy and Inclusion*, 68 J. AFR. L. 245, 255-57 (2024); *see generally* Alvarez, Argente & Patten, *supra* note 42, at 1, 7.

44 BANSAL & SINGH, *supra* note 5, at 10-11.

45 *Id.* at 5-6.

46 *Financial Inclusion*, CGAP, https://www.cgap.org/financial-inclusion [https://perma.cc/8X3Q-RPZP] ("Financial inclusion means that all people and businesses have access to — and are empowered to use — affordable, responsible financial services that meet their needs. These services include payments, savings, credit, and insurance").

47 Kosse & Mattei, *supra* note 36, at 6; *see also Digital Bahamian Dollar*, *supra* note 32.

48 *Banking the Unbanked in Sub-Saharan Africa*, CREM NIGERIA (Aug. 26, 2022), https://cremnigeria.org/banking-the-unbanked-in-sub-saharan-africa/ [https://perma.cc/W6BJ-QADP].

49 Kosse & Mattei, *supra* note 36, at 9; *see also* RAITHATHA & STORCHI, *supra* note 13.

complement existing financial systems.[50] However, doing so would require deliberate analysis of the existing technological infrastructure and financial behaviors.

African financial regimes have high levels of informality, strong reliance on mobile money platforms, and an ever-growing demand for remittance services.[51] These systems offer a fast, reliable, and widely accepted way to transfer funds without a bank account. In fact, systems like Kenya's M-Pesa, Ghana's MTN Mobile Money, and Nigeria's Paga represent local innovations that offer financial inclusion through a decentralized network of mobile operators rather than centralized banks.[52]

The World Bank reports that mobile money has had a transformative role in enhancing financial inclusion in Sub-Saharan Africa, making Sub-Sarahan Africa a global leader in its adoption.[53] 28% of adults in the region hold mobile money accounts, with over 30% ownership in 20 of the 36 surveyed economies, surpassing traditional bank account use in many cases.[54] In fact, Sub-Saharan Africa accounts for nearly half of all global mobile money accounts, with West Africa emerging as a key growth area, driven by vibrant ecosystems in Nigeria, Ghana, and Senegal.[55] Mobile money contributed approximately $600 billion to global GDP between 2013 and 2022, with Sub-Saharan Africa accounting for $150 billion.[56]

As it has become more popular, mobile money has evolved significantly, with diverse use cases such as merchant payments and international remittances experiencing rapid growth.[57] In 2023, merchant payments totaled $74 billion, and international remittances reached $29 billion.[58]

The adoption of this system has made financial systems more accessible. It has been pivotal in transforming economies that were largely informal

50 Kosse & Mattei, *supra* note 36, at 9, 17.

51 RAITHATHA & STORCHI, *supra* note 13, at 3,7.

52 Omotubora, *supra* note 43, at 259-60; *see also* INT'L MONETARY FUND, REG'L ECON. OUTLOOK: SUB-SAHARAN AFRICA—DIGITAL CURRENCY INNOVATIONS IN SUB-SAHARAN AFRICA, INT'L MONETARY FUND 1 (2022).

53 *Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa, supra* note 13 ("Mobile money has become foundational to increasing financial inclusion in Sub-Saharan Africa. East Africa was once the epicenter of mobile money, given the pioneering mobile network operators in Kenya and elsewhere.").

54 *Id.* ("Sub-Saharan Africa was home to all 12 of the world's economies in which more adults have only a mobile money account than have an account with a bank or similarly regulated financial institution. As of 2022, 28 percent of adults on average across Sub-Saharan Africa had a mobile money account . . . In fact, 20 out of the 36 surveyed economies in the region have a 30 percent or higher share of adults with a mobile money account").

55 RAITHATHA & STORCHI, *supra* note 13 at 3, 18.

56 *Id.* at 15, 16.

57 *Id.* at 3*; Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa, supra* note 13 ("The Global Findex 2021 data show that mobile money account owners now use their accounts for a range of purposes, including to receive and make a variety of payment types, as well as to save, store money, and borrow").

58 RAITHATHA & STORCHI, *supra* note 13, at 3, 7.

and cash-based into formalized ones, even if they were not bank-based.[59] Scholars have noted that mobile money also plays a pivotal role in promoting gender and age equity by effectively reducing access barriers.[60] Unlike traditional banking, mobile money provides a somewhat level playing field for all, as seen in key economies where women's ownership rates match or exceed those of men. Similarly, mobile money's accessibility ensures that older adults, often marginalized in conventional banking, can participate in the financial ecosystem.[61]

Additionally, the versatility of mobile money is evident in its widespread adoption for diverse financial activities.[62] While initially designed for Peer-to-peer (P2P) payments, mobile money now facilitates the receipt of wages, government transfers, and agricultural payments, often surpassing traditional banking in popularity.[63] It also encourages formal savings, transitions users from informal methods, and expands access to credit, particularly in mature markets like Kenya.[64]

Adjacent financial services, including microloans, savings, and insurance, are expanding, driven by innovations and strategic partnerships with banks and mobile money service providers.[65] These services enhance financial inclusion and create new revenue streams for providers.[66] This multifunctionality establishes mobile money as an indispensable tool in the region, driving shifts in financial behavior and fostering economic empowerment.

Despite its transformative impact, mobile money adoption in Africa faces systemic barriers and consumer risks. Limited access to mobile phones, identification documents, and funds remains a significant obstacle

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59 *Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa, supra* note 13 ("The data also suggests substitution of mobile money to replace traditional accounts in economies such as Malawi and Togo, where between 2017 and 2021, growth in mobile money account adoption occurred concurrently with a decline or stagnancy in bank account ownership").

60 *Id.* ("Mobile money accounts have helped drive greater gender equity in account ownership — at least in some economies. In seven of the 15 economies where more than 20 percent of adults have a mobile money account, for example, women have equal or higher mobile money account ownership than men").

61 *Id.*

62 *Id.* ("The first mobile money products—designed and delivered by mobile phone network operators—were intended to facilitate person-to-person (P2P) payments. That use case dominated the mobile money space for years in Sub-Saharan Africa. No longer. The Global Findex 2021 data show that mobile money account owners now use their accounts for a range of purposes, including to receive and make a variety of payment types, as well as to save, store money, and borrow").

63 *Id.*

64 *Id.* ("Specifically, the data suggests that some adults who were saving at home or through less formal means transitioned to formal savings, enabled by their mobile money account").

65 *Id.* ("Mobile money also enables more widespread access to credit in some economies. Of the 12 percent of adults in the region who borrowed formally in the year prior to the Global Findex 2021 survey, nearly half borrowed from a mobile money provider").

66 *Id.* ("Mobile money has become foundational to increasing financial inclusion in Sub-Saharan Africa").

for millions of potential users.[67] Additionally, consumer risks, such as unclear fee structures, fraud, and reliance on intermediaries, can undermine the benefits of mobile money.[68] Notably, nearly one-third of users require assistance operating their accounts.[69] In Ghana, for example, it is not uncommon to see kiosks where mobile money operators help customers make deposits and withdrawals, improve digital literacy, and resolve technical difficulties.[70]

IV. WHY CBDCS? CRYPTOCURRENCIES ARE AN UNFAVORED ALTERNATIVE

One cannot discuss digital currencies, especially CBDCs, without considering cryptocurrencies. They readily come to mind when digital currencies are mentioned.[71] Platforms that market and facilitate the trading of cryptocurrencies (such as Bitcoin and Ethereum) have continued to gain prominence across Africa.[72] These platforms can facilitate easy payments using some telecom digital payment methods.[73] While cryptocurrencies have gained traction in some parts of Africa, especially as a hedge against currency depreciation and inflation and a tool for cross-border transactions, they come with significant challenges. Namely, their volatility makes them unreliable as a store of value, and their decentralized nature poses challenges for governments that seek to control monetary policy.[74]

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67 *Id.* ("The most common barrier across the region to getting a mobile money account was lack of money, which is consistent with the reasons given for not having a bank account, discussed in the overview note in this series . . . The lack of a mobile phone was the second most common reason across the region for not having a mobile money account . . . The lack of documentation needed to open an account ranked as the third most common barrier across the region").

68 RAITHATHA & STORCHI, *supra* note 13, at 8, 82-83.

69 *Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa, supra* note 13 ("[A]cross Sub-Saharan Africa around 30 percent of mobile money account holders cannot do so without help").

70 *Everything you Need to Know about Mobile Money in Ghana*, WORLDREMIT BLOG, https://www.worldremit.com/en/blog/finance/mobile-money-ghana [https://perma.cc/VS7R-DMLR].

71 Nicholas Anthony, *CBDC vs. Crypto: What's the Difference?*, CATO INST. (Mar. 31, 2023), https://www.cato.org/blog/cbdc-vs-crypto-whats-difference [https://perma.cc/P8CJ-THHU]. This article notes the similarities and differences between CBDCs and Cryptocurrencies. It acknowledges the common conflation between the two, while establishing critical differences. It also examines how CBDCs have been argued to be a response to crypto and provides insight into how and why crypto proponents have reacted to China's innovation in the CBDC space.

72 *Sub-Saharan Africa Crypto Adoption Trends and Analysis,* CHAINALYSIS BLOG (Sep. 19, 2023) https://www.chainalysis.com/blog/africa-cryptocurrency-adoption/ [https://perma.cc/48J3-26QG].

73 *Buy Bitcoin with M-Pesa*, PAYBIS, https://paybis.com/buy-bitcoin-with-mpesa/ [https://perma.cc/7ULB-9V2P].

74 Alvarez, Argente & Patten, *supra* note 42; *see also* Anthony, *supra* note 71 ("A CBDC would fundamentally differ from existing money because it would establish a direct line between citizens and the federal government—a sort of digital tether").

El Salvador's failed experiments with adopting Bitcoin as legal tender in 2022 (Chivo Wallet) provide a good case study.[75] The country's adoption of Bitcoin was met with skepticism from international financial organizations and its population.[76] Salvadorans, lacking the infrastructure and knowledge to use cryptocurrency effectively, did not embrace the policy.[77] Prior scholarship on the subject indicates that the program failed primarily because of low adoption and use of the government-backed Chivo Wallet.[78]

While the initial adoption of the Chivo Wallet surged following government incentives, such as a $30 bonus and fee subsidies, momentum waned quickly. Many users downloaded the app only to use the bonus and then abandoned their wallets afterward.[79] Scholars have argued that this pattern reflects a lack of intrinsic motivation or utility beyond any government incentives.[80] Further, a cultural preference for cash complicated Bitcoin's adoption in El Salvador. As of 2023, over half of the population relied exclusively on cash for transactions, valuing its simplicity, stability, and anonymity.[81]

Additionally, businesses expressed limited interest in accepting Bitcoin despite the legal mandate. While approximately 20% of firms accepted Bitcoin, only a small fraction of transactions used Bitcoin. Even then, most firms quickly converted Bitcoin sales into U.S. dollars to mitigate the risks of price volatility.[82]

More importantly, access to smartphones with reliable internet, a prerequisite for using Chivo Wallet, was not universal in El Salvador.[83] Even among those who downloaded the app, technical difficulties and usability issues discouraged continued engagement.[84] These challenges extended beyond individuals' personal preferences and capabilities.

El Salvador's Bitcoin experiment underscores the complexities of introducing cryptocurrencies as a national currency. Cultural reliance on cash, infrastructural gaps, mistrust, and Bitcoin's volatility contributed to its limited success, if not inevitable failure. This case study highlights the broader challenges of adopting cryptocurrencies in developing economies,

75 Given the similarities between the El Salvador's financial landscape and the African landscape explained earlier in the paper. It is also the first country to adopt Bitcoin as legal tender and thus has been studied more thoroughly.

76 Alvarez, Argente & Patten, *supra* note 42, at 3-4, 7.

77 *Id.*

78 *Id.*

79 *Id.*

80 *Id.*

81 *Id.* at 2, 4.

82 *Id.*

83 *Id.*

84 *Id.*

suggesting the need for robust infrastructure, public education, and trust-building measures to ensure effective integration if cryptocurrencies were to become an option. Outside the El Salvadorian case study, similar concerns have been raised in the Central African Republic, the first African country to establish Bitcoin as legal tender.[85] It is not highlighted here as a case study due to a lack of available studies.

It is, however, important to note that in countries with high inflation and unstable currencies, such as Zimbabwe[86] and Sudan,[87] cryptocurrencies may remain a popular—albeit unofficial—option for preserving value and facilitating remittances.[88]

V. CBDC IMPLEMENTATION IN AFRICA: NIGERIA'S ENAIRA

The Central Bank of Nigeria (CBN), like other central banks globally, has taken on the task of managing the design, distribution, and regulation of digital currencies.[89] The Nigerian eNaira experience highlights both the promise and the challenge of using CBDCs to complement existing mobile money services. However, the eNaira's low adoption rate indicates that infrastructural barriers, public awareness, and digital literacy are critical factors impacting CBDC's success.[90] With the rise of technical knowledge

85 Amick, Shawn, *Coinbase-backed MARA to Advise Central African Republic on Bitcoin Adoption*, BITCOIN MAGAZINE (May 11, 2022), https://bitcoinmagazine.com/markets/coinbase-backed-mara-to-advise-central-african-republic-on-bitcoin-adoption [https://perma.cc/BP5K-9RZP] ("MARA has reportedly recommended that the government increase internet penetration and provide more citizens with national IDs. The internet is only accessible to about 11% of CAR's five million citizens according to data from DataReportal. This lack of connectivity creates extra hurdles for would-be users looking to adopt bitcoin"); Judicael Yongo et al., *Bitcoin Adoption by Central African Republic Baffles Cryptoverse*, REUTERS (Apr. 28, 2022), https://www.reuters.com/world/africa/bitcoin-adoption-by-central-african-republic-baffles-cryptoverse-2022-04-28/ [https://perma.cc/7PAQ-EFLE] ("Four analysts and crypto experts said great challenges lie ahead in adopting bitcoin in one of the world's poorest countries with low internet use, widespread conflict, spotty electricity and a population mostly unfamiliar with crypto.").

86 Earl Nurse, *The 'Worthless' 100 Trillion Dollar Bank Note*, CNN (May 6, 2016), https://www.cnn.com/2016/05/06/africa/zimbabwe-trillion-dollar-note/index.html [https://perma.cc/V3MX-7WTN].

87 *Military Spending, Hyperinflation Cripple Sudan's Economy*, SUDAN TRIBUNE (Dec. 9, 2024), https://sudantribune.com/article/294423 [https://perma.cc/5WX5-C86B].

88 *See* Louisa Alexa, *How Bitcoin Helps Civilians Escape The War In Sudan*, FORBES (July 5, 2023) https://www.forbes.com/sites/digital-assets/2023/07/05/how-bitcoin-helps-civilians-escape-the-war-in-sudan/ [https://perma.cc/3BZ7-Z6GM]; *see also* Martin Leo Rivers, *Bitcoin Could Solve Zimbabwe's Hyperinflation Problem—Instead, the Country Is Telling Impoverished Citizens to Just Buy Gold*, FORBES (July 27, 2022), https://www.forbes.com/sites/martinrivers/2022/07/27/bitcoin-could-solve-zimbabwes-hyperinflation-problem—instead-the-country-is-telling-impoverished-citizens-to-just-buy-gold/ [https://perma.cc/ACD3-QYLD]; *Sub-Saharan Africa Crypto Adoption Trends and Analysis,* CHAINALYSIS BLOG (Sep. 19, 2023) https://www.chainalysis.com/blog/africa-cryptocurrency-adoption/ [https://perma.cc/678R-K3QV].

89 CENT. BANK OF NIGERIA, *eNaira Overview*, https://www.cbn.gov.ng/currency/eNaira.html [https://perma.cc/C6QJ-ZT98]; *see also* FIRST BANK OF NIGERIA, *e-Naira*, https://www.firstbanknigeria.com/personal/ways-to-bank/e-naira/ [https://perma.cc/XYH8-2XN3]; Huang, *supra* note 24; EUR. CENT. BANK, *Digital Euro*, https://www.ecb.europa.eu/euro/digital_euro/html/index.en.html [https://perma.cc/C7S9-5K4K].

90 OZILI, *supra* note 3, at 18.

and education amongst the mostly young workforce,[91] the development of blockchain technology is promising.[92] However, there are some gaps, such as identity systems and secure digital payments.[93] Moreover, central banks are often slow to innovate due to bureaucracy, which could delay the launch and effectiveness of CBDCs.[94] In contrast, private companies have been innovative in developing mobile money solutions, as evidenced by the quick adoption of mobile money systems across the continent.[95] To argue for a different CBDC adoption strategy on the continent, it is crucial to understand the current one.

The eNaira, launched in October 2021, is Africa's first Central Bank Digital Currency (CBDC),[96] designed to facilitate secure, traceable, and cost-effective digital transactions. It operates on a blockchain-based system and is stored in digital wallets, enabling seamless payment functionalities.[97] Its innovative approach introduces a two-tiered system in which the Central Bank of Nigeria (CBN) issues the eNaira to financial institutions, which then manage transactions for end users.[98] Such a setup ensures effective oversight and scalability by leveraging existing banking structures.[99]

One of the standout features of the eNaira is its tiered wallet system.[100] This structure accommodates a wide range of users, from individuals

91 *African Investment Forum: Africa Remains Attractive to Investors Despite Occasionally Complex Local and Geopolitical Situations*, AFR. DEV. BANK GRP. (Dec. 12, 2024), https://www.afdb.org/en/news-and-events/african-investment-forum-africa-remains-attractive-investors-despite-occasionally-complex-local-and-geopolitical-situations-56079 [https://perma.cc/M8CC-K3LJ].

92 *Blockchain is a Promising Technology, but Bottlenecks and Complex Challenges Lie Ahead*, JOINT RSCH. CTR. EUR. COMM'N. (2019), https://joint-research-centre.ec.europa.eu/jrc-mission-statement-work-programme/facts4eufuture/blockchain-now-and-tomorrow-assessing-multidimensional-impacts-distributed-ledger-technologies/blockchain-promising-technology-bottlenecks-and-complex-challenges-lie-ahead_en [https://perma.cc/F3A8-N8A4].

93 BANSAL & SINGH, *supra* note 5, at 6-7.

94 Bryce Elder, *Even Central Banks Are Losing Faith in CBDCs*, FINANCIAL TIMES, (Nov. 26, 2024), https://www.ft.com/content/e50d0d40-a670-4ee7-b734-5f0ee3375aeb [https://perma.cc/MY8J-P9GB] ("Unfortunately, slow progress here speaks of high legal and regulatory hurdles, as well as of vested interests and industry obduracy.")

95 *Data From the Global Findex 2021: The Impact of Mobile Money in Sub-Saharan Africa, supra* note 13 ("Mobile money has become foundational to increasing financial inclusion in Sub-Saharan Africa. East Africa was once the epicenter of mobile money, given the pioneering mobile network operators in Kenya and elsewhere. These services have become more widely available in recent years, such that by 2022, Sub-Saharan Africa was home to all 12 of the world's economies in which more adults have only a mobile money account than have an account with a bank or similarly regulated financial institution.").

96 Ree, *supra* note 19, at 7; *see also* Igoni, *supra* note 19, at 2867.

97 Ree, *supra* note 19, at 7.

98 Biodun Adedipe, *Adoption of the eNaira: Issues and the Way Forward*, 60 C.B.N. ECON. & FIN. REV. 4, 171, 175 (Central Bank of Nigeria, 2022).

99 Ree, *supra* note 19, at 7-8.

100 *Id.* at 8 ("[W]here central bank issues CBDC mainly (or only to) banks (in exchange for reserve deposits), which then handles CBDC transaction with retail clients (e.g., exchange retail deposits to CBDC, similar to the case of meeting cash withdrawal request at ATM or over the counter)—along with nonbank payment service providers.")

without formal banking access, to merchants with substantial transaction needs.[101] Requirements for wallet access vary across tiers, ranging from basic information such as a phone number to more stringent Know Your Customer ("KYC") processes that require proof of address and detailed identity verification.[102] Each tier imposes specific transaction and balance limits, ensuring regulatory compliance and managing risks associated with digital currencies.[103]

A significant driver for the eNaira is its focus on financial inclusion. In a country where a large portion of the population lacks access to formal banking services, the eNaira initially targeted banked individuals but later expanded to include those with only mobile phones.[104] This expansion leverages Nigeria's high mobile phone penetration to offer an accessible and inclusive digital payment solution, reducing barriers to financial participation for underserved populations.[105]

To offer this system, eNaira has sought integration with mobile money systems as a critical feature. Through Application Programming Interfaces (APIs), users can transfer funds between mobile money and eNaira wallets, fostering interoperability.[106] This integration allows the eNaira to complement existing mobile money systems, offering users a risk-free option for storing funds while maintaining the convenience of mobile money's broad reach and services.[107]

The eNaira also aims to transform remittance flows by reducing costs and streamlining processes. Traditional remittance systems rely on complex intermediary chains that involve high fees and delays. The eNaira would simplify this by enabling direct wallet-to-wallet transfers within Nigeria, bypassing intermediaries and enhancing efficiency. This functionality has the potential to significantly lower remittance costs, benefiting both senders and recipients.[108]

But despite these innovative features, the eNaira faces challenges, including low adoption rates due to limited awareness among the population, competition from established mobile money systems, and the need for widespread merchant acceptance.[109] As of 2023, the initiative had not yet progressed past the initial wave of early adopters, and the number of retail clients on board is less than 1% of active bank accounts.[110] The Central

101 *Id.* at 9-10.
102 Adedipe, *supra* note 98, at 175.
103 Ree, *supra* note 19, at 10.
104 *Id.* at 4.
105 *Id.*
106 *Id.* at 8.
107 *Id.* at 16.
108 *Id.* at 21.
109 *Id.* at 11-12.
110 Akindipe, Akhimie & Olonade, *supra* note 1, at 24, 38.

Bank of Nigeria itself reported that it only had a 0.5 percent adoption rate in 2022.[111] The Bank resorted to orchestrating a cash shortage to force CBDC adoption, which only led to protests and an increase in adoption to six percent.[112] Despite low adoption rates, financial inclusion remains a central motivation for the eNaira project, especially as the Nigerian government seeks to provide accessible, affordable, and secure financial services to the unbanked and underserved segments of the population.[113] To overcome these hurdles, the CBN has implemented strategies such as public education campaigns, incentivizing merchant participation, and integrating eNaira with mobile banking systems.[114] These efforts aim to build trust and expand the network effect necessary for its success.[115]

The unsuccessful rollout is a classic example of the importance of robust public engagement. The eNaira's rollout faced barriers due to low digital literacy and insufficient public understanding of the benefits of digital currency. The low adoption of the eNaira can be attributed to several factors, with the primary being a lack of public awareness and understanding of digital currencies.[116] Moreover, public trust in the eNaira has eroded due to concerns about cybersecurity and the volatility of digital currencies in general.[117]

The eNaira is a bold initiative to modernize Nigeria's financial system and enhance financial inclusion. Its blockchain-backed, two-tiered system provides security and traceability, while its integration with mobile money systems offers flexibility and convenience. However, achieving its full potential requires addressing adoption barriers and fostering trust among users and businesses alike.

While the current eNaira is built on the country's banking infrastructure and has the mobile money adaptations as a feature, this paper argues for a strategy where mobile money is the very foundation of any CBDC deployment in the region—not an attachment, but as part of the second tier. Such an approach is particularly well suited to the region, given low levels of bank penetration and the widespread availability of mobile money services.[118] Essentially, CBDCs in Africa can ride the wave of mobile money rather than reinvent the figurative wheel. China's e-CNY provides a model for that.

111 Adedipe, *supra* note 98, at 177.
112 ANTHONY ET AL., *supra* note 4.
113 Adedipe, *supra* note 98, at 178-79.
114 *Id.* at 177.
115 Ree, *supra* note 19, at 13.
116 *Id*. at 11-12
117 *Id.* at 12
118 Akindipe, Akhimie & Olonade, *supra* note 1, at 34, 39.

VI. THE REFERENCE: THE ECNY

Currently, the success of China's pilot programs underscores the value of government-managed digital currency to ensure stability and regulatory compliance. Emulating China's controlled CBDC approach could therefore help avoid the pitfalls observed in El Salvador's Bitcoin experiment and possibly increase CBDC adoption in the region**.** In China, the e-CNY serves as an alternative to privately issued digital currencies, mitigating the volatility and risks associated with unregulated cryptocurrencies.[119] How does China do it? They use a tiered system.

In the first tier of this system, the People's Bank of China ("PBoC") maintains exclusive control over the issuance and management of the e-CNY.[120] The central bank is responsible for creating the digital yuan and for controlling its supply, ensuring it aligns with the country's monetary policy.[121] The PBoC directly oversees the currency's circulation and guarantees its stability, but it does not directly distribute the e-CNY to consumers or businesses. Instead, it relies on intermediaries to fulfill that role.[122]

The second tier involves participation from commercial banks and large mobile payment platforms such as Alipay and WeChat Pay.[123] These entities act as distribution agents for the e-CNY, making it accessible to the public.[124] In this framework, banks and payment platforms are responsible for providing wallets, managing customer accounts, and facilitating transactions using the digital yuan. This allows the e-CNY to tap into China's existing digital payment infrastructure, which is already widely adopted nationwide. By leveraging established players like Alipay and WeChat Pay, the PBoC can maximize the e-CNY's reach without building an entirely new system from scratch.[125]

By allowing private firms to manage distribution and customer engagement, China's central bank outsources the complex operational aspects of retail payments to financial services already equipped to manage them. The PBoC can focus on regulatory oversight and managing the financial system, while private entities handle consumer-facing services.[126]

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119 BANSAL & SINGH, *supra* note 5, at 5, 10.

120 Daniel Broby, *Central Bank Digital Currencies—Lessons from China*, 40 J. INFO. SCI. & ENG'G 699, 703-04 (2024).

121 Cheng, *supra* note 16, at 159.

122 BANSAL & SINGH, *supra* note 5, at 4, 8.

123 Broby, *supra* note 120.

124 *Id.*

125 BANSAL & SINGH, *supra* note 5, at 5, 10.

126 *Id.*

This tiered system is designed to balance user anonymity with regulatory oversight.[127] This structure enables the People's Bank of China (PBoC) to control financial flows and facilitate access at various levels through a rigorous system of user verification.[128] For the lowest tier, users need only provide a phone number, which in China is often tied to verified IDs due to SIM registration requirements. Some African countries have tightened SIM registration requirements, but there is still a long way to go.[129] This lowest tier is suitable for small transactions, such as public transit fares or minor retail purchases. Higher tiers require more extensive personal information, such as government-issued IDs, and offer higher transaction limits.[130] High-tier is ideal for businesses and individuals who would be conducting significant financial activities. This tiered system ensures financial inclusion for smaller users. It is also great for maintaining compliance with anti-money laundering ("AML") and counter-terrorism financing ("CTF") regulations.[131]

For our purposes, it is also essential to understand that rather than replacing private payment systems, the e-CNY integrates with established platforms like Alipay and WeChat Pay, in essence leveraging their extensive infrastructure and user base.[132] These platforms provide seamless access to e-CNY, enabling users to link international credit cards during onboarding. So far, this has been done in pilot areas like Hong Kong and key cities in mainland China.[133] The integration also supports international visitors, enabling them to transact in e-CNY. Examples of these use cases were demonstrated during events like the Winter Olympics.[134] Users can switch between traditional payment methods and the e-CNY within these platforms, ensuring a unified payment experience. Additionally, the e-CNY enables programmable features such as expiring funds, which can promote spending within specific time frames, and conditional payments, which restrict funds to designated purposes, underscoring how far China's

127 *Id.* at 5-6.

128 *Id.*

129 Vaughan O'Grady, *SIM Registration Starts in Togo but Is Abandoned in Mauritius*, DEVELOPING TELECOMS (Jan. 3, 2025), https://developingtelecoms.com/telecom-business/telecom-regulation/17807-sim-registration-starts-in-togo-but-is-abandoned-in-mauritius.html [https://perma.cc/Q5BB-VVHE]; *see also Ghana to Block All Unregistered Sim Cards after October,* AFRICANEWS (2022), https://www.africanews.com/2022/10/18/ghana-to-block-all-unregistered-sim-cards-after-october/ [https://perma.cc/GJ48-NBZT].

130 BANSAL & SINGH, *supra* note 5, at 5-6.

131 *Id.* at 6.

132 *Id.*; *see also* Huang, *supra* note 24 ("It's intended to replace cash - as such, it doesn't bear any interest and is pegged 1:1 with China's domestic currency, the Yuan . . . while the Digital Yuan is not claimed to try to replace Alipay and WeChat Pay").

133 Broby, *supra* note 120.

134 BANSAL & SINGH, *supra* note 5, at 5-6; *see also* Huang, *supra* note 24 ("During the Winter Olympics, it was one of three forms of payment accepted.").

development has come.[135] These initial integrations pave the way for a smoother transition when the time arrives for a fully digital currency.[136]

The PBoC oversees all transactions, including balances and user identities, and maintains a closed-source codebase that ensures security but limits external audits and third-party development.[137] Although the e-CNY offers privacy tiers, all transactions are ultimately traceable, giving the government comprehensive oversight.[138]

The e-CNY is projected to serve multiple strategic goals for the Chinese government. Domestically, it seeks to reduce reliance on the duopoly of Alipay and WeChat Pay by providing a state-controlled alternative to these private giants.[139] Of course, it is also intended to replace physical cash for everyday transactions, offering a digital equivalent that aligns with modern payment trends.[140] Furthermore, the e-CNY enables the government to exercise greater control over the monetary system, implementing policies such as expiring funds to promote economic activity.[141]F The government can see the money move and, to an extent, control it. One's position as a consumer or the government determines whether this is an advantage or a disadvantage.[142] Internationally, the e-CNY supports China's ambition to internationalize the yuan, improve cross-border payment systems, and establish global standards for digital currencies. Through initiatives like Project M-Bridge, China plans to collaborate with other central banks to enhance trade and commodity transactions.[143]

Despite its potential, the e-CNY is expected to face adoption challenges. Many Chinese consumers prefer the convenience of Alipay and WeChat Pay, which are deeply embedded in their daily lives. By mid-2023, e-CNY transactions accounted for just 0.16% of China's total monetary volume,

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135 Broby, *supra* note 120, at 703.

136 BANSAL & SINGH, *supra* note 5, at 5-6; *see also* Huang, *supra* note 24 ("However, if you are in one of the pilot areas, there is now a guide for foreigners to onboard onto it if they wish.").

137 Broby, *supra* note 120.

138 BANSAL & SINGH, *supra* note 5, at 6.

139 Huang, *supra* note 24 ("[I]t would perhaps be preferable to get China away from a duopoly of potentially unreliable technology partners and towards a sector that the Chinese party- state has long supervised and used to fund the national stimulus.")

140 Broby, *supra* note 120, at 699.

141 *Id.; see also* Huang, *supra* note 24 ("It's intended to replace cash - as such, it doesn't bear any interest and is pegged 1:1 with China's domestic currency, the Yuan . . . China's main goal with the e-CNY, the retail CBDC, is to create another Chinese domestic payment option.").

142 Michel, *supra* note 4; s*ee also* ANTHONY ET AL., *supra* note 4.

143 BANSAL & SINGH, *supra* note 5, at 4; *see also* C.P. Chandrasekhar & Jayati Ghosh, *Bilateral Swaps' Role in China's Rising Global Footprint*, THE HINDU BUSINESSLINE (Dec. 14, 2020), https://www.thehindubusinessline.com/opinion/bilateral-swaps-role-in-chinas-rising-global-footprint/article33330279.ece [https://perma.cc/25NW-QAR3] ("Between 2009 and 2020, China entered into such arrangements with 41 countries . . . active agreements peaking at 33 at the end of 2016 and standing at 27 by the end of 2019").

indicating slow adoption despite incremental growth.[144] However, the e-CNY has shown promise in pilot regions, particularly in public transit and retail scenarios, and its integration with popular payment platforms minimizes disruption to user habits.[145] Having payment systems people are used to reduces adoption friction. This is a critical part of the model for African countries.[146]

In summary, the e-CNY's tiered privacy system, integration with existing platforms, and centralized control reflect China's ambition to modernize its financial system while addressing regulatory and economic goals. Although its widespread adoption remains a work in progress, the e-CNY represents a significant step toward redefining digital payments and the role of central banks in financial innovation. It is also a pioneering example for other countries developing their own CBDCs. It is easy for countries to tout the various promises and ideas they have for CBDCs; however, successful CBDC adoption depends on aligning currency functionality with user trust and seamless integration with existing payment systems. The Chinese e-CNY model demonstrates one pathway to balance these competing demands. China has adopted a "controllable anonymity" approach, in which small transactions may remain pseudonymous, while larger ones require full identification.[147]I This framework seeks to reconcile the benefits of traceability with a recognition of privacy expectations in low-value, everyday payments. For African states, the lesson is not that the e-CNY is directly transferable, but that a calibrated design—tiered wallets, transaction thresholds, and clear data governance rules—can mitigate risks without undermining financial integrity.

VII. WHY CHINA'S TWO-TIER ECNY SYSTEM CANNOT SIMPLY BE COPIED

As shown, the two-tiered adoption model where African countries centralize mobile money digital payment systems is not a novel idea. China's e-CNY model has already done this. China's experience demonstrates the importance of aligning CBDCs with existing infrastructure to avoid disruption. Collaboration between central banks and telecoms could allow CBDCs to coexist with mobile money, strengthening

144 Huang, *supra* note 24 ("While payment volumes, when data is released, indicate that the Digital Yuan has grown in terms of payment volume from its beginnings, the size of transaction throughput (a claimed $250bn in the first half of 2023) pales in comparison to the population and size of China and represented just 0.16% of all Chinese monetary volume.")

145 Broby, *supra* note 120, at 705.

146 BANSAL & SINGH, *supra* note 5, at 4 ; *see also* Chandrasekhar & Ghosh, *supra* note 143; Cheng, *supra* note 16, at 159, 162.

147 Tariqullah Khan, Governance of Central Bank Digital Currencies Using the Dynamic Prescriptive Economics Framework 13 (Aug. 2025) (unpublished manuscript), https://ssrn.com/abstract=5385897 [https://perma.cc/NB3G-SU32].

financial inclusion without causing disruptions, as the eNaira's development has begun to recognize.[148] For African economies, the proposed CBDC model will have two categories of challenges: the "private problem" and the "regular problems."

There is a critical difference in the digital finance landscape that prevents African countries from simply mirroring China's approach. China's e-CNY is deeply embedded in a state-controlled structure, providing the government with substantial oversight of digital transactions while retaining control over data and privacy management through selective privacy tiers.[149] In contrast, the digital finance systems that dominate the African financial landscape are primarily operated by private entities.

Therefore, African countries interested in adopting CBDCs would have to wrestle with a critical underlying question: how regulations could be structured to address the foreseeable tension between central banks and the private telecommunication companies. In comes the "private problem."

A. The Private Problem

Regulating the deployment of Central Bank Digital Currencies (CBDCs) in African countries through telco-run mobile money platforms requires a nuanced and thoughtful strategy. This is particularly because of the divergence in interests between state regulators and private companies. Unlike China, where platforms like Alipay and WeChat Pay, though private, are closely aligned with and sometimes influenced by the government[150], African telecom companies, such as Safaricom, MTN, and Orange, are private entities driven by profit motives.[151] Aligning their goals with state interests in implementing CBDCs will be necessary for successful CBDC implementation.

The first and most straightforward approach is to establish public-private partnerships between central banks and telecom companies. This will be a short leap from integrations that already exist, enabling the

148 Ree, *supra* note 19, at 16; Omotubora, *supra* note 43, at 246, 256.

149 BANSAL & SINGH, *supra* note 5, at 20.

150 *China's Ant Group Plans to List Overseas Unit in Hong Kong, Report Says*, REUTERS (May 4, 2025), https://www.reuters.com/sustainability/boards-policy-regulation/chinas-ant-group-plans-list-overseas-unit-hong-kong-report-says-2025-05-04/ [https://perma.cc/X3MB-P4Z6]; Ouya Shijia & Fan Feifei, *Alipay to Have No Controlling Stakeholder*, CHINA DAILY (Jan. 1, 2024), https://global.chinadaily.com.cn/a/202401/01/WS6591f310a3105f21a5079e57.html [https://perma.cc/ZQR5-GQTL]; Vasudha Mukherjee, *China May Impose Similar Regulations for WeChat as India's UPI Rules*, BUS. STANDARD (June 5, 2024), https://www.business-standard.com/world-news/china-may-impose-similar-regulations-for-wechat-as-india-s-upi-rules-124060500623_1.html [https://perma.cc/H9QD-MXZS]; Cameron Caldwell & Jennifer Liu, *Dominance of WeChat Pay and Alipay in the Chinese Digital Payments Industry*, FOCUS FINANCE (Mar. 10, 2021), https://www.focusfinance.org/post/dominance-of-wechat-pay-and-alipay-in-the-chinese-digital-payments-industry [https://perma.cc/D5ZZ-AJGM].

151 RAITHATHA & STORCHI, *supra* note 13, at 28.

financial services these telecom companies already provide. Governments can offer incentives such as tax breaks,[152] operational subsidies (even in the form of policy),[153] shared revenue models,[154] or other incentives. Central banks can also implement tiered compensation structures, rewarding telecoms for activities like onboarding users or processing CBDC transactions. Such arrangements could ensure that telecoms have a financial stake in the success of CBDC programs without compromising state control. These incentives can offset potential revenue losses that telecoms might face from reduced reliance on traditional mobile money services and increase public buy-in.[155] By creating mutually beneficial arrangements, telecoms are more likely to invest in infrastructure and technology to support CBDC transactions.

Regulatory oversight would be a critical component. In China, the People's Bank of China ("PBoC") oversees the integration of the e-CNY with digital payment platforms, ensuring strict compliance with state policies.[156] In Africa, where regulatory capacity can vary significantly, adopting regulatory sandboxes could provide a controlled environment to test CBDC integration. Sandboxes allow regulators to collaborate with telecoms, ensuring compliance with standards while fostering innovation within defined parameters. China's model shows the way by slowly rolling out the e-CNY in certain regions for specific retail purposes.[157]

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152 RAITHATHA & STORCHI, *supra* note 13, at 54 ("Governments in Tanzania and Ghana have recognised the negative effects of taxing mobile money transactions. Following the introduction of transaction levies, mobile money users resorted to using cash. This led to a reduction in taxable mobile money transactions and an overall reduction in tax revenues. As a result, both countries have either reduced or removed these taxes entirely.").

153 Katy Marquardt Hill, '*Mobile Money' Has Been a Game-Changer in Developing Countries, But It May Not Be Serving Those Who Need It Most*, CU BOULDER TODAY (June 7, 2023), https://www.colorado.edu/today/2023/06/07/mobile-money-has-been-game-changer-developing-countries-it-may-not-be-serving-those-who [https://perma.cc/QS96-TRTA] ("To better support agents, the authors suggest enabling inventory pooling among agents for e-float, providing insurance services to mitigate theft risk and paying higher commissions or other incentives").

154 Zachary White, *Revenue-Share Financing: A High-Potential Model for Addressing the Asset Financing Shortfall in Low- and Middle-Income Countries*, GSMA (May 14, 2024), https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/blog/revenue-share-financing-a-high-potential-model-for-addressing-the-asset-financing-shortfall-in-low-and-middle-income-countries/ [https://perma.cc/WB72-5VZG] ("Revenue sharing is a financing arrangement where repayments are based on flow of future revenues rather than fixed repayments.").

155 BANSAL & SINGH, *supra* note 5, at 9 ("It is important to note that a major contributing factor to the aforementioned examples that demonstrate easy scalability of digital payments is the presence of state- driven incentives. In its CBDC trials, China has already begun to incentivize its digital yuan by giving users exclusive discounts on certain purchases.")*; see also Latest Digital Yuan Trial Is 10× the First. Hong Kong Cross-Border Tests Start*, LEDGER INSIGHTS (Apr. 14, 2021), https://www.ledgerinsights.com/latest-digital-yuan-trial-is-10x-the-first-hong-kong-cross-border-tests-start/ [https://perma.cc/KT7F-H8S4].

156 BANSAL & SINGH, *supra* note 5, at 4, 9.

157 *Id.* at 5-6; *China to Launch Digital Currency Pilot Program in Some Cities*, REUTERS (Aug. 14, 2020), https://www.reuters.com/article/technology/china-to-launch-digital-currency-pilot-program-in-some-cities-mofcom-idUSKCN25A0GJ/ [https://perma.cc/Y286-C36H].

The private problem also encompasses interoperability concerns. As discussed, interoperability is vital for widespread CBDC adoption. In China, while the e-CNY operates within a unified ecosystem where Alipay, WeChat Pay, and e-CNY wallets are seamlessly integrated, the government has spearheaded an interoperability campaign using its influence.[158] However, African mobile money platforms are often siloed, limiting cross-platform transactions.[159] To address this, central banks can mandate interoperability as a condition for telecom participation in CBDC deployment. Developing a centralized payment switch or infrastructure that connects all telecom platforms can facilitate seamless transactions and reduce market fragmentation. This is not an absurd suggestion, as some telecom companies have initiated platform interoperability, albeit for consumer ease rather than for CBDC purposes.[160]

Further, data governance and privacy are critical considerations in CBDC deployment. It is important to note that China places limited emphasis on this feature.[161] In fact, the PBoC uses its capabilities to maintain complete control over e-CNY transaction data, raising concerns about surveillance.[162] In Africa, however, where public trust in financial systems may be fragile, transparency and user privacy are paramount (they can at least be symbolic, as governments make information accessible and present opportunities for trust). Governments can establish robust data governance frameworks to ensure that transaction data is used responsibly.

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158 *Can Alipay and WeChat Pay Converge with the e-CNY?,* KAPRONASIA (Oct. 18, 2024), https://kapronasia.com/insight/blogs/payments-research/china-payments-research/can-alipay-and-wechat-pay-converge-with-the-e-cny [https://perma.cc/DMS3-PC33] ("No wonder that Mu Changchun, head of the Digital Currency Research Institute, the central bank agency responsible for developing the digital yuan, said at a recent forum that the digital yuan should eventually be a payment option across 'all retail scenarios.' Though Mu did not mention Alipay and WeChat Pay specifically, the implications of the comment are clear"); Cheng, *supra* note 16, at 159.

159 Alessio Botta et al., *The Future of Payments in Africa*, MCKINSEY (Sep. 7, 2022), https://www.mckinsey.com/industries/financial-services/our-insights/the-future-of-payments-in-africa [https://perma.cc/GT54-89TH].

160 *See, e.g., M-Pesa and MTN Mobile Money Agree Mobile Money Services,* VODAFONE NEWS (Jan. 2025), https://www.vodafone.com/news/services/m-pesa-mtn [https://perma.cc/VG4E-RAGC].

161 BANSAL & SINGH, *supra* note 5, at 5-6 (The anonymity of the central bank's digital currency is limited under the premise of controllable risks.).

162 *Id.* at 6:

> The patents also indicate that China may intend to regulate CBDC supply using an algorithm based on certain triggers, such as loan interest rates and economic triggers. For example, the inventions will make it possible for the PBoC to issue to a financial institution inactive digital currency, which can only be activated once the financial institution meets certain conditions, like having appropriate lending rates. This means China's CBDC will become the world's first programmable money. This programmable aspect of China's CBDC was tested in July 2021 when, as part of the pilot programs in Chengdu, the Chinese government distributed digital yuan with pre-programmed utility for paying subway fees, shared bike fees, or bus fares. This distributed digital yuan can only be spent on the preprogrammed intended purpose and cannot be converted into general-purpose digital yuan.

See also Wolfie Zhao, *China's New Digital Yuan Test Shows It Can Be Programed to Confine Utility*, THE BLOCK (July 2, 2021), https://www.theblockcrypto.com/post/110377/china-digital-yuan-test-programmable-chengdu [https://perma.cc/RGL9-WAXJ].

Partnering with telecoms to enforce high security and privacy standards can build public confidence in CBDCs.[163] The problem will be balancing the government's need to access information while protecting its citizens' privacy in the digital space, with the telecom company's need to be transparent and help its governments enforce data governance while maintaining the competitive advantage of keeping its users' data secure.[164]

B. The "Regular Problems"

The regulatory considerations for CBDCs in Africa are complex due to countries' highly informal economies and limited digital infrastructure.[165] Nigeria's experience with the eNaira demonstrates the potential pitfalls if regulations are not carefully aligned with local needs and capacities.[166] In contrast to China's centralized digital yuan model, African countries may require a slightly more decentralized approach that integrates with private mobile networks while maintaining regulatory oversight. The Bank for International Settlements (BIS) survey finds that over 80% of central banks envision a future in which CBDCs and fast payment systems coexist, underscoring the importance of regulatory frameworks that accommodate unique regional financial ecosystems.[167]

China's experience with the e-CNY demonstrates the efficacy of embedding CBDCs within an existing digital finance landscape, after which a clear regulatory framework can be built to protect data privacy and ensure seamless financial transactions. For African regulators, focusing on creating compatible frameworks that support interoperability with mobile networks while ensuring regulatory alignment with international standards could be pivotal. For instance, in Nigeria, where mobile phone penetration is high but bank account ownership is low, a hybrid system that leverages the existing mobile money infrastructure to support eNaira transactions could address logistical challenges faced by the Central Bank.[168]

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163 Kieran Murphy et al., *Central Bank Digital Currency Data Use and Privacy Protection*, FINTECH NOTES NO. 2024/004, 3 (Aug. 2024) [https://perma.cc/TSD6-5LSP] ("Central banks could promote innovation and competition by avoiding data silos and encouraging data sharing, even if they do not store or manage transaction-level data themselves").

164 *Id.* ("CBDC offers an opportunity to possibly improve the trade-off between data use and privacy protection as compared to private digital payment systems. Facing a similar trade-off to private digital payment systems, central banks may have several potential advantages in striking a better balance. They have strong convening powers and are well positioned to clearly articulate principles and policies to enable privacy and coordinate the adoption of a privacy-by-design approach in the CBDC ecosystem.").

165 Schwarcz*, supra* note 37, at 1046, 1052.

166 Ree, *supra* note 19, at 15; Schwarcz, *supra* note 37, at 1043-44.

167 G. A. Walker, *Digital Money & Central Bank Digital Currency (CBDC) – New Opportunity, New Challenge*, 55 INT'L LAW. 409, 410 n.7, 417 (2022); Kosse & Mattei. *supra* note 36, at 1, 9.

168 Ree, *supra* note 19, at 16.

However, because the African continent presents unique challenges and opportunities in adopting CBDCs, recognizing the blind spots and limitations of mobile money systems, particularly concerning cross-border transactions, regulation, and the involvement of non-bank actors, is essential. These concerns already exist across all regimes implementing CBDCs but are expected to take a more potent form when private digital finance players are incorporated. However, as argued, balancing these competing interests will be crucial to the successful development and deployment of CBDCs in Africa, given that leveraging private digital finance players may be the most efficient approach. The final part of this paper highlights a laundry list of these "regular" challenges of CBDCs, mentioned above, but collated in this section, aside from the private problem, and how the Chinese e-CNY model provides some answers.

1. Data and Information Privacy

Concerns over data and privacy dominate debates about CBDC adoption. A retail CBDC, by its very nature, enables central banks to access transaction-level information that far exceeds what they can access in a cash-based or sometimes traditional banking system. While this capacity can assist with anti-money laundering ("AML") and counter-terrorist financing ("CTF") compliance, it raises difficult questions about surveillance and individual rights.

African countries face these questions with particular urgency. Nigeria's eNaira, for instance, requires tiered know-your-customer verification and central bank monitoring.[169] Similarly, South Africa's Reserve Bank has acknowledged that a retail CBDC could heighten risks of state overreach, even as it emphasizes privacy in its architecture.[170] The system would have expanded access, but at what cost: creating transaction datasets that are vulnerable to misuse?

China's privacy and regulatory model for the e-CNY involves detailed data-sharing protocols managed by the People's Bank of China ("PBoC"), ensuring that user data remains within a secure state-managed framework. These protocols are designed to ensure that user data is kept within a safe, state-managed framework while allowing for the necessary oversight to prevent illicit financial activities.[171] This model strikes a balance between financial transparency—critical to combating money laundering and terrorist financing—and the privacy concerns of individual users. The

169 CENT. BANK OF NIGERIA, DESIGN PAPER FOR THE ENAIRA 11 (2021).

170 S. AFR. RSRV. BANK, *supra* note 33, at 38.

171 BANSAL & SINGH, *supra* note 5, at 6; Huang, *supra* note 24 ("Not only does the Central Bank likely know each balance and each wallet account along with personal information needed to create those accounts, but it will also be able to expire monies, as it did with the airdrops it used to trial the e-CNY.").

PBoC's system collects less transaction information than traditional electronic payment methods and limits data sharing with third parties, except when required by law.[172] In the context of African countries, where CBDCs should be deployed alongside telecommunication-based digital payment systems, adopting a similar layered privacy model could be highly effective. African nations face unique challenges related to data privacy due to the dominance of telecom companies in mobile money transactions, which, though regulated, are not typically subject to the same level of regulatory scrutiny as banks.[173]

To mitigate these risks, African central banks could implement a layered privacy and data-sharing model, similar to China's approach with the e-CNY.[174] In China, the People's Bank of China (PBoC) controls the issuance of the digital yuan, while commercial banks and payment platforms like Alipay and WeChat handle distribution. This ensures that while user data is collected at the transaction level, the central bank retains control over data management and access.[175] African countries could adopt a similar model in which telecom companies, which already dominate the digital payment landscape, act as distribution agents for CBDCs. The regulation can therefore be parsed, given that existing mobile money regulations address privacy concerns.[176]

However, the central banks would maintain oversight of currency issuance and have access to transaction data as needed, ensuring regulatory compliance and financial transparency. Additionally, implementing strict KYC and AML protocols at various transaction tiers would help limit the misuse of CBDCs for illicit activities.[177] For example, small-value transactions could be conducted with minimal KYC requirements to preserve user privacy, while larger transactions would require stricter verification and reporting processes.[178]

This approach would allow central banks to monitor large-scale financial activities that may pose a risk while ensuring that low-value transactions, which make up the bulk of daily commerce in many African

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172 *Id.*

173 REG'L ECON. OUTLOOK: SUB-SAHARAN AFRICA—DIGITAL CURRENCY INNOVATIONS IN SUB-SAHARAN AFRICA, INT'L MONETARY FUND 2,3 (2022).

174 Huang, *supra* note 24 ("Even though there are 'privacy' tiers, the Central Bank requires personal identifiers to operate with the system. Even at the lowest tier, you're required to provide a phone number, which, in China, is likely to tie your real ID if you bought the SIM in China.").

175 BANSAL & SINGH, *supra* note 5. at 8.

176 CENTRAL BANK OF NIGERIA, FRAMEWORK AND GUIDELINES ON MOBILE MONEY SERVICES IN NIGERIA 1 (2021).

177 BANSAL & SINGH, *supra* note 5, at 6.

178 *Id.* at 6; Igoni, *supra* note 19, at 2867; *see generally* LIANA W. ROSEN, PAUL TIERNO & RENO S. MILLER, CONGR. RSCH SERV. REP., TERRORIST FINANCING: HAMAS AND CRYPTOCURRENCY FUNDRAISING (Dec. 9, 2024), https://www.congress.gov/crs-product/IF12537 [https://perma.cc/G4QK-V4LS] (discussing the potential negative effects of an unregulated and unmonitored system).

nations, are not overly burdensome for users.[179] The underlying blockchain technology for CBDCs already gives central banks access to transaction information, but they will only have to monitor it.[180] A layered approach to privacy is akin to maintaining central control over transaction data at higher tiers, where large-value or high-risk transactions occur, while offering more privacy for lower-value transactions. This model could provide users with assurance that their small-scale transactions remain private while enabling regulators to monitor more significant transactions for suspicious activity.[181] For African states, the lesson is not that the e-CNY is directly transferable, but that calibrating its design can mitigate risks while maintaining some financial integrity.

2. Cross-Border Regulations

Cross-border payments remain among the most expensive and inefficient aspects of the global financial system. The average remittance to Sub-Saharan Africa costs the sender around 8%, well above the Sustainable Development Goal target of 3%, and transaction delays routinely undermine economic activity.[182] Weak correspondent banking networks, fragmented regulatory regimes, and dependence on dominant global currencies exacerbate these frictions.[183]

In addition to strong domestic regulations, therefore, African countries must also work towards cross-border regulatory cooperation. The lack of a comprehensive global regulatory framework for CBDCs means that individuals and businesses could exploit discrepancies between national regulations to evade taxes or circumvent financial oversight without regional or international collaboration. African nations could collaboratively leverage initiatives such as the African Continental Free Trade Area ("AfCFTA") to develop a coordinated regulatory framework for cross-border CBDC transactions, ensuring that digital currencies do not

179 Huang, *supra* note 24 ("The privacy tiers of the Digital Yuan mean that the central bank has control and access over personal identifiers and should also know each account balance.").

180 Michel, *supra* note 4; *see also* ANTHONY ET AL., *supra* note 4.

181 MONEY AND PAYMENTS: THE U.S. DOLLAR IN THE AGE OF DIGITAL TRANSFORMATION, *supra* note 4, at 20; OZILI, *supra* note 3.

182 Joshua Korber Hoffman, *It Costs More to Send Money to Sub-Saharan Africa Than Anywhere Else in the World. These Companies Are Trying to Change That*, CNN (Feb. 25, 2025), https://www.cnn.com/world/africa/remitances-sub-saharan-africa-technology-spc [https://perma.cc/25BK-ULVD] ("Sending money to sub-Saharan Africa costs the sender an average of 8.37% of the total value of the transaction, as of Q2 2024, according to the World Bank . . . The UN has targeted a global average of 3% for remittance fees.").

183 *Why Africa's Struggle for FinTech-Friendly Regulations Is More Important Than Ever*, MAURITIUS AFRICA FINTECH HUB (June 16, 2020), https://mauritiusfintech.org/blog/africa-struggle-fintech-friendly-regulations/ [https://perma.cc/663X-QP49] ("It is then sobering to reflect that regulatory frameworks that are currently enacted in the region are not keeping up with the rapid pace of change. Regulatory convergence will also be important, as African markets and countries are fragmented and conflicting regulatory regimes could present difficulties for financial service providers").

create new financial havens akin to existing tax havens.[184] It is, however, essential to note that the AfCFTA is not a sovereign and cannot issue legal tender, which may seem to put it at odds with the earlier chartalist theory. However, it still works here because it is an economic coalition of nations that speaks with one voice.

With the trade agreement picking up steam across Africa, it is impossible not to think about integrating this system and preparing it for global deals. China's Belt and Road Initiative has leveraged the digital yuan to streamline cross-border trade payments, enabling real-time transactions with reduced reliance on traditional dollar-dominated systems.[185] The Chinese system is leveraging existing trade routes to expand adoption outside China. African countries could apply this model within the African Continental Free Trade Area[186], using interoperable CBDCs to enhance regional trade and economic integration while reducing foreign currency dependency. By adopting an African CBDC standard compatible with the digital yuan's frameworks, African nations could establish a regional currency model that complements China's global efforts to reduce reliance on the dollar.

Another alternative is to examine China's participation in Project M-Bridge, a cross-border payments initiative involving multiple central banks, which highlights the role of international collaboration in CBDC implementation. African nations could similarly benefit from partnerships with global institutions such as the BIS to enhance CBDC interoperability and regulatory alignment within the AfCFTA, ensuring compatibility for seamless cross-border trade and reducing transactional inefficiencies.[187]

3. Enforcement and Compliance

Additionally, African regulators may benefit from China's example of robust enforcement to curb the influence of private financial service providers, ensuring that telecom companies remain compliant with national regulations. These could include the aforementioned KYC and AML

184 Igoni, *supra* note 19, at 2867; *see generally* ROSEN, TIERNO & MILLER, *supra* note 178.

185 *China's Trade With BRI Countries Surges to $1.34 Trillion in 2019*, ECONOMIC TIMES (Jan. 15, 2020), https://economictimes.indiatimes.com/news/international/business/chinas-trade-with-bri-countries-surges-to-1-34-trillion-in-2019/articleshow/73271222.cms [https://perma.cc/HXJ6-C4XC]; *see generally* Yan Liang, *RMB Internationalization and Financing Belt-Road Initiative: An MMT Perspective*, 53 CHINESE ECON. 317 (2020) (exploring the implications of the connections between the internationalization of China's currency and BRI financing)..

186 *African Continental Free Trade Area: Questions & Answers,* U.N. ECON. COMM'N FOR AFR., https://archive.uneca.org/publications/african-continental-free-trade-area-questions-answers [https://perma.cc/BH4U-XMBC].

187 BANSAL & SINGH, *supra* note 5, at 10; Huang, *supra* note 24 ("China is also piloting Project M-Bridge with the BIS Innovation Hub wholesale CBDCs that interface with other central banks. With the joining of the UAE and Saudi Arabia's central banks, this project is building toward a significant international effort and is part of a larger-scale strategy to internationalize the Yuan.").

protocols added to bolster the potentially strong compliance requirements. This would be especially pertinent for cross-border interoperability within the African Continental Free Trade Area, aligning domestic CBDC policies with regional integration goals.[188] The success of any CBDC depends not only on domestic functionality but also on interoperability across systems. A CBDC that cannot integrate with existing payment networks or with other jurisdictions' digital currencies risks reinforcing fragmentation rather than solving it. This challenge is acute in Africa, where payment ecosystems are already unevenly developed.

Nigeria's eNaira, for example, remains largely siloed, focusing on mobile money in the country.[189] Ghana's digital currency pilot similarly operates within a closed testing environment, raising questions about how it will link to both domestic fintech networks and regional systems.[190] South Africa's *Project Khokha 2* has gone further by testing wholesale settlement interoperability, but its experiments remain confined to controlled pilot environments.[191]

China's e-CNY model provides one pathway for interoperability by employing a two-tier system: the central bank issues the currency to commercial banks, which in turn distribute it through existing financial institutions and technology platforms. This design ensures compatibility with existing payment rails while retaining central oversight. Additionally, cross-border pilots such as *M-Bridge* highlight how layered technical standards and governance frameworks can facilitate connections between different CBDCs without requiring full convergence.

For African states, the lesson is that interoperability must be designed at multiple levels: domestic, regional, and international. A CBDC that connects seamlessly with local mobile money platforms, links into regional settlement systems like the African Export-Import Bank's Pan-African Payment and Settlement System ("PAPSS"),[192] and remains compatible with evolving global frameworks will be more likely to succeed.

4. Penetration Concerns

African economies could consider offline payment features similar to those in the e-CNY, such as Near Field Communication ("NFC")-enabled cards for areas with limited internet access, which could help reach rural populations that rely on cash transactions. This approach aligns with the existing financial structure in many African countries, where offline and

188 BANSAL & SINGH, *supra* note 5, at 10.

189 CENT. BANK OF NIGERIA, DESIGN PAPER FOR THE ENAIRA 4 (2021).

190 BANK OF GHANA, PAYMENT SYSTEMS OVERSIGHT ANNUAL REPORT 2022 38 (2022).

191 S. AFR. RSRV. BANK, *supra* note 33, at 7.

192 AFREXIMBANK, TRADE AND MARKET UPDATE: PAYMENT AND SETTLEMENT SYSTEMS AND INTRA-AFRICAN TRADE 1 (2023).

mobile-first solutions are crucial for penetrating remote areas with limited banking infrastructure.[193] These offline solutions could be essential in rural African regions where internet connectivity is inconsistent or nonexistent.[194] Infrastructure development, therefore, must be a priority. Countries will need to assess the feasibility and scalability of providing technological infrastructure for offline payments, given their associated costs and complexities.[195]

5. Addressing Geopolitical Issues

One cannot, however, talk about Africa without addressing the historical politico-economic conditions that have shaped global financial systems. One significant risk is that CBDCs could face the same challenges currently affecting global tax regulation, such as regulatory arbitrage and inconsistent enforcement across borders.

Historically, such disparities have often favored advanced economies, exacerbating global inequality.[196] Without coordinated international standards, African countries might be disadvantaged in global CBDC networks, much like they have been in other financial systems. Advanced economies have often exploited regulatory gaps to avoid taxes and shift financial resources across borders. For instance, the Swiss tax haven issue, detailed in reports about the "Liberia problem," highlights how certain countries can avoid being penalized for tax abuses, while smaller, less powerful nations—often in Africa—are targeted.[197]

This dynamic could repeat itself in the CBDC landscape, where African nations may struggle to enforce consistent regulations if international frameworks are not established. Such a dynamic would allow wealthier nations to exploit the system, as tax havens do today, further entrenching global inequality. For African countries, the solution lies in collaboration. By working together within frameworks such as the African Continental Free Trade Area ("AfCFTA"), African countries can develop shared regulatory standards that ensure equitable participation in the global financial system.[198] This would help prevent the exploitation of regulatory loopholes and foster a more balanced economic environment. Conceptually,

193 Akindipe, Akhimie & Olonade, *supra* note 1, at 34, 39.

194 Ozili, *CBDC, Fintech and Cryptocurrency*, *supra* note 22; UNITED NATIONS, THE SUSTAINABLE DEVELOPMENT GOALS REPORT: SPECIAL EDITION 2023 (2023); BANK OF GHANA, PAYMENT SYSTEMS OVERSIGHT ANNUAL REPORT 2022 38 (2022).

195 Heng Wang & Simin Gao, *The Future of the International Financial System: The Emerging CBDC Network and Its Impact on Regulation*, 18 REG. & GOVERNANCE 288 (2024).

196 *See generally* Steven A. Dean, *Surrey's Silence: Subpart F and the Swiss Subsidiary Tax That Never Was*, 86 L.& CONTEMP. PROBS. 73 (2023).

197 *Id.*

198 Marinos Themistocleous et al., *Towards Cross-Border CBDC Interoperability: Insights From A Multivocal Literature Review*, 36 J. ENTER. INFO. MGMT. 1296 (2023).

this discussion also underscores the importance of establishing robust regional CBDC frameworks to avoid past mistakes, ensuring that African economies are not left once again vulnerable to the actions of wealthier nations. If African countries fail to collaborate on regulatory frameworks, they risk recreating the inequities CBDCs should address.

6. Education Regulation

Of course, in countries where most transactions occur outside of formal financial institutions, CBDCs could struggle to gain traction without digital literacy. Without a widespread understanding of how CBDCs work, financial regimes risk worsening financial exclusion rather than reducing it. Governments will need to invest in education and outreach programs to ensure that the benefits of CBDCs are accessible to all segments of the population. Public education is essential for adoption of CBDC.

China's success with the e-CNY so far has been bolstered by extensive digital literacy campaigns and incentives for early users.[199] African central banks should, similarly, engage in public outreach and digital literacy programs to build trust and understanding. Targeted education campaigns in rural areas, partnerships with community organizations, and collaborations with telecom providers could be critical to ensuring a smooth CBDC adoption process across diverse populations.[200] Additionally, the eNaira's rollout reflects the importance of comprehensive public engagement and education when introducing new financial systems.

7. Financial Incentives

Drawing comparisons with China's e-CNY pilot, which used incentives such as discounts and reduced transaction fees to drive public interest, African central banks may need to adopt similar strategies.[201] Offering utility payment discounts, reducing transaction fees, and running awareness campaigns tailored to the rural population could significantly boost adoption of the eNaira. Moreover, integrating the eNaira into the already widespread mobile money systems, such as those prevalent in East Africa,

199 Oskar Szydłowski, *Prospects For The Launch Of The Digital Yuan* (Feb. 7, 2022), https://pism.pl/publications/prospects-for-the-launch-of-the-digital-yuan [https://perma.cc/C2G3-5Y7L] ("So far, statistics on app downloads and accounts created indicate success in uptake of the digital yuan in China. However, these may be due to the novelty effect and material benefits of using the digital currency, such as the giveaways by the Chinese government . . . At the same time, a large educational campaign on the digital currency was launched.").

200 Cheng, *supra* note 16, at 161-62.

201 OZILI, *supra* note 3, at 18; Tinkara Godec, *China Leads the Push for Central Bank Digital Currencies with E-CNY*, CHINAOBSERVERS (Oct. 4, 2022), https://chinaobservers.eu/china-leads-the-push-for-central-bank-digital-currencies-with-e-cny/ [https://perma.cc/XH8J-CUCH]; Jesse Coghlan, *China Doles Out Millions In Digital Yuan In Bid To Boost Adoption: Report*, COINTELEGRAPH (2023), https://cointelegraph.com/news/china-doles-out-millions-in-digital-yuan-in-bid-to-boost-adoption-report [https://perma.cc/GNP7-3YQ8].

might make it easier for the unbanked population to embrace digital currency.[202] These, however, are not guaranteed to work, as people might adopt them for the initial incentives and then stop using them.

8. Adoption Concerns

Another strategy could involve leveraging the eNaira for government social intervention programs, such as distributing welfare payments or subsidies through the digital currency, creating a captive audience for the eNaira.[203] By using the eNaira for social intervention programs, the government would address multiple challenges simultaneously.

First, this strategy would help reduce the dependency on cash, a critical issue in Nigeria, where cash-based transactions still dominate many sectors of the economy. The eNaira could serve as a more efficient and secure alternative to distributing physical cash for welfare programs, minimizing risks such as theft and fraud, as well as logistical challenges associated with handling cash.[204] Moreover, by offering subsidies or welfare payments through the eNaira, the government would not only drive adoption but also increase financial inclusion, particularly among the unbanked population. This strategy aligns with the original objectives of the eNaira: enhancing financial inclusion and making digital financial services more accessible to marginalized groups.[205]

Another potential advantage of using the eNaira for government welfare programs is the ability to track and monitor transactions in real time. The Nigerian government could ensure that welfare funds are being used for their intended purposes: improving accountability and transparency. For instance, subsidies allocated for specific needs, such as healthcare, education, or food, could be restricted to use within those sectors, ensuring that the funds are spent appropriately.[206] This type of programmable digital currency offers a level of control not possible with cash or traditional banking methods, enabling the government to better manage public resources and combat corruption.

The integration of the eNaira into government welfare payments could significantly streamline welfare program management by reducing administrative burdens and cash-handling costs.[207] Direct digital transfers through the eNaira could increase efficiency, reduce operational costs, and minimize errors or delays in payment distribution, ensuring timely and

202 Ree, *supra* note 19, at 12.
203 OZILI, *supra* note 3, at 18.
204 Ozili, *Assessing Global and Local Interest in eNaira*, *supra* note 18, at 2.
205 *Id.*
206 BANSAL & SINGH, *supra* note 5, at 6.
207 Ozili, *Assessing Global and Local Interest in eNaira*, *supra* note 18, at 4, 15.

accurate disbursements to beneficiaries.[208] Additionally, incentivizing recipients to use the eNaira could promote financial literacy and encourage broader engagement with digital financial services, such as savings, loans, and insurance, enhancing economic participation and resilience.[209] Nigeria's use of the eNaira for welfare payments could serve as a model for other African countries, particularly within the framework of regional initiatives like the African Continental Free Trade Area (AfCFTA), positioning Nigeria as a leader in digital financial innovation across the continent.

VIII. CONCLUSION

Central bank digital currencies sit at the intersection of sovereignty, technology, and financial stability. For African economies, the stakes are particularly high: CBDCs promise greater inclusion and efficiency but also expose systemic vulnerabilities. The Chinese e-CNY experience provides valuable insights, not as a template to be copied wholesale, but as a set of design lessons. Controllable anonymity illustrates one way to reconcile privacy with compliance. Tiered wallet structures demonstrate how to manage the risk of disintermediation. Cross-border pilots show the potential—and limits—of CBDCs as alternatives to entrenched global infrastructures.

By drawing on China's experience with the e-CNY, African nations can design CBDCs that foster financial inclusion, promote economic autonomy, and streamline cross-border payments. China's two-tier distribution model, privacy controls, and integration with international frameworks offer a robust, adaptable framework for addressing Africa's unique financial landscape. However, the implementation of CBDCs in Africa must go beyond replication. It requires innovative adaptations that account for the continent's distinct economic conditions, its high reliance on mobile money platforms, and the diversity of its financial ecosystems.

If implemented with strategic planning, technological innovation, and regional cooperation, African CBDCs could serve as transformative pillars of an inclusive and resilient financial system. These currencies have the potential to unlock significant benefits, including enhanced economic integration through mechanisms such as the African Continental Free Trade Area, reduced transaction costs for cross-border remittances, and improved access to financial services for unbanked and underbanked populations. This financial inclusion could be particularly impactful in rural areas, where traditional banking infrastructure remains limited, but mobile phone penetration is high.

208 BANSAL & SINGH, *supra* note 5, at 7, 13, 15.

209 Ozili, *Assessing Global and Local Interest in eNaira*, *supra* note 18, at 4.

To achieve these goals, African governments must prioritize partnerships with key stakeholders, including telecom companies and fintech innovators that dominate the digital payment landscape in many African nations. Public-private partnerships can ensure the scalability and interoperability of CBDCs with existing mobile money platforms, providing seamless user experiences while maintaining central bank oversight. Additionally, a focus on technological advancements, such as offline payment capabilities, could enable broader adoption, particularly in regions with limited internet access.

Regulatory frameworks will play a pivotal role in the success of African CBDCs. Similar to China's tiered privacy system, a balanced approach to privacy and transparency can help protect user data while ensuring compliance with anti-money laundering ("AML") and counter-terrorism financing ("CTF") regulations. Moreover, cross-border regulatory alignment, fostered by regional bodies such as the AfCFTA, will be critical to prevent regulatory arbitrage and ensure a unified financial ecosystem. Establishing interoperability and governance standards will enable African CBDCs to seamlessly integrate into global financial systems while promoting regional economic sovereignty.

However, the success of CBDCs will hinge on more than technological and regulatory solutions. Public trust and understanding are equally essential. Governments must invest in raising awareness about the benefits of CBDCs, particularly among rural and underserved populations, to ensure these digital currencies do not exacerbate existing inequalities. Programs to integrate CBDCs into social welfare distribution, such as subsidies or direct cash transfers, could further promote adoption while enhancing transparency and accountability in public spending.

By leveraging local strengths, addressing regional challenges, and fostering innovation through collaboration, African nations can create a digital currency framework that not only enhances economic inclusion but also strengthens their position in a rapidly evolving global financial ecosystem. African policymakers must therefore navigate three goals simultaneously: tailoring CBDC design to domestic needs, coordinating regionally to ensure interoperability, and preparing for integration into an evolving global monetary system. Done well, CBDCs can extend state authority into the digital age while supporting development goals. Done poorly, they risk deepening fragmentation and undermining economic stability. The question is not whether CBDCs will arrive, but how states will shape them.