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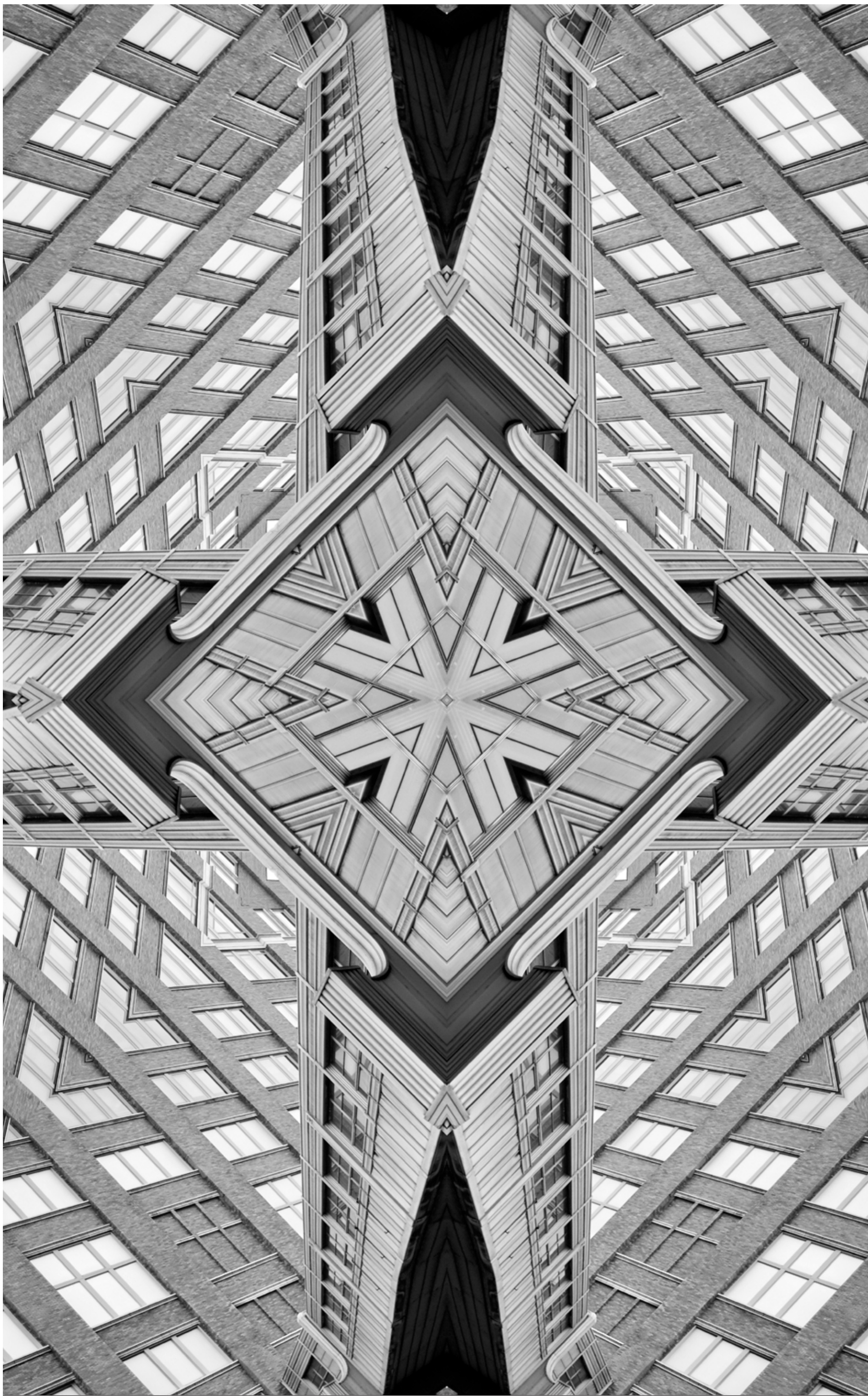

Issue Brief

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Beyond the Hype: Developing Interoperability Standards for Digital Currency at the G20

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Abstract

The legacy cross-border payment infrastructure is replete with issues of high costs, limited access, low speed, and opaque structures, which have limited the potential of cross-border payments to enhance international trade and foster economic growth in emerging economies. The increased demand for transparent, accessible, faster and cheaper solutions in the financial sector has pushed the private and public sectors to accelerate investments in innovations for payment solutions. At the G20, the three past presidencies had sought to prioritise enhancing cross-border payment infrastructures and recognised the contribution of Central Bank Digital Currencies (CBDCs) to enable it. This paper explores why under India's presidency, the G20 should develop and outline CBDC interoperability standards to ensure value alignment among the member economies. These standards could ensure that novel models of facilitating cross-border payments can co-exist and are interoperable with existing national payment systems to avoid infrastructural vulnerabilities.

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Introduction

Central Bank Digital Currency (CBDC), or public sector-issued digital currency, is increasingly gaining prominence in many parts of the globe.[1] CBDCs are poised to enhance access to financial services particularly for unbanked consumers, and facilitate market integration for emerging economies, as they can function even in regions that lack constant access to the internet.[2] They could also aid cross-border payments by prioritising policy motivations through design choices. Further, they can provide an efficient and cost-effective approach to facilitate cross-border payments by reducing the cost of maintaining multiple complex financial systems and limiting the friction caused by different time zones in processing payments.[3] CBDCs, unlike cryptocurrencies,[4] provide central banks with the ability to implement monetary policies to ensure stability and monitor inflation.

Perhaps most importantly, securing trust in digital currency backed by central banks will be easier[5] as it is coming from a single, trusted source.[6] The fall of Terra-LUNA USD,[7] a sizeable stablecoin, in May 2022, signals that economic stability provided by central banks is critical while financial systems are being reimagined to address the gaps in legacy systems.

However, CBDCs could lead to fragmentation in banking systems unless interoperability standards are incorporated in the initial stages. These standards include considerations from technical, business, regulatory and legacy perspectives; technical standards will ensure alignment on common protocols, identifiers and messaging formats to support seamless payments across different currencies, and regulatory standards will ensure consistency in regulatory guidelines over security and anonymity. Design principles—including privacy, resilience, completion, vendor neutrality, availability, finality, predictability and atomicity—will also need to be accounted for.[8]

This brief makes a case for India to leverage the opportunity of rising global interest in CBDCs, develop and outline interoperability standards on CBDCs at the G20, and ensure value alignment for cross-border payments. The brief outlines the work being done by the G20 to facilitate cross-border payments, particularly by pushing for the development of CBDCs and their interoperability standards; elaborates on the varied policy motivations of G20 economies for CBDCs, to establish challenges in aligning interoperability standards; and demonstrates why India should lead the task of outlining the interoperability principles for CBDCs.

As of 2022,[9] 105 countries across the globe were in the initial stages of exploring CBDCs, with nearly 50 of them having already started to develop and pilot their currency, while 10 have fully launched theirs. Sand Dollar,[10] a local CBDC in the Bahamas, has been in use for over a year, whereas China's e-CNY[11] or digital renminbi has over 100 million users. Since CBDCs are largely in the developing and piloting stage, it is an opportune time to drive alignment to ensure that novel models of cross-border payments can co-exist and interact with existing national payment systems to avoid infrastructural vulnerabilities, fraudulent imitation, money laundering, and cyber-attacks.

Experiments that evaluate the efficiency and other considerations of multilateral platforms for CBDCs are well underway.[12] For instance, as part of Project mBridge, the People's Bank of China (PBOC) partnered with the monetary authorities of Hong Kong, the United Arab Emirates (UAE) and Thailand, along with the Bank of International Settlements (BIS) Innovation Hub to test a multi-CBDC arrangement[13] using w-CBDC for cross-border payment settlements. The pilot concluded in October 2022 and demonstrated that multi-CBDC platforms can enhance the efficiency of payments, support local currencies for international payments, and reduce settlement risks. Given the nature of the project and the common platform, interoperability between legacy clearing systems was ensured. The project is currently at the stage of automating processes to guarantee interoperability.[14]

Moreover, central banks would be required to carefully assess and manage financial stability implications, define the authorisation process for each payment, and ensure that existing actors in the ecosystem such as intermediary banks are not adversely impacted by the use of CBDCs. The cost of developing, testing, processing and maintaining CBDCs will also be significant and would require central banks to collaborate on balancing the costs with the benefits.

At the G20, India proposed the discussion on the macroeconomic implications of CBDCs and its use cases as a priority within the finance track agenda[15] as part of the Finance and Central Bank Deputies meeting in Bengaluru in December 2022. Following India's Finance Minister Nirmala Sitharaman's announcement in the budget speech of 2022–23[16] on the introduction of the digital rupee (e₹) in 2022, RBI notified amendments in the Reserve Bank of India Act, 1934 to enable running the pilot and commencing[17] phased implementation of CBDCs in the wholesale and retail segments. RBI released a concept note on CBDCs in October 2022,[18] providing a background of its objectives and motivations for the e₹. The pilot test for wCBDC was conducted without any hindrances on 1 November 2022 for secondary market trades in government securities, with a total of INR 275 crores among nine banks, including the State Bank of

India, Bank of Baroda, IDFC First Bank, and ICICI, through an account-based mechanism.[19] The rCBDC pilot project commenced on 1 December 2022 across four cities—New Delhi, Mumbai, Bengaluru and Bhubaneswar—using a token-based mechanism.[20]

The G20 presidencies since 2020—Saudi Arabia, Italy and Indonesia—emphasised the enhancement of cross-border payment infrastructure to ensure streamlined post-COVID recovery that prioritises the stability of financial systems by building on the work done by previous presidencies, especially since the global financial crisis of 2008.

Saudi Arabia Presidency (2020)

In 2020, the Financial Stability Board[21] (FSB) and other international standard-setting organisations designed a three-stage roadmap to enhance cross-border payments for the G20. In the first stage, FSB provided an assessment of existing cross-border payment arrangements and presented the "Enhancing Cross-border Payments: Stage 1 Report to the G20"[22] to G20 Finance Ministers and Central Bank Governors (FMCBGs) in April 2020. Along with fragmented data standards limiting interoperability, inconsistent understanding of compliance requirements, differences in operating hours, differences in payment processes for each country and outdated legacy technology platforms, were identified as friction points. This report focused on utilising technological innovations and public–private partnerships to address identified gaps while remaining cautious of the risks by securing interoperability standards, legal certainty and oversight mechanisms.

In July 2020, BIS presented "Enhancing Cross-border Payments: Building Blocks of a Global Roadmap - Technical Background Report"[23] to FMCBGs, highlighting 19 building blocks across five focus areas to improve inefficiencies in current cross-border payment systems. The five focus areas are: aligning private and public sector vision on enhancing cross-border payments; coordinating oversight and regulatory frameworks; addressing existing gaps in legacy payment infrastructure and arrangements; enhancing data quality and market practices; and exploring the role of the new payment infrastructure to develop interlinkage options and enable efficient cross-currency payments. CBDC is one of the building blocks under the fifth focus area on exploring new payment infrastructures. The third and final stage provided an actionable roadmap, with "Enhancing Cross-border Payments: Stage 3 Roadmap"[24] in October 2020 providing next steps and possible timeframes. The roadmap was endorsed by the G20 economies in 2020 to address the most pressing challenges around cross-border payment systems.

Italy (2021)

The Italian Presidency of the G20 continued[25] to work on improving cross-border payments and achieving sustainable growth with the 'three Ps'—people, planet and prosperity[26]—underpinning its approach. In October 2021,[27] Italy recognised quantitative targets for measuring and defining progress on cross-border payments in terms of cost, transparency, efficiency and access while building upon the roadmap. As such, Italy partnered with BIS on the Nexus Project[28] to connect similar instant payment systems[29] to improve transparency and reduce transaction costs as part of the workstream initiated by the G20 Saudi Presidency for enhancing cross-border payments. Ignazio Visco, Governor of the Bank of Italy, while expanding on G20 priorities within the finance track, stated that Global Stable Coins (GSCs) and CBDCs are closely related, share a transactional purpose and may often complement each other. G20 had identified the high-level recommendations of the FSB on regulation and supervision of stablecoins under the presidency as mandatory criteria for jurisdictions developing stablecoin arrangements.[30] The recommendations emphasised the need to implement regulatory and oversight capabilities proportionate to the risks for GSCs. Italy also scheduled the first international financial architecture working group meeting to facilitate knowledge sharing on approaches to improve international payments as well as the financial and economic aspects of CBDC.

Indonesia (2022)

The Indonesian Presidency in 2022 identified CBDCs as one of the priority agendas[31] under the finance track and welcomed sustained discussions on CBDCs at the Third FMCBGs Meeting[32] in July 2022. The focus of the G20 TechSprint 2022[33] was on developing solutions to enrich various aspects of wCBDCs and rCBDCs for financial inclusion, enhanced distribution, programmability of money and interoperability. BIS, The International Monetary Fund (IMF) and World Bank also presented a joint report to the G20 on the "Options for Access to and Interoperability of CBDCs for Cross-border Payments"[34] in July 2022. The report highlighted the need to make decisions on interoperability at an early stage in the development cycle of CBDCs and ensure consensus with international partners on various design choices. It also presented the evaluation criteria for assessing cross-border CBDC arrangements based on principles of efficiency, resilience, assured coexistence and interoperability, financial inclusion, and absence of harm.

Policy Motivations

G20 economies such as China, Japan, India, Russia and South Korea have advanced to the development and pilot stage of CBDCs. This section expands on the interlinked yet distinct policy motivations guiding the CBDC development of most G20 economies.[35] Aspects that dominate the development of CBDCs include developing cash-like digital means of payment, boosting financial inclusion, strengthening competition between payments service providers (PSPs), enhancing efficiency, and reducing costs of providing financial services.[36]

Table 1
Drivers of CBDC Design and Development in G20 Economies

Country	Drivers of CBDC development
Australia	Explore innovative business models and use cases of CBDCs
Brazil	Build a safe model to allow entrepreneurs to innovate and experiment with programmable technologies such as smart contracts and digital money
Canada	Sustain trust in the Canadian dollar and adapt to the changing nature of payment services
China	Improve domestic and cross-border payment efficiency
France	Improve cross-border and cross-currency payments
India	Reduce operational costs of cash management; foster financial inclusion; improve domestic and cross-border payment efficiency; provide alternatives to private cryptocurrencies
Indonesia	Promote financial stability
Italy	Ensure monetary sovereignty
Japan	Provide a payment instrument with cash; support private payment services; develop innovative payment and settlement systems
Republic of South Korea	Ensure independence of central banks
Mexico	Foster public payment infrastructure

Russia	Enhance competition in the financial market, quality of services, and financial inclusion
Saudi Arabia	Promote financial innovation; improve access to central bank money; improve domestic and cross-border payment efficiency
South Africa	Improve financial inclusion; distribute targeted welfare schemes; and facilitate cross-border payments
Türkiye	Complement existing payment infrastructure
United Kingdom	Improve payment services and infrastructure
United States	Improve domestic and cross-border payment efficiency
European Union	Maintain citizens' trust in payment services and money

Source: Author's own, using official statements from Central Banks and other primary sources.

With diverse motivations guiding the development, as outlined in Table 1, aligning on interoperability standards remains a challenge. Differences in political systems and how monetary policy decisions are made by economies result in further complications. Disconnected payment systems that could result from this, such as to circumvent economic sanctions, will increase transaction costs for businesses in emerging markets.[37] For instance, Russia announced plans of doing business with China using the digital rouble[38] by 2023 following its push from the SWIFT system[39] in May 2022. PBOC is also intently expanding e-CNY's user base beyond Russia to international trading partners,[40] particularly emerging economies, to circumvent the threat of being banned from SWIFT.

Moreover, China's firm positioning on CBDCs may result in the United States (US) losing its leading influence over the global payments infrastructure.[41] While the dominant global payments currency is still the US Dollar, it has witnessed a gradual decline over the last two decades. According to an IMF working paper[42] published in March 2022, investments from US dollars are shifting towards e-CNY. The Biden-Harris Administration also recognises that the US cannot rely solely on stablecoins to ensure the dominance of the US Dollar and will have to consider investments in CBDCs.

In the policy objectives[43] identified for the US Central Bank Digital Currency System in September 2022, the White House named the maintenance of US leadership in the global financial system and global dominance of the dollar a priority. With two completely divergent motivations steering the drive for CBDCs in both countries, the fragmentation of novel models of cross-border payments or the development of new economic blocs will limit the possibility of CBDCs to address issues with legacy financial systems.

India's appetite and infrastructure for digital payments have increased significantly since demonetisation in 2016. This transformation was guided by RBI's approach to the provision of digital financial infrastructure for every citizen as a public good.[44] India Stack[45] has played a pivotal role in advancing RBI's mandate through its open application programming interface that integrates digital identity and payment systems between banks, digital wallets and fintech firms. The addition of a new layer to the retail payment system or Unified Payments Interface (UPI) allowed banks to exchange payment orders with other banks as well as non-bank firms, removing barriers to transferring funds and receiving payments, which would otherwise take days or weeks to process. Interoperability[46] has become a crucial feature of India's digital payment system. The following paragraphs discuss the key factors steering India's drive on CBDCs to enhance cross-border payments.

a) Monetary sovereignty

At a parliamentary panel[47] in May 2022, chaired by Former Minister of State for Finance Jayant Sinha, RBI officials, including Governor Shaktikanta Das, expressed apprehensions on the "dollarisation"[48] of the Indian economy. They cautioned that the spread of dollarisation through cryptocurrencies could adversely impact India's sovereign interest by undermining RBI's capability to define monetary policy and strategies to ensure the stability of the financial system. It will also undermine the value of the Indian rupee. The e₹ is intended to distance Indian citizens from the lure of private cryptocurrencies, and this is cited as one of the crucial[49] reasons for countries in the Indo-Pacific, such as Vietnam and Indonesia, to pursue research on CBDCs. Moreover, as per recent research produced by IMF in 2022, the announcement of launching CBDCs in itself reduces[50] crypto activities.

b) International trade in Rupee

Russia's push from SWIFT led to the resurrection of India's proposal of trading in Rupee, citing that it will make trade easier, protect foreign exchange reserves, and generate greater demand for the Rupee. The Directorate General of Foreign Trade and RBI released notifications dated 11 July and 16 September 2022,[51] announcing amendments in the Foreign Trade Policy and Handbook of Procedures to allow for invoicing, payment and settlements of imports or exports in Rupee. India is also currently exploring agreements like the Rupee-Rouble Pact[52] with countries in South Asia. Such agreements would emphasise exports from India, sustain the global trading community's interest in the Rupee and support small businesses by mitigating the impact of volatile forex markets.[53] w-CBDC arrangements could bolster this integration in international capital flows and foreign trade. Additionally, India is looking to expand cooperation on CBDC[54] with South Asian economies to facilitate trade.

c) Increase in remittances

Remittances to India set a new record in 2022, reaching INR 8.183 trillion from INR 7.3 trillion in 2021.[55] India is the recipient of the world's largest remittance inflows, followed by Mexico, China, the Philippines and Egypt. The inflows are mostly coming from Indians based in Gulf Cooperation Council countries, including the UAE, Saudi Arabia, Oman, Bahrain, Kuwait and Qatar, as well as the US and the United Kingdom.[56] The cost of sending remittances has reduced in the last decade to 6.3 percent,[57] translating roughly to more than INR 3 trillion diverted from actual recipients, which include low-income households, into the pockets of intermediaries. The cost continues to exceed the 2011 G20 commitment, which aimed to reduce the cost to 5 percent.[58] As such, RBI has been pursuing projects such as that with the Monetary Authority of Singapore (MAS) to link UPI with PayNow for cross-border payments.[59]

d) Complementing UPI in international payments

While UPI can assist with monetary transactions between bank accounts or digital wallets, CBDCs can assist in transactions between private entities, businesses and individuals.[60] Moreover, CBDCs raise liabilities for the bank and reduce settlement risks. As noted by the RBI governor, CBDC is a currency system whereas UPI is a payment system.[61] Additionally, the transaction limit set by the National Payments Corporation of India (NPCI) of a maximum payment of up to INR 1 lakh per day have restricted UPI's usage for larger business-to-business and cross-border payments. Moreover, to expand the usage of UPI across jurisdictions, NPCI is required to enter multiple individual partnerships[62] with monetary authorities or private players based in other countries, which is time-consuming. Since July 2021, NPCI has expanded UPI usage to ten countries by allowing UPI platform to onboard non-resident accountholders or Indian citizens residing in these countries to make transactions.[63] r-CBDC arrangements could assist with advancing cross-border payments and complement the progress made by NPCI.

The Way Forward

A sound cross-border payment infrastructure is critical for international trade and economic activities. Yet, four key issues—high costs, limited access, low speed and opaque structures—continue to pose challenges. Technological innovations in fintech, cryptocurrencies and stablecoins have highlighted the need for the public sector to collaborate with private sector enterprises to invest in addressing these gaps. International payments have several interdependencies, so that enhancements of any kind to existing systems can only be achieved through collaboration on innovation and knowledge sharing, especially for newer models of cross-border payments such as CBDCs.

CBDCs are uniquely poised to enable the efficient transfer of payments while ensuring that central banks can monitor inflation and monetary policies. Moreover, CBDCs provide a 'clean slate' to reimagine financial systems and address the issues straining international economy and trade through programming choices based on efficiency, resilience, assuring co-existence and interoperability, financial inclusion and absence of harm. International institutions such as BIS, along with FSB, IMF and World Economic Forum (WEF) have emerged as key actors in the ongoing discussion on CBDCs. Nearly half of the projects within the BIS Innovation Hub focus on various aspects of CBDCs. Moreover, private sector enterprises are closely involved in producing and proposing solutions. Areas for private-public cooperation can range from consultations on CBDCs, sharing of expertise, joint piloting, and efforts to support merchant acceptance and ensure interoperability with private payment systems.[64]

At the least, all major central banks are aligned, in that CBDCs will co-exist with cash and bank deposits. Further, standardisation and international cooperation will remain vital as CBDCs are developed and piloted. The G7, under the German presidency[65] in 2022, also recognised developing interoperability standards for CBDCs as critical to avoid the misuse of CBDCs and ensure the relevance of central bank money and financial stability.

Since 2015, India has been working on strengthening its e-governance initiatives by infusing interoperability through the Interoperability Framework for e-Governance.[66] The framework identified three essential layers of interoperability—organisational, for process alignment between multiple organisations; semantic, to support information exchange between entities in a meaningful manner; and technical, to support data exchanges. Moreover, India's efficient implementation of UPI, while ensuring multi-stakeholder collaboration, also demonstrates its ability to steer the initiative in aligning G20

The Way Forward

economies on core principles to fulfil the promise of interoperability in CBDCs with technical support from international institutions like BIS, FSB, WEF, IMF and International Organisation for Standardisation.[67] Furthermore, user adoption and acceptance of CBDCs to facilitate cross-border payments should be plainsailing for India since the value proposition for consumers, regulators, and central banks is established.

> "CBDCs provide a clean slate to reimagine financial systems and address the issues straining international economy and trade."

Conclusion

It would be difficult to achieve a 'one-size-fits-all' approach for CBDCs, but a principle-based approach to ensure alignment on design principles on the development and use of CBDC must be built. Alignment of principles would be central to avoiding further fragmentation of the international payment infrastructure. In particular, countries can adopt a graded approach for low-value remittances and payments to test the viability of a principle-based approach. It is also essential to eliminate exchange rate risk and the cost of currency conversions. Under India's G20 presidency, research could be commissioned to BIS, IMF, and FSB, to assess the efficiency and efficacy of adopting a principles-based approach for interoperability while monitoring risks.

To be sure, ensuring interoperability is a continuous process that would depend on changes in legislation, national priorities, business processes and technologies. As such, ensuring interoperability will be a dynamic process—one that will have to be periodically updated and prioritised in future G20 presidencies. However, the groundwork should be steered by India as it attempts to answer some of these questions for the domestic use of rCBDC and wCBDC.

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Endnotes

1 ‘CBDC’ is a legal tender issued in digital form by the central bank. The key design choices to develop CBDCs are type, form, model, instrument design and degree of anonymity. They are of two types—wholesale CBDCs (wCBDCs), with limited utility for financial institutions, and retail CBDCs (rCBDCs), with expansive usage for the general public. See: RBI, *Concept Note on Central Bank Digital Currency,* (RBI, 2022), https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CONCEPTNOTEACB531172E0B4DFC9A6E506C2C24FFB6.PDF.

2 Raphael Auer, Holti Banka, Nana Yaa Boakye-Adjei, Ahmed Faragallah, Jon Frost, Harish Natarajan and Jermy Prenio, *Central bank digital currencies: a new tool in the financial inclusion toolkit?,* Basel, World Bank Group and BIS, 2022, *https://www.bis.org/fsi/publ/insights41.htm*

3 BIS, IMF and World Bank, *Central bank digital currencies for cross-border payments - Report to the G20, July 2021,* Basel, BIS, 2021, *https://www.bis.org/publ/othp38.pdf*

4 The value of cryptocurrencies is volatile and constantly fluctuating. Such fluctuations could adversely impact the financial stability of the economy. Concurrently, stablecoins have emerged with exchange value pegged to fiat currencies or assets in those currencies, but caution must be ensured as the assets backing stablecoins are not clearly outlined at the outset.

5 Darryl West, “Why Trust is Key to Money’s Digital Future,” HSBC, July 11, 2018, https://www.hsbc.com/insight/topics/why-trust-is-key-to-moneys-digital-future (accessed on September 25, 2022).

6 Trust is essential in money exchange—one has to trust that their money has value and that others will accept it. See: Isabel Schnabel and Hyun Song Shin, *BIS Working Papers No 698, Money and trust: lessons from the 1620s for money in the digital age*, Basel, BIS, 2018, *https://www.bis.org/publ/work698.htm*

7 “Luna-Terra Crash: A Brief History of Failed Algorithmic Stablecoins,” *The Indian Express,* May 26, 2022, https://indianexpress.com/article/technology/crypto/luna-terra-crash-a-brief-history-of-failed-algorithmic-stablecoins-7934293/

8 WEF, *Defining Interoperability, November 2021*, Cologny, WEF, 2021, https://www3.weforum.org/docs/WEF_Defining_Interoperability_2021.pdf

9 “Central Bank Digital Currency Tracker,” Atlantic Council, https://www.atlanticcouncil.org/cbdctracker/.

10 “Digital Bahamian Dollar,” Sand Dollar, https://www.sanddollar.bs/.

11 “China Begins Next Phase of CBDC Testing with e-CNY Payment for Public Transport,” *Financial Express*, August 24, 2022, https://www.financialexpress.com/blockchain/china-begins-next-phase-of-cbdc-testing-with-e-cny-payment-for-public-transport/2641960/.

12 BIS, Committee on Payments and Market Infrastructures, BIS Innovation Hub, IMF and World Bank, *Exploring multilateral platforms for cross-border payments, January 2023,* Basel, BIS, 2023, https://www.bis.org/cpmi/publ/d213.pdf

Endnotes

13 "Multiple CBDC (mCBDC) Bridge," BIS, https://www.bis.org/about/bisih/topics/cbdc/mcbdc_bridge.htm.

14 Hong Kong Monetary Authority, Bank of Thailand, PBOC, and Central Bank of the U.A.E. *Project mBridge: Connecting economies through CBDC, October 2022,* Basel, BIS, 2022, https://www.bis.org/publ/othp59.pdf

15 Saurav Anand, "G20 gets broad support on finance sector priorities," *LiveMint*, December 15, 2022, https://www.livemint.com/economy/g20-gets-broad-support-on-finance-sector-priorities-11671044754816.html.

16 Nirmala Sitharaman, "Budget 2022-2023" (speech, Delhi, February 1, 2022), Government of India, https://www.indiabudget.gov.in/doc/Budget2022_23/Budget_Speech.pdf.

17 Shaktikanta Das, "Fintech as a Force Multiplier" (speech, Mumbai, September 20, 2022), Global Fintech Festival, https://www.rbi.org.in/scripts/BS_SpeechesView.aspx?id=1327.

18 "Concept Note on Central Bank Digital Currency"

19 Bhaskar Dutta and Manojit Saha, "RBI's e-rupee pilot takes off; Day 1 bond trade deals hit Rs 275 Crore," *Business Standard*, November 1, 2022, https://wap-business--standard-com.cdn.ampproject.org/c/s/wap.business-standard.com/article-amp/finance/rbi-s-cbdc-pilot-for-bond-trade-takes-off-deals-worth-rs-275-cr-struck-122110101363_1.html; Token-and account-based are two forms of CBDCs. A token-based CBDC requires the bearer of the token to verify that ownership of the token is genuine and in an account-based system, the intermediary is required the verify identity of the account holder and maintain record of balances.

20 Ministry of Finance, Government of India, https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/dec/doc2022121139301.pdf.

21 Financial Stability Board is an international body, instituted in April 2009 after the G20 London Summit. It monitors and provides proposals about the global financial systems.

22 FSB, *Enhancing Cross-border Payments: Stage 1 Report to the G20, April 2020,* Basel, FSB, 2020, *https://www.fsb.org/wp-content/uploads/P090420-1.pdf*

23 BIS, *Enhancing cross-border payments: building blocks of a global roadmap: Stage 2 report to the G20, July 2020,* Basel, BIS, 2020, https://www.bis.org/cpmi/publ/d193.pdf

24 FSB, *Enhancing Cross-border Payments: Stage 3 roadmap, October 2020,* Basel, FSB, 2020, https://www.fsb.org/2020/10/enhancing-cross-border-payments-stage-3-roadmap/

25 Piero Cipollone, "The Italian G20 presidency and the cross-border payments agenda," (speech, Switzerland, March 19, 2021), BIS - Committee on Payments

and Market Infrastructures Conference, https://www.bancaditalia.it/pubblicazioni/interventi-direttorio/int-dir-2021/2021.03.19-Cipollone.pdf.

26 Jeremy Chan, "G20 Priorities: Sustainable Finance, Cross Border Payments," *The Global Treasurer,* June 18, 2021, https://www.theglobaltreasurer.com/2021/06/18/g20-priorities-sustainable-finance-cross-border-payments/.

27 FSB, *Targets for Addressing the Four Challenges of Cross-Border Payments: Final Report, October 2021,* Basel, FSB, 2021, http://www.g20.utoronto.ca/2021/FSB-Targets-for-cross-border-payments-roadmap.pdf

28 "Nexus Overview," BIS Innovation Hub, https://docs.bis.org/nexus/. Banca d'Italia, Government of Italy, https://www.bancaditalia.it/media/notizia/banca-d-italia-and-the-bank-for-international-settlements-take-part-in-the-nexus-experiment-to-improve-cross-border-payments/?com.dotmarketing.htmlpage.language=1&dotcache=refresh

29 Instant payment systems allow banks to process payments in seconds; about 60 countries have such a system in place.

30 FSB, *Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements: Final Report and High-Level Recommendations*, *October 2020*, Basel, FSB, 2020, https://www.fsb.org/2020/10/regulation-supervision-and-oversight-of-global-stablecoin-arrangements/

31 Bank of Indonesia, Government of Indonesia, https://www.bi.go.id/en/publikasi/ruang-media/news-release/Pages/sp_2332321.aspx .

32 G20 Chair's Summary, *Third G20 Finance Ministers and Central Bank Governors Meeting,* 2022, https://www.g20.org/content/dam/gtwenty/about_g20/previous_summit_documents/2022/G20 Chairs Summary 3rd FMCBG 15-16 July 2022.pdf

33 "G20 TechSprint", BIS, https://www.bis.org/about/bisih/topics/suptech_regtech/techsprint.htm . TechSprint is an annual hackathon organised within G20 for innovators, developers, etc since 2020.

34 BIS, Committee on Payments and Market Infrastructures, Innovation Hub, IMF, World Bank Group, *Options for access to and interoperability of CBDCs for cross-border payments, July 2022*, Basel, BIS, 2022, https://www.bis.org/publ/othp52.pdf.

35 Reserve Bank of Australia, Government of Australia, https://www.rba.gov.au/media-releases/2022/mr-22-23.html; Central Bank of Brazil, "Initial Steps Towards a Central Bank Digital Currency by the Central Bank of Brazil," in the *BIS Papers*, *no. 123*, *CBDCs in emerging market economies,* (BIS, 2022),https://www.bis.org/publ/bppdf/bispap123.pdf; Bank of Canada, Government of Canada, https://www.bankofcanada.ca/2020/02/contingency-planning-central-bank-digital-currency/; François Villeroy de Galhau, "Central Bank Digital Currency (CBDC) and bank intermediation in the digital age" (speech, Paris, July 12, 2022), 2022 Paris Europlace International Finance Forum, https://www.banque-france.fr/en/intervention/cbdc-and-bank-intermediation-digital-age; Riccardo De Bonis and Giuseppe Ferrero, *Technological progress and institutional*

adaptations: the case of the Central Bank Digital Currency (CBDC), Rome, Banca D'Italia, 2022, https://www.bancaditalia.it/pubblicazioni/qef/2022-0690/index.html?com.dotmarketing.htmlpage.language=1&dotcache=refresh&dotcache=refresh; Bank of Japan, Government of Japan, https://www.boj.or.jp/en/paym/digital/index.htm; June Park, *South Korea's Critical Moment in Digital Currency Policymaking: Between Regulating Cryptocurrencies and Launching a Central Bank Digital Currency (CBDC),* Washington DC, Korea Economic Institute, 2022, https://keia.org/publication/south-koreas-critical-moment-in-digital-currency-policymaking-between-regulating-cryptocurrencies-and-launching-a-central-bank-digital-currency-cbdc/; Habtamu Fuje, Saad Quayyum and Franck Ouattara, "More African Central Banks are Exploring Digital Currencies," IMF Blog, June 24, 2022, https://www.imf.org/en/Blogs/Articles/2022/06/23/blog-africa-cbdc (accessed on October 3, 2022); Central Bank of the Republic of Türkiye, Government of Türkiye, https://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Announcements/Press+Releases/2021/ANO2021-40; Bank of England, Government of England, https://www.bankofengland.co.uk/research/digital-currencies; Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/newsevents/pressreleases/other20220120a.htm; Christine Lagarde, "Digital Euro: a common European project" (speech, Brussels, November 7, 2022), High level conference: Towards a legislative framework enabling a digital euro for citizens and businesses, https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp221107~dcc0cd8ed9.en.html

36 Sarwat Jahan, Elena Loukoianova et al., *Towards Central Bank Digital Currencies in Asia and the Pacific: Results of a Regional Survey,* Washington DC, IMF, 2022, https://www.elibrary.imf.org/view/journals/063/2022/009/article-A001-en.xml; Anneke Kosse and Ilaria Mattei, *Gaining Momentum – Results of the 2021 BIS survey on central bank digital currencies,* Basel, BIS, 2022, https://www.bis.org/publ/bppdf/bispap125.pdf

37 Kristalina Georgieva, "Confronting Fragmentation: How to Modernize the International Payment System" (speech, Zurich, May 10, 2022), IMF-Swiss National Bank High-Level Conference, https://www.imf.org/en/News/Articles/2022/05/10/sp051022-md-concluding-remarks-at-the-snb-high-level-conference.

38 "Russia plans to use digital rouble in settlements with China, says lawmaker," *Reuters,* September 26, 2022, https://www.reuters.com/markets/currencies/russia-plans-use-digital-rouble-settlements-with-china-says-lawmaker-2022-09-26/.

39 Russell Hotten, "Ukraine Conflict: What is Swift and why is banning Russia so significant?," *BBC*, May 4, 2022, https://www.bbc.com/news/business-60521822.

40 Rajesh Bansal and Somya Singh, *China's Digital Yuan: An Alternative to the Dollar-Dominated Financial System,* New Delhi, Carnegie India, 2021, https://carnegieindia.org/2021/08/31/china-s-digital-yuan-alternative-to-dollar-dominated-financial-system-pub-85203.

41 Serkan Arslanalp, Barry Eichengreen, and Chima Simpson-Bell, "Dollar Dominance and the Rise of Nontraditional Reserve Currencies," IMF Blog, June 1, 2022, https://www.imf.org/en/Blogs/Articles/2022/06/01/blog-dollar-dominance-

and-the-rise-of-nontraditional-reserve-currencies (accessed September 10, 2022).

42 Serkan Arslanalp, Barry J..Eichengreen, and Chima Simpson-Bell, *The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies,* Washington DC, IMF, 2022, https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150.

43 Office of Science and Technology Policy, *Policy Objectives for a U.S. Central Bank Digital Currency,* 2022, https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-Policy-Objectives-US-CBDC-System.pdf.

44 Derryl D'Silva, Zuzana Filková, Frank Packer and Siddharth Tiwari, "The design of digital financial infrastructure: lessons from India," Basel, BIS, 2019, https://www.bis.org/publ/bppdf/bispap106.pdf.

45 Jeff Kearns and Ashlin Mathew, "India Embraces Mobile Money," IMF Blog, September 2022, https://www.imf.org/en/Publications/fandd/issues/2022/09/Digital-Journeys-India-embraces-mobile-money-Kearns-Mathew/ (accessed September 10, 2022).

46 Yan Carrière-Swallow, Vikram Haksar, and Manasa Patnam, "Stacking Up Financial Inclusion Gains in India," IMF Blog, July 2021, https://www.imf.org/external/pubs/ft/fandd/2021/07/india-stack-financial-access-and-digital-inclusion.htm (accessed September 10, 2022).

47 "Cryptos can 'seriously undermine' monetary system: RBI tells House Panel," *Business Standard,* May 16, 2022, https://www.business-standard.com/article/finance/cryptos-can-seriously-undermine-monetary-system-rbi-tells-house-panel-122051500499_1.html.

48 Countries with weak policy institutions facing high inflation are at a high risk of stablecoins in foreign currency replacing their local currencies. This new form of dollarisation could significantly undermine the country's abilities to monitor monetary policy and ensure economic growth. Dollarisation is a concern for India, as most cryptocurrencies and stablecoins are pegged to dollar as underlying assets. Tobias Adrian and Tommaso Mancini-Griffoli, "Digital Currencies: The Rise of Stablecoins," IMF Blog, September 19, 2019, https://www.imf.org/en/Blogs/Articles/2019/09/19/blog-digital-currencies-the-rise-of-stablecoins (accessed September 10, 2022).

49 Krishna Srinivasan, "Opening Remarks at Peer-Learning Series on Digital Money/Technology: Central Bank Digital Currency and the Case of China" (speech, July 7, 2022), IMF, https://www.imf.org/en/News/Articles/2022/07/07/sp070722-central-bank-digital-currency-and-the-case-of-china.

50 Krishna Srinivasan, "Opening Remarks at Peer-Learning Series on Digital Money/Technology: Central Bank Digital Currency and the Case of China" (speech, July 7, 2022), IMF, https://www.imf.org/en/News/Articles/2022/07/07/sp070722-central-bank-digital-currency-and-the-case-of-china.

Endnotes

51 Ministry of Commerce & Industry, Government of India, https://www.pib.gov.in/PressReleasePage.aspx?PRID=1874753.

52 Amiti Sen, "Rupee-rouble trade arrangement: Will it work?," *Businessline,* March 7, 2022, https://www.thehindubusinessline.com/blexplainer/bl-explainer-rupee-rouble-trade-arrangement-will-it-work/article65200627.ece.

53 Harsh Kumar, "Will RBI's CBDC Internationalize Rupee? Here's What Experts Say," *Outlook India,* November 4, 2022, https://www.outlookindia.com/business/can-rbi-s-cbdc-take-rupee-globally-here-s-what-experts-say-news-234764.

54 "Govt, RBI in Talks with Some South Asian Countries for Rupee Trade: Das," *The Indian Express*, January 7, 2023, https://indianexpress.com/article/cities/mumbai/govt-rbi-in-talks-with-some-south-asian-countries-for-rupee-trade-das-8366328/.

55 World Bank, *Migration and Development Brief 37: Remittances Brave Global Headwinds*, Washington DC: World Bank, 2022, https://www.knomad.org/publication/migration-and-development-brief-37.

56 G. Sampath, "Explained | The Sustained Growth in Remittances," *Business Line*, December 8, 2022, https://www.thehindu.com/business/explained-the-sustained-growth-in-remittances/article66238616.ece.

57 Kristalina Georgieva, "Confronting Fragmentation: How to Modernize the International Payment System" (speech, Zurich, May 10, 2022), IMF-Swiss National Bank High-Level Conference, https://www.imf.org/en/News/Articles/2022/05/10/sp051022-md-concluding-remarks-at-the-snb-high-level-conference.

58 Silvia Merler, "The Cost of Remittances," *Bruegel*, April 30, 2018, https://www.bruegel.org/blog-post/cost-remittances (accessed on October 5, 2022)

59 Reserve Bank of India, Government of India, https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=52223.

60 Basudha Das, "CBDC vs UPI: What Differences Did RBI Governor Shaktikanta Das Note," *Business Today*, December 7, 2022, https://www.businesstoday.in/latest/economy/story/cbdc-vs-upi-what-differences-did-rbi-governor-shaktikanta-das-note-about-erupee-355564-2022-12-07.

61 Shaktikanta Das, "Governor's Conversation with Business Today at the Banking and Economy Summit on January 13, 2023" (speech, Mumbai, January 16, 2023), Banking and Economy Summit, https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1348.

62 Vivek Belgavi, *The Evolving Landscape of Cross-border Payments,* New Delhi, PwC, 2021, https://www.pwc.in/assets/pdfs/consulting/financial-services/fintech/point-of-view/pov-downloads/the-evolving-landscape-of-cross-border-payments.pdf.

63 Naina Bhardwaj, "Which Countries Can Use India's UPI Platform? A Look at Increased Indian Digital Payment Access", India Briefing, January 12, 2023,

https://www.india-briefing.com/news/global-acceptance-of-indias-digital-payment-systems-europe-latest-to-join-26183.html/ (accessed on January 12, 2023)

64 WEF, *Regulatory Choices:The Role of the Public Sector and Public-Private Cooperation in the Era of Digital Currency Growth, November 2021,* Cologny, WEF, 2021, https://www3.weforum.org/docs/WEF_Role_of_Public_Sector_and_Public_Private_Cooperation_2021.pdf

65 John Beirne, Nicola Bilotta, Mei Lin Fung and Tamara Singh, *Central Bank Digital Currencies: Governance, Interoperability and Inclusive Growth,* Berlin, T7 Task Force Sustainable Economic Recovery, 2022, https://www.think7.org/wp-content/uploads/2022/03/Recovery_Central-Bank-Digital-Currencies-Governance-Interoperability-and-Inclusive-Growth_John-Beirne_Nicola-Bilotta_Mei-Lin-Fung_Tamara-Singh.pdf.

66 Ministry of Communications and Information Technology, *Interoperability Framework for e-Governance (IFEG),* 2015, http://egovstandards.gov.in/sites/default/files/2021-07/Interoperability%20Framework%20For%20e-Governance%20%28IFEG%29%20Ver.1.0.pdf.

67 International Organisation for Standardisation, https://committee.iso.org/sites/tc68/home/news/content-left-area/news-and-updates/central-bank-digital-currencies.html

Endnotes

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