CBDCs in emerging market economies – a short note by Bank Indonesia

Question 2: Objectives and considerations for CBDC issuance

- Objectives and considerations for CBDC issuance are country-specific and dependent on factors such as each jurisdiction's financial system, economic, and legal structures.
- What are your policy objectives for issuing CBDC? Are you considering general purpose (retail) CBDC for day-to-day payments or CBDC restricted to wholesale, financial market payments, given your policy objectives? What are the costs/benefits of each?

Key drivers and policy objectives of CBDC in Indonesia

The advancement of technology over the past years has reshaped many aspects of customer behaviour, including how transactions are made. To effectively deal with the evolution towards digitalisation, fast, cost-effective, easy to use, secure, and reliable digital payment solutions are required to provide better integration and capability to meet demand in the digital era. Below, we discuss some observed domestic considerations in Indonesian digital payments that have led to a discourse on the importance of central bank digital currency (CBDC) issuance.

Since the declaration of the National Cashless Movement (GNNT) by Bank Indonesia in 2014, which was further supported by Bank Indonesia Payment System Blueprint initiatives, there has been tremendous growth in the use of digital payments for purchasing goods and services in Indonesia. In October 2021, Indonesia's digital economy and finance development was still exhibiting an upward trend, as indicated by the respective year-on-year (YoY) growth of 36.9% in e-commerce and 52.6% in fintech lending transactions. In addition, the expansion of digital banking has proven the agility of the banking industry and its ability to provide digital services that meet the changing demands of its users. The adoption of the Quick Response Indonesia Standard (QRIS) system to enhance cashless payment has also doubled. Similarly, through credit and debit transfers and e-money and the amount of money in circulation, retail payments show an upward trend with a noticeable rise of 28% (YoY) in credit card transactions. E-money usage has also increased by 51.6% during the same period. There was 16.9% (YoY) growth in volume and 17.5% (YoY) growth in value of BI-RTGS (Bank Indonesia real-time gross settlement) transactions for wholesale payments, with customer transactions contributing a significant proportion of the growth in wholesale transactions (22.3% (YoY) growth in value and 14.6% (YoY) in volume). In the same period, the Bank Indonesia national clearing system (SKNBI) dedicated to retail transactions also displayed positive trends. It increased in both the value and volume of transactions by 29% (YoY) and 19% (YoY), respectively.

Bank Indonesia continues to expedite the digitalisation of the payment system to support the acceleration of the national digital financial economy. To that end, various payment system digitalisation programs that have been implemented include the expansion of QRIS, the National Open API Payment

Standard (SNAP) and regulatory reform, as well as the implementation plan for the Bank Indonesia Fast Payment (BI-FAST) system. Digital economic and financial transactions are proliferating along with increasing acceptance and people's preferences for online shopping, expansion, and convenience of digital payment systems, as well as digital banking acceleration.

The rapid changes in the payment landscape, coupled with other digital disruptions such as the emergence of private digital currency, the internet of things (IoT), big data, blockchain, artificial intelligence (AI), decentralised finance (DeFi) and machine-to-machine (MtM) communication, have a significant impact on central banking practices. These have triggered central banks to adopt a more proactive stance to anticipate the uncertainty in the future, including the issuance of CBDC.

Central banks consider issuing a CBDC for various reasons shaped by local circumstances and at a different pace across jurisdictions and types of economy. As such, the objectives of CBDC issuance in different countries converge into six main objectives: (i) to provide risk-free digital payment using central bank money compared to the services provided by private entities; (ii) to mitigate risk to currency sovereignty and monetary stability from non-sovereign digital currency; (iii) to enhance payment system competition, efficiency and resilience, including for cross-border payments; (iv) to provide a new instrument for monetary and financial stability policy; (v) to facilitate fiscal transfers/subsidy distribution directly to the recipient's account/wallet; and (vi) to support financial inclusion with the digitalisation of payment data, offline functionality, and cost-effective transactions.

To ensure the smooth implementation of CBDC, the majority of central banks follow three common foundational principles. First, the CBDC should be implemented based on a strong legal basis which serves as a consensus from several stakeholders. Second, CBDC should support the objectives of the central bank on monetary, payment system and financial system stability. Third, CBDC should promote financial inclusion, innovation, and efficiency of the financial system in the digital era.

The use of CBDC as a form of central bank money that could act as both a liquid, safe settlement asset and an anchor for the payment system will improve the payment system's efficiency by increasing competition in the domestic and global payment systems markets. The issuance of CBDC can provide benefits for the wholesale and retail payment rails. For wholesale payment systems, wholesale CBDC (wCBDC) could increase settlement efficiency for transactions regarding securities, derivatives and cross-border payments. As a digital service, CBDC can be designed to support 24/7 operation and allow easier asset exchange. In addition, it could enable simplified payment data streams and better traceability of illicit transactions. Lastly, certain models of CBDC might increase trust between counterparties. Besides this, CBDC can also potentially benefit retail payment systems. A retail CBDC (rCBDC) could reduce the cost of managing cash for central banks as well as enabling fast, cost-effective and secure payments. This might result in a more efficient payment system. Moreover, CBDC could promote central banks' ability to monitor economic activities in real-time and support innovation by private entities, including enhancing financial inclusion. A domestic CBDC might also function as the requirement for better cross-border arrangements.

Despite the potential benefits of CBDC, there are several challenges that central banks should assess. Wholesale CBDC might disrupt the innovation already

flourishing in the existing financial system. Additionally, the implementation of wCBDC might be hindered by a lack of proper infrastructure and potential incompatibility with other financial infrastructure. The adoption of distributed ledger technology (DLT) for wCBDC may raise several issues, namely privacy, settlement finality, scalability, performance, and resiliency. On the rCBDC side, the implementation of rCBDC might entail cyber security and technology risks. Other challenges for rCBDC include the adoption and inclusion issue: it should be possible to distribute rCBDC to a broader user group, including residents in remote areas, with the ability to meet the service level agreement requirements. Other potential risks include disintermediation and bank run since CBDC would play a substantial role in facilitating the conversion of assets from commercial bank money to central bank money.

The challenges faced by Bank Indonesia in achieving its policy objectives are influenced by global and domestic issues that arise due to the dynamics in its strategic environment. Digital disruptions have compelled Bank Indonesia to adapt to the changing situation quickly and precisely. **Bank Indonesia plans to issue CBDC as a response to three key drivers**: first, "to emphasise BI's role as the country's sole authority for currency issuance, including in digital form, to maintain monetary sovereignty"; second, to take part in international initiatives among central banks or international organisations related to the issuance of CBDCs; and third, to spur on the integration of the national digital economy and financial system.

In response to the aforementioned key drivers, Bank Indonesia has formulated the main goal of CBDC in Indonesia, which is to provide a legal digital payment instrument in the Republic of Indonesia to support the performance of the central bank's duties, as well as supporting financial system stability and integration of the digital economy and financial system. Based on the main goal, three main objectives of CBDC issuance are being developed and will be discussed further below.

The first objective is to provide *sovereign public goods*. The core responsibility of central banks is providing currency to the public. The constitution, central bank act and currency law, mandates Bank Indonesia as the sole institution with the role to manage currency as a sovereign public good in Indonesia, represented by the rupiah in various forms, to support economic activities. As the rapid innovation of technology has enabled the digital economy to flourish in Indonesia, the rupiah needs to evolve into the form of sovereign digital money to support transactions in the digital era. Unlike private or foreign digital currency, sovereign CBDC would provide the public with a direct claim on the central bank, which would ensure trust and improve the functioning of the monetary system.

The second objective is to support the mandate and objectives of the central bank in the digital era. CBDC issuance may entail several threats that may hinder monetary and financial system stability, such as the risks of disintermediation and bank runs, which would lead to the obstruction of monetary and macroprudential policy exercised by the central bank. The implementation of CBDC should not be counterproductive to the central bank fulfilling its existing mandate by addressing the aforementioned issues with appropriate policy. In addition, it would be essential to identify the potential area of CBDC utilisation to sustain monetary, macroprudential and payment system policy in the digital era. CBDC has the potential to support the fulfillment of central bank objectives and, to some extent, could potentially be an essential tool for central banks in the future to enhance monetary and financial stability through leveraging new technologies.

The third objective is to encourage inclusion, innovation, and efficiency on an end-to-end basis. Considering the rapid growth of financial and payment instruments in Indonesia, CBDC must deliver added value to businesses and consumers with new innovative ways to pay, which contribute to the development of faster, cheaper, more inclusive, convenient, and efficient payment solutions in support of dynamic trends and innovations. CBDC ecosystems should avoid reinforcing barriers to financial access for those excluded from or underserved by the existing financial system while at the same time harnessing innovation to deliver a resilient and efficient payment landscape.

Design choices for CBDC in Indonesia

To achieve the objectives mentioned above, Indonesia's CBDC should support both retail and large-value and financial market transactions. Therefore, Bank Indonesia will develop wCBDC to support large-value and financial market transactions, including monetary operations and government transactions, and rCBDC to support retail transactions in the digital era.

A proper CBDC design is fundamental to ensure its objectives are met. Currently, Bank Indonesia is still researching and assessing the potential design of a CBDC which will be able to support Indonesia's economy while minimising risks. CBDC should provide more convenience in digital transactions without further disrupting the current payment system, such as fiat money, money held in accounts, digital banking, electronic money, and electronic wallets. This consideration will affect the technology and architecture used in Indonesian CBDC.

In 2022, Bank Indonesia will continue its exploration on CBDC by publishing a conceptual design for the digital rupiah to support the digital payment system and accelerate international cooperation on CBDC in the G20 forum. The CBDC issuance plan is designed to be integrated with existing infrastructure developments based on Indonesia's payment and financial system blueprint, including the foundation of end-to-end integration that has been built between the financial and payment infrastructures. This will add complexity to the design and require stronger governance to ensure all of the objectives are met.