

Central Bank digital currencies in Africa: catching up*



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This brief analyses the development, motivations and concerns of Central Bank digital currencies (CBDCs) in Africa relative to other developing regions. The interest on CBDCs in Africa has boomed recently. Most central banks (CBs) are analysing CBDCs, but only few have projects at advanced stages (pilot or live). Like their peers, a key motivation for African CBs is achieving greater payment system efficiency. They also place more emphasis on financial inclusion and a higher proportion see potential benefits for monetary policy. These factors could favour CBDC adoption. But Africans are more worried than other regions about cyber risks and cross-border spillovers and are also concerned about high operational costs. These factors and others, such as the high degree of informality may hinder adoption. All in all, differences in motivations, concerns and other country-specific factors determine how CBs are approaching CBDCs.

Digital technology in finance and new private forms of digital money have the potential to transform and improve the monetary system. But, as argued in the last Bank for International Settlements Annual report (BIS (2022)), structural flaws make cryptocurrencies unsuitable as the basis for the monetary system. Central bank digital currencies (CBDCs) are now envisioned as bolstering the public good nature of the monetary system with the central bank (CB) at the core, supporting safe, low-cost and inclusive payments, while promoting innovation.

*This brief is based in Alberola and Mattei (2022), written while both authors worked at the BIS. The views in this contribution represent those of the authors and not necessarily those of the BIS or Banco de España. Enrique (alberola@bde.es) is Adviser and Ilaria is Research Analyst in their current institutions.

In this context and after some initial hesitations, CBs have adopted a more proactive stance toward CBDCs. In 2021, 90% of CBs surveyed were engaged in CBDC analysis or projects in 2021, compared with two thirds in 2017, and the share running pilot projects had doubled, reaching 26% (Kosse and Mattei (2022)).

African CBs are no exception to the global trend. Most lagged behind in the initial stages but all the CBs that participated in the survey underlying this brief claim that they are now active on CBDCs. However, most are still in the initial stage of research and analysis. Only Nigeria has issued a retail CBDC, the eNaira, and Ghana and South Africa are running pilot projects (retail and wholesale, respectively).

This brief analyses the motivations and perceived risks of CBDCs and the design choices they imply from an African perspective.

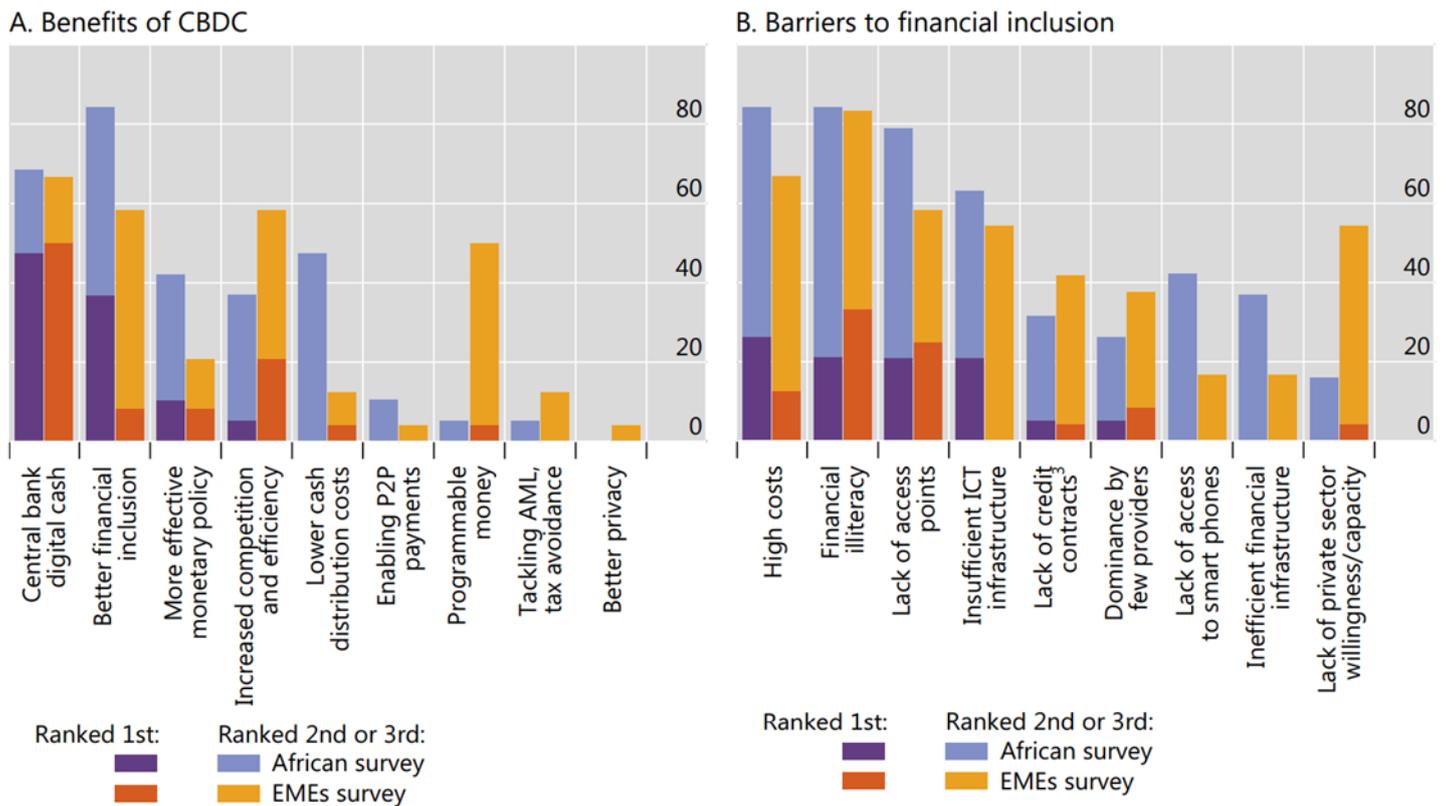
Motivations

The top motivations for CBDC issuance in Africa are the provision of cash in digital form and the promotion of financial inclusion (Graph 1.A). Other key considerations include improving the effectiveness of monetary policy, increasing competition and reducing distribution costs of money. These motivations are not mutually exclusive.

The **provision of cash in digital form** as an alternative means of payment is the top consideration for more than half of the surveyed African CBs, similar to other emerging market economies (EMEs).

Mobile money – ie digital payments through a mobile phone not requiring a bank account – started the transformation of the payment landscape in Africa at the turn of the century, East African countries such as Kenya at the forefront of mobile money. Later, banks and then big techs and fintech firms have moved in with new means of payment; likewise, digital assets, such as cryptocurrencies and stablecoins, have emerged.

Graph 1: Fostering financial inclusion is one of the main motivations for CBDCs in Africa¹
Percentage of participating central banks²



¹ Each bar indicates the percentage of central banks that choose a given motivation as one of their top three benefits of CBDC/barrier to financial inclusion. ² Unless otherwise stated, the percentage is computed over all the central banks that participated in the surveys (19 and 24 central banks in the African and EME survey, respectively), including those that did not answer the specific question. ³ Lack of credit contracts and procedures suitable for individuals and/or firms with erratic and/or undocumented cash flows. Source: Alberola and Mattei (2022).

Against this backdrop, a CBDC could serve as a prime form of trusted money, just as cash does today. Relatedly, CBDCs could reinforce CBs' roles as the issuer of the unit of account and as the anchor of the monetary system. Another possible motivation for issuing a CBDC that is more relevant in Africa than in other EMEs is the savings in the distribution of physical money.

Financial inclusion in Africa has improved over time but it is still low, with half of African adults having no bank account in 2021, a greater proportion than in any other region. CBDCs are perceived as an important and complementary tool for promoting financial inclusion and it is the top consideration for more than a third of African CBs.

Financial market features and broader structural factors explain financial exclusion (Graph 1.B). Market features seen as most important in Africa include high costs, lack of access points and inadequate ICT infrastructure. Private sector reluctance is not judged as a relevant constraint, in contrast to assessments in other EMEs. Financial or digital illiteracy – especially prevalent in low-income countries – is the main structural factor impeding inclusion. Africa's young population facilitates digital services penetration, but the informal sector – where most employment is in the continent – favours the anonymity of cash. This is an obstacle to financial inclusion and eventually to the wide adoption of CBDCs.

CBDCs can mitigate some of the market imperfections inhibiting inclusion. For instance, CBDC issuance can provide an open infrastructure that sets the rules of the game for payment service providers (PSPs). In turn, this could enhance interoperability and promote effective competition, thereby delivering benefits to consumers. Private players could also develop services with greater added value on the basis of CBDCs. Finally, CBDCs could help cut the cost of payment services by lowering or eliminating fees.

The introduction of a CBDC as an alternative means of payment can improve the efficiency of the payment system, by providing a level playing field through open standards. Depending on design, it can improve competition and reduce costs, and can also help prevent informational rents. CBDC issuance could also support new digital technologies and their integration with the broader economy such as the distribution of fiscal transfers and tax collection, thereby also fostering the formalisation of economic activity.

Concerns related to CBDC issuance

The main concerns related to CBDCs (Graph 2) are operational. These include cyber security, the maintenance burden for CBs and the resilience and stability of the system. African CBs are also concerned by low user adoption and bank disintermediation, albeit to a lesser extent than other EMEs. These latter concerns could be mutually exclusive, as low adoption could decrease disintermediation risk.

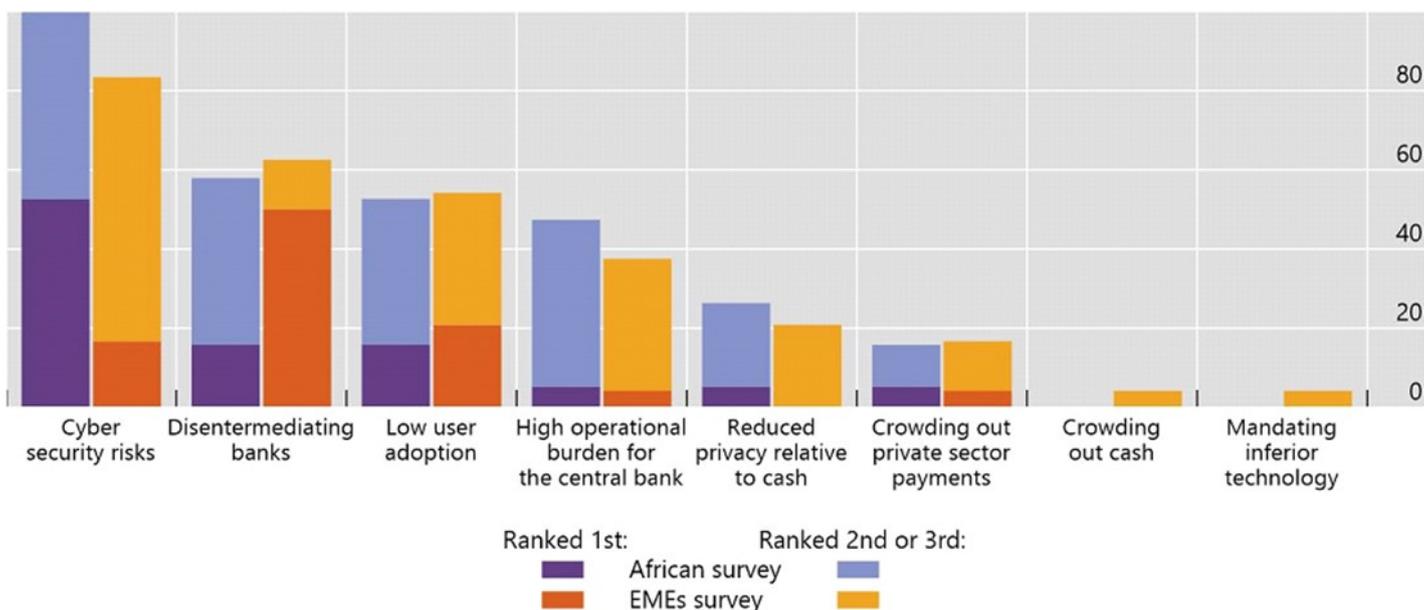
CBDC systems must be safe, stable, robust and able to recover from operational disruptions. Such disruptions could also have reputational costs. These risks are common to any payment system, including fast payment systems (FPS).

The main operational challenge noted is **cyber risk**, even more in Africa than elsewhere. A successful cyber attack on CBDCs could cause widespread and serious damage and erode the reputation of CBs.

Another important challenge is the operational burden of maintaining a reliable and complex CBDC, whose costs in terms of financial and technological resources are high.

Graph 2: Main concerns related to CBDCs centre on cyber security, while resilience scores highest on infrastructure considerations¹

Percentage of participating central banks



¹ Each bar indicates the percentage of central banks that choose a given downside as one of their top three concerns.

Source: Alberola and Mattei (2022).

Low CBDC adoption, which would hinder the policy objectives CBs hope to achieve, is the second largest concern for African CBs. This concern is particularly widespread in North Africa, where digital payment penetration is relatively limited.

Success in the adoption of a currency is driven by its usefulness to private agents. In particular, CBDCs would need to satisfy unmet user needs for broad adoption. In contrast to physical cash, where CBs have a monopoly, CBDCs face competition from private FPS that could undermine their adoption. Around half of African CBs perceive significant advantages of CBDCs over FPS in terms of boosting financial inclusion, somewhat more than other EMEs. However, East African CBs, where mobile money is widespread, are more cautious on CBDC deployments.

For merchants and banks affected by disintermediation, which could be reluctant to adopt, the gains from CBDCs could come from more efficient payments domestically. And a CBDC could lay the foundation for an international system of CBDCs, where a multi-CBDC bridge could further help broaden the reach of banks and merchants.

Over half of African survey respondents indicated concerns about **bank disintermediation**, somewhat less than other developing CBs. Design choices, such as remuneration of CBDCs and possibly safety, could drive bank disintermediation. An account at the CB might be attractive as being safer. The perceived main channels through which credit provision could be affected in Africa include a smaller volume of deposits, more volatile and higher loan rates and lower bank lending. Even with limits on individual CBDC holdings, some reduction in commercial bank deposits could ensue. An interest-bearing CBDC would reinforce such effects.

However, banks could benefit from CBDCs if they foster financial inclusion, as intended: an increase in users of digital payment of financial services would eventually allow the banking sector to expand its financial services, as the experience of Brazil's Pix suggests (Duarte et al (2022)).

Any disintermediation is likely to be more marked and abrupt in a crisis, given a CBDC's status as a safe asset. Specifically, CBDCs could exacerbate runs on weak private banks, especially in countries where banking sectors are less developed or have low reputation. The conditions – tranquil or crisis times – under which CBDCs might disintermediate banks present difficult policy trade-offs for a CB. A CBDC could hasten disintermediation in a crisis, amplifying the liquidity stress on weaker banks. However, not allowing for CBDCs' convertibility to control volatile flows runs counter to the goal of providing a safe means of payment precisely when that safety is valued most.

Design choices for CBDCs in Africa

At their current stage of development, there is still a large scope to define the most appropriate design of a CBDC to maximize the benefits and mitigate the risks of issuing a CBDC. In any case, any choice implies trade-offs.

A first choice concerns the type of CBDC. A **retail or general purpose CBDC** is universally accessible to the general public (like cash) and can be made anonymous. A wholesale CBDC is available only to select financial institutions (similar to bank reserves). With reserves being digital for a long time, the wholesale CBDC only differs in the form that it is available (for instance, as a token on a distributed ledger platform). As such, it may be accessible to a wider set of counterparties, be interoperable with foreign systems, or feature “smart contracts” (eg allowing instantaneous settlement of securities on a delivery-versus-payment basis – so-called atomic settlement). Most African CBs are investigating both retail and wholesale CBDCs, while about a third are focusing only on the retail version, proportions similar to other EMEs.

A second key decision is on the **type of architecture**: a two-tier CBDC, with the CB at the core, but private agents (banks and PSPs) interacting with users; or a direct system where the CB also takes care of user-facing activities. A two-tier architecture would also reduce the burden for the CB. African CBs are less decided than their peers on the type of architecture, with just 40% favouring a two-tier system, compared with three quarters of their EMEs' peers. The preference for a two-tier model is strongest among CBs for which financial disintermediation is a top concern. Bringing banks – and other PSPs – on board would encourage them to accept CBDCs. A two-tier model would facilitate collaboration and potentially draw on synergies with the private sector. It would also hugely reduce the operating costs for CBs, such as performing know-your-client or anti-money laundering functions.

Domestic interoperability (with other financial providers) and **offline availability** are most desirable features for African CBs, as they would favour adoption and inclusion. Other features like remuneration or limits to CBDCs deposits, data governance or the technology (distributed v. central ledgers) imply clear trade-offs.

Delving in detail on other design choices falls beyond the scope of this brief. In Alberola and Mattei (2022) we elaborate more on them.

Cross-border CBDCs

CBDCs that can be used across borders or are interoperable with foreign CBDCs – ie cross-border CBDCs – bring benefits as well as challenges.

International payments such as remittances remain costly, with those for Africa as the most expensive. African CBs think that cross-border CBDCs could streamline intermediation and thus reduce transaction costs and time. Trade payments and trade finance would also benefit. CBDCs would also enable better monitoring of capital flows to the extent that such flows are channeled through cross-border CBDCs.

Regarding the risks, there is a widespread perception that cross-border CBDCs could spur currency substitution, exchange rate volatility and tax avoidance

On net, African CBs favour cross-border interoperable CBDCs. Potential risks could be manageable via design features such as limits on access and usage, for instance restricting non-residents transactions.

Three types of CBDC arrangement for cross-border interoperability are gaining traction (Carstens (2021)). The first model promotes CBDCs' compatibility via harmonised regulatory frameworks, market practices and messaging formats. The second takes integration further by linking two domestic systems through technical interfaces that allow them to interoperate. The third, and most ambitious, establishes a single and jointly operated wholesale multi-CBDC system. In all models, users would be able to hold CBDCs from various jurisdictions in their CBDC "wallet", subject to some limits.

Cross-border coordination and cooperation are crucial. In particular, the choices made by large economy central banks could constrain the options available to smaller countries. Efforts include common governance arrangements, which can be challenging. In addition, consistent technical standards, oversight framework and adequate liquidity would be necessary for several currencies. ■

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