Mind the Gap: Assessing the Market Implications of Retail Central Bank Digital Currencies

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Introduction

Central banks around the world have rapidly accelerated their exploration of central bank digital currencies (CBDCs), conducting in-depth economic analysis, technical proofs-of-concept, and even large-scale pilots to understand the role that a CBDC could play in achieving their economic and policy objectives. As part of this exploration, central banks are carefully considering the feasibility of retail CBDCs[63] as they continually strive to strengthen and grow their economies with greater innovation and efficiency. To do this, they will necessarily have to engage an ecosystem of participating banks, payment service providers, data service providers, payment networks, and a variety of technology resources. Collectively, it will be critical that there is active public-private collaboration to consider the impact that CBDCs may have on the future of payments and how best to safeguard the interests of consumers and businesses.

Exploring the promise of new technology and the potential efficiency gains that adoption could bring has been an essential part of the modernisation journey. Innovative new solutions have been the drivers for sustainable and inclusive economic growth that benefit everyone, everywhere. However, the success of innovative payment solutions has always been contingent on

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63. References to CBDCs in this paper are referring to retail CBDCs unless otherwise specified.

whether they fundamentally address any perceived gaps in the market that existing solutions and services do not already adequately serve. It also depends on whether consumers and businesses believe that new payment innovations are superior to the (digital) solutions already available.

Importantly in case of CBDCs, it will also be contingent on who is best placed to provide this innovation. Unlike commercial payment solutions offered today, retail CBDCs raise the more fundamental questions of whether central banks should be in the business of providing retail payments to customers and the broader implications this may have on competition. There are also problematic assumptions made in relation to retail CBDCs that relate to their need to mimic cash-like convenience, which has a direct impact on business models, distorting market dynamics and risking instability.

This paper challenges the motivations and the assumptions made by central banks on how retail CBDCs would be delivered under so-called "two-tier" intermediated models. Section 1 explores the motivations outlined by central banks, and questions whether retail CBDCs are intended to act as "monetary anchors" for stability or, whether they are instead being designed as central bank-led market solutions. Section 2 then discusses the notion that a retail CBDC would be delivered under a two-tier intermediated model, highlighting the vast gaps between how the roles of industry participants for retail CBDCs are envisaged and how the current intermediated financial system operates today. Section 3 then delves into the commercial model for delivering a retail CBDC, which for many central banks, is expected to be offered free of charge to customers just like their cash equivalents. The paper concludes with the principles that will be needed for CBDCs to successfully address user needs, and importantly how the market can help deliver and distribute CBDCs.

Central bank digital currencies: Monetary anchor or market solution?

Today, there are 134 countries & currency unions, representing 98 per cent of global GDP, exploring both wholesale and retail CBDCs.[64] Central banks' motivations for exploring CBDCs vary across jurisdictions. Key goals often

64. See the Atlantic Council's CBDC Tracker at https://www.atlanticcouncil.org/cbdctracker/

cited by central banks include creating a digital substitute for cash in an increasingly digital society, improving control over monetary policy, achieving geopolitical and strategic autonomy, enhancing resilience, increasing the speed of payments, reducing their cost, and facilitating financial inclusion. Above all, central banks want to ensure that central bank money remains an anchor of monetary and financial stability.[65]

Design choices for the successful rollout of any new product will always place the needs of end-users at the centre of solution development. Ultimately, CBDCs will only meet their broader policy and systemic objectives if users believe that their value improves on, and is superior to, existing market solutions and there is widespread adoption. To determine whether CBDCs ultimately meet their objectives will therefore require central banks to clearly articulate the economic or market problem that exists in today's payment system, how the CBDC addresses or solves this problem and what "success" looks like. This should be based on use cases that are informed by market assessments of current and future payment needs. This means that user segments are clearly identified, the value-added benefits of the CBDC are clearly understood by all parties in the payments ecosystem and that existing payment infrastructure and technical know-how are leveraged to help rollout and delivery.

However, as is the case for many CBDC initiatives around the world, the motivations expressed by central banks are predominantly focused on policy and systemic objectives, rather than being primarily driven by specific customer needs, requirements or benefits. Macroeconomic, financial policy and international considerations will likely fail to resonate with end-users who – particularly in highly advanced payments systems – already have fast, safe and efficient ways to make everyday payments. Paradoxically, if CBDCs are also overwhelmingly successful and achieve substantial adoption and usage, this may mean that they have displaced other types of payment instruments and deposit accounts, materializing the risks of disintermediation, deposit substitution and financial instability. In such a scenario, "success" may also mean that central bank money no longer acts as an anchor of monetary

65. There are numerous references made by central banks that CBDCs would reinforce central bank money as the anchor of the monetary system, as well as acting as an anchor of financial stability. For example, see speeches by Panetta (November 2021), Rehn (August 2022), Jordan (May 2024), Villeroy de Galhau (May 2024).

and financial stability, but rather becomes the cause of market disruption and instability.

Currently, the design choices being explored for many retail CBDC projects replicate payment features and functionalities already offered by the private sector. They are based on the delivery of a means to hold and fund retail payments in CBDC (e.g., digital wallets), the infrastructure needed to enable those CBDC payments (e.g., online, point of sale and offline capabilities) and finally, a scheme (e.g., like the ones operated by domestic and international card networks and digital public infrastructure). While the underlying value being transferred with a CBDC is a central bank liability rather than a commercial bank liability, this distinction is largely inconsequential for the average consumer. The form factors needed will also be indistinguishable from current retail payment products.

It will be critical therefore that the intended benefits of CBDCs over existing payment solutions in terms of their novel application be clearly articulated to users. To ensure its longer-term viability, central banks should also outline the incremental value that CBDCs create that exceed the significant costs associated with their development, delivery, and operation. Market participants will find it challenging to invest in new infrastructure unless there is a strong commercial business use case for doing so. Above all, CBDCs should avoid replicating market solutions in pursuit of domestic, geopolitical or macro-financial policy goals when highly advanced market solutions already exist. To do so could cause competitive distortions and inadvertently threaten the efficiencies that already exist in today's highly evolved payments systems. It remains to be seen whether it is the role of the central bank to be direct providers of digital retail payments.

Instead, central banks can ensure that central bank money remains a monetary anchor by "doing what only central banks can do"[66]. Central banks are important regulators of payment systems and they are there to ensure the smooth functioning of the financial system. Central banks are pivotal for providing the necessary regulatory framework to foster safe innovation and

66. In the House of Lords debate on the Economic Affairs Committee's Report, Lord King of Lothbury cautioned against expanding the Bank of England's responsibilities with a retail CBDC, noting that his motto for a central bank is: "only do what only you can do". See https://hansard.parliament.uk/lords/2023-02-02/debates/75D69175-C242-45B8-B5F8-393D171D9329/CentralBankDigitalCurrencies(EconomicAffairsCommitteeReport)

supporting market innovation, e.g., in the nascent form of commercial bank tokenised deposits, which could play an important role in driving new payment solutions for the future digital money landscape (Oliver Wyman and JP Morgan, 2022). Importantly, tokenised central bank reserves in the form of wholesale CBDCs, together with tokenised deposits, would maintain the strong two-tier monetary system and provide the necessary monetary anchor to ensure the "singleness of money" in an evolving digital payments age (BIS, 2023).

Delivering digital public money: the "two-tier" distribution model and interoperability

Central bank proposals for CBDCs recognise that digital innovation in payments is best served under a public-private partnership, which is critical to ensuring an open and competitive payment ecosystem. This approach is aligned with the existing allocation of public and private responsibilities within the financial system, and by extending a broader set of capabilities to the private sector, it would also provide a more robust platform for the development of value-added innovations. In the context therefore for CBDCs, a truly intermediated retail CBDC model could provide a secure, fast, and resilient technology environment that avoids the unnecessary expense of parallel infrastructure and ensures that compliance requirements remain primarily with industry. This approach also ensures that the central bank retains institutional governance over core monetary infrastructure, while relying on private sector competition to drive innovation, efficiency, and a diversity of offerings.

Importantly, in a well-designed two-tier approach, intermediaries would continue to play a critical role in creating trust, meeting the needs of users, and enabling the successful adoption of a CBDC. As is the case for the current ecosystem, a two-tier model is based on the central bank issuing the currency and relying on market intermediaries to determine the modalities of distribution. These intermediaries then compete to attract customers through better and more efficient products and services and develop these based on market dynamics and commercial considerations. Therefore, if the CBDC intends to promote choice and competition in a two-tier model, the modalities of distribution and acceptance should be left to intermediaries and merchants

and be based on market and commercial considerations rather than regulatory solutions.

Intermediated models for distributing retail CBDCs nevertheless appear to fall short of such an arrangement in emerging retail CBDC proposals. Two-tier models, such as the ones that are being considered in Europe, require intermediaries to fulfil the role as distribution agents on behalf of the central bank, which are required to carry out these functions based on legislative mandates. This means that intermediaries do not necessarily exercise agency over whether they distribute and how they can offer CBDC products based on commercial considerations. Similarly, they will not be given the freedom to choose the means through which they would be able to distribute retail CBDCs. While interoperability is cited as a key objective for CBDCs, emerging proposals seem to indicate that they would need to be distributed using only central bank run-payment rails, operating separately under their own scheme.[67]

A CBDC has the potential to serve as a foundation for innovative and value-added financial products and services developed by competitors within the private sector if there is a genuine desire for a CBDC to act as a digital version of central bank money. Open and competitive payment ecosystems are critical to enabling access, adoption, and use of payment options that serve a wide range of user needs, preferences, and financial inclusion. Moreover, ongoing payments innovation and the efficiency of national and international payment flows all depend on CBDCs being interoperable with existing payment schemes to ensure seamless consumer adoption, avoid siloed ecosystems and monetary fragmentation. For a CBDC, interoperability with other stores of value (e.g., commercial bank deposits, e-money etc.) would play an important role in strengthening the domestic payment ecosystem and reinforcing the role of central bank money at its core. Sustained collaboration between the central bank and private sector participants will be critical to delivering this interoperability.

A CBDC must be usable for a variety of in-person and digital transactions to provide value as a payment mechanism. However, enabling acceptance points is a prominent challenge to driving mass adoption of any new payment

67. See the Digital euro package https://finance.ec.europa.eu/publications/digital-euro-package_en

solution. Consumers will be more likely to adopt a CBDC if it can be used on existing acceptance infrastructure and is supported by known and identifiable payment form factors (physical and remote) linked to the user's existing devices and accounts. Requiring CBDCs to employ new payment rails would on the other hand create artificial barriers between the CBDC and commercial bank money, causing unnecessary friction between payment means and overcomplicate access and distribution. This would generate confusion and ultimately go against the ambition of an integrated payment market.

Proposals that seek to mandate acceptance and impose regulatory models of distribution call into question a true two-tier model, which could result in unintended market fragmentation with implications for competition, stability, security, and innovation within the broader payment system. CBDCs will be more competitive, innovative, resilient, and better equipped to meet various policy objectives, as well as the evolving demands of the consumer, where the project works to actively encourage the participation of all payments market stakeholders. A 'two-tier' model that is based on market-led innovation is best placed to provide a secure, fast, and resilient technology environment that avoids the unnecessary expense of parallel infrastructure and ensures resilience.

Ensuring a sustainable and competitive payment ecosystem

Many central banks envisage CBDCs to operate functionally as a version of "digital cash". This logic assumes that cash has characteristics that can be easily replicated by a digital equivalent. At a minimum, this means that users should have access to CBDCs at no additional cost, that it should be available at any time – with or without internet connectivity –, be accepted as a means to purchase goods and services and to be able to exchange it peer to peer. Importantly, it should also be available to everyone, to ensure inclusion and equity.

However, unlike the relatively simple infrastructure that is needed to print and distribute cash, building new wallet solutions, integrating with new payment infrastructure, developing offline solutions, and enabling the various links in the payment value chain are all costly and complex activities.

Sustainable digital payment ecosystems are dependent on a delicate balancing of incentives between those stakeholders who bear the costs of enabling payments and those who benefit from payment services. For a central bank's CBDC infrastructure to sustain a vibrant and competitive ecosystem of payments innovators, incentives will need to exist that allow payment service providers to generate an appropriate return on their investments.

Compensation models therefore need to consider the potentially significant new implementation and running costs that merchants and intermediaries will need to incur to offer CBDC services. These include, but not limited to, adapting front and backend systems, customer onboarding processes, operational and other security upgrades. Many central banks are also discussing the possibility that CBDCs could run on entirely new technology, such as distributed ledger technology (DLT). Others are also considering the need to adopt state-of-the-art privacy enhancing technologies, which are promising but have yet to be run and operated at scale. Accordingly, compensation models also need to factor in the feasibility for industry to adopt such new technologies. New teams of expertise would be needed with detailed knowledge of this new technology over the lifecycle of their development, leading to potentially high operational costs and excessive complexity for some payment intermediaries.

Thought should also be given to how well existing regulation is equipped to address downstream applications of a CBDC via new technologies. Regulatory guidance in this area would be essential to help participants apply existing rules to innovative payment services involving a CBDC according to whatever technological form it is designed to function. For example, if parallel DLT infrastructure is required to support a CBDC that will function offline - consideration will need to be given to any additional regulatory requirements applicable to the use of this technology.

Another key area of risk that is often given limited consideration is the enormous complexity and costs of mitigating fraud and cyber-risk across a retail CBDC ecosystem. The cost to the global economy of cybercrime is expected to grow by 15 percent per year over the next five years, reaching $10.5 trillion USD annually by 2025.[8] A retail CBDC will inevitably face sophisticated fraud and cyberattacks from both private and state-sponsored actors. CBDC users must trust that the system will be accessible and

operational where and when it is needed; that their funds, accounts, identity, and other data are secure; and that they will be protected in the event of fraud.

Importantly, unlike commercial means of payment, end users will hold the CBDC to a much higher standard given that it will be compared to its closest equivalent – the physical banknote. Users will also assume that as it is issued and backed by the central bank (often cited as the key benefit of a CBDC) it would be more secure than commercial alternatives. Should the CBDC therefore suffer from any vulnerability due to weak end-points, the underlying credibility of the CBDC and implicitly the central bank may be impacted as a result.

The premise of CBDC innovation and scalability is built on the ability of intermediaries to offer consumers new digital services to enhance the convenience and utility of their CBDC accounts. If the cost to intermediaries and service providers for the provision of the CBDC is greater than a comparable digital means of payment, industry will not be incentivized to provide high-quality CBDC services, which may affect the success of the CBDC. The same competitive conditions should therefore be applied to CBDC and comparable payment services. Likewise, if central banks propose mandatory acceptance, intermediaries and merchants must not be constrained by regulated levels of compensation or, the payment rails through which they distribute and accept a CBDC. Instead, they should be given the choice to determine the most appropriate and cost-effective way to recuperate the costs being imposed as well as deliver commercially viable solutions to their customers.

From a business perspective, while merchants are applauding CBDC initiatives in the hope of reduced costs, CBDCs risk disintermediating banks in the distribution of money and constraining existing private payment solutions. The risk of endangering competition and innovation due to excessive central bank's intervention is high. This is why it is crucial to strike the right balance between public intervention and private sector initiative in regulating CBDCs. Above all, a CBDC should be financially self-sustaining, i.e., operate without any public subsidies on investment or operational costs. Otherwise, there is a risk that the CBDC will have the unintended consequences of reducing the diversity, competitiveness, and resilience in the payment landscape.

Conclusion: principles for an open, competitive, and innovative payment market using CBDCs

It is essential that governments and central banks adopt specific measures to ensure an open, competitive, and innovative payment market using CBDCs. These actions should focus on creating a level-playing field for all payment solutions, encouraging private sector participation, and fostering technological advancements. By doing so, central banks can support a dynamic financial ecosystem where multiple payment methods coexist and compete, ultimately benefiting consumers through increased choice and improved services. By focusing on ensuring a well-functioning market, central banks can drive improvements in efficiency, innovation, and service quality to the benefit of consumers and thereby remaining an anchor for monetary and financial stability.

While the motivations driving central banks to explore CBDCs differ, there remains a common set of principles that all CBDC initiatives should support. These tenets will best serve the needs of consumers, preserve the health of the financial system, and ensure that consumers continue to have access to a robust and innovative array of payment options (McWaters, 2024).

- **Promote Mutual Trust and a Global Approach to Payments.** Encouraging a global regulatory framework that supports multilateral initiatives ensures that sovereignty and geopolitical goals do not create barriers to competition and investment. Strengthening the relationship between jurisdictions is essential to prevent race-to-the-bottom scenarios where national champions are favored over foreign competition. This collaborative approach will uphold the commitment of advanced economies to an open free market economy. CBDCs should be designed to integrate with existing payment solutions, promoting unity rather than exclusion in the global payments landscape.
- **Foster Genuine Public-Private Cooperation.** Establishing open and ongoing dialogue between regulators and private market participants ensures that CBDC projects are aligned with market needs and have the best chance of success. Clearly delineating the roles and responsibilities of the central bank and private entities ensures that the central bank does

not encroach on market activities that are more efficiently managed by private parties. Private sector innovation can be encouraged by avoiding overly prescriptive, top-down regulation that may stifle creativity and adaptability. This collaborative approach will leverage the strengths of both public and private sectors, fostering a dynamic and innovative payment ecosystem.

- **Ensure a Level-Playing Field.** Implementing regulations that allow CBDCs and private payment solutions to compete on fair terms will ensure a level playing field. This includes avoiding undue advantages for CBDCs from both a business and regulatory perspective. To achieve this the following guidelines should be followed:
- **Mandatory acceptance.** If CBDCs are granted mandatory acceptance by merchants, they would have a significant advantage over private payment solutions, which take years to scale up merchant acceptance. Careful consideration is needed to balance this.
- **Market-Driven Compensation and Pricing.** The compensation and pricing for CBDCs should be in line with the market (ie based on market analysis, established market impact assessments and pricing regulation) to ensure fairness. Above all, public subsidies should be avoided. The cornerstone of an open market economy is based on vibrant competition which drives better consumer outcomes.
- **Regulatory Impartiality.** As the issuer and regulator, the central bank should not exploit its privileged position to disadvantage competing payment methods. Regulatory measures must be impartial.
- **Consistent Regulatory Standards.** Apply the principle of "same activity, same risk, same regulation" to ensure that CBDCs are subject to the same regulatory requirements (e.g., oversight and AML checks) as private payment solutions.
- **Create Interoperability:** Designing CBDCs to integrate seamlessly with existing national and international payment systems is critical. This means relying on widely used standards and technologies to minimize costs and implementation burdens for intermediaries, service providers and merchants. Focusing on interoperability, rather than building a new infrastructure, would increase resilience and promote innovation by allowing the industry to build new services based on existing ones, thus

reducing time-to-market. Ensuring compatibility with a wide array of solutions, including traditional banking, stablecoins, and potentially other CBDCs, is essential.

By taking these positive actions, central banks, governments and legislators can create an environment where both CBDCs and private payment solutions thrive, driving competition, innovation, and improved financial services for all users. Partnerships between the public and private sectors will be key to successfully ushering in transformational change, drive adoption, and create the best end-user experience. Ongoing payments innovation, expanded financial inclusion, and the efficiency of national and international payment flows all depend on vibrant private sector competition. If a CBDC is the right path for a central bank to reach its objectives, the private sector can help central banks bring their vision to life and realize their goals.

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