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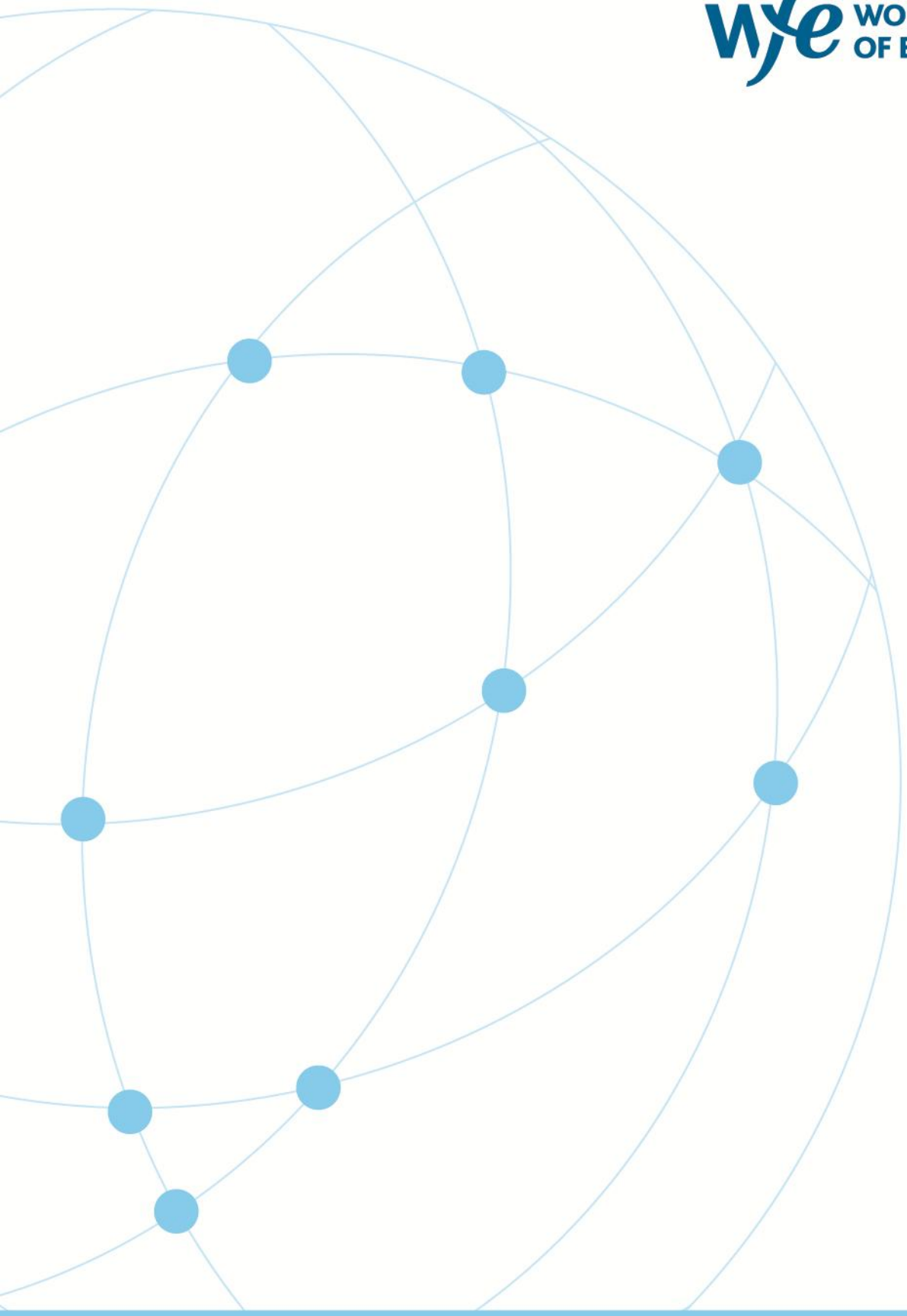

The Value of Central Bank Digital Currencies to Public Markets

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Summary

Central Bank Digital Currencies (CBDCs) are emerging as a significant development in global finance, with 94% of central banks exploring CBDCs, and the World Economic Forum projecting 24 CBDCs to be operational by 2030.

This paper finds that CBDCs are a crucial enabler of a tokenised financial ecosystem. Nevertheless, their adoption and success depend on coordinated industry efforts and a balanced evaluation of benefits versus costs.

As the global industry association for exchanges and clearing houses (CCPs), we represent the providers of over 250 market infrastructures that see more than $140tr in trading pass through them annually (at end-2024). By contributing our insights, we aim to ensure that the development and implementation of CBDCs align with the operational realities, efficiency needs, and stability requirements of public markets. This makes our perspective vital in shaping the future of CBDCs in a way that supports the broader financial ecosystem.

Key insights:

- **CBDCs' Benefits**: CBDCs introduce a new form of central bank money, a useful step towards creating tokenised asset ecosystems, improving audit trails, and streamlining cross-border payments by bypassing traditional banking networks. CBDCs could offer efficiency gains in settlement, be useful as collateral, and provide a complementary or alternative payment rail that enhances resilience.
- **Challenges and Risks**: CBDC transaction speeds currently fall short of requirements for today's low latency trading environment. Their value during low-activity hours raises cost-benefit questions. While CBDCs could reduce counterparty risk, existing systems like central clearing already address this with added efficiencies. Legal and regulatory updates would also be essential, particularly for cross-border use.
- **Implementation Complexities**: Interoperability with existing systems, costly integration with legacy infrastructure and regulatory hurdles are all issues. Cross-border coordination would also be crucial for CBDC success.
- **Conclusion**: CBDCs are necessary to enable digital ledger technology adoption in traditional financial markets. However, achieving widespread public market transformation may be limited due to high costs, technological demands, and extensive regulatory adaptation required. Its success is not guaranteed simply by its existence.

Central bank digital currencies (CBDCs) have become a topic of global interest. According to the Bank for International Settlements (BIS) 2023 BIS survey on CBDCs and crypto, 94% of the 86 central banks surveyed are exploring a CBDC.[1] The World Economic Forum expects 24 CBDCs to be live by 2030.[2]

CBDCs could represent a significant shift in how payments and settlements occur within financial markets. As a representative of exchanges and clearing houses, the WFE wants to actively contribute to the debate on CBDCs and set out our view and ensure that the development and implementation of CBDCs are aligned with the broader needs of capital markets.

This paper examines the role and potential of **Central Bank Digital Currencies (CBDCs)** in the context of public markets, beginning with an explanation of what CBDCs are and how they fit within the existing framework of central bank money and commercial bank money. The paper then explores **benefits of CBDCs to public markets**, such as enhancing the role of central bank money in tokenised ecosystems, supporting secure and traceable transactions, improving cross-border payments by bypassing traditional correspondent banking, and potentially lowering settlement costs. CBDCs are also examined for their use as high-quality collateral, providing real-time liquidity and reduced counterparty risk. Additionally, CBDCs could improve market resilience by offering an alternative payment rail that operates independently of traditional banking systems.

Despite these benefits, the paper identifies significant **challenges and risks** to CBDC implementation. These include interoperability issues, integration costs with legacy systems, regulatory alignment needs, and potential for market disruptions. Furthermore, risks like digital bank runs, cross-border regulatory hurdles, and high compliance costs for smaller firms could affect financial stability. The conclusion posits that while CBDCs may drive adoption of distributed ledger technology and improve efficiency, their impact on public markets may be limited, given the substantial implementation challenges and costs involved

1. What is a Central Bank Digital Currency?

A CBDC is "a digital payment instrument, denominated in the national unit of account, that is a direct liability of the central bank."[3]

Today, central banks issue two types of money and support a third. They issue physical cash, which is accessible and peer-to-peer, and electronic central bank deposits (reserves), available only to certain financial institutions. The third type, private money, primarily consists of commercial bank deposits accessible to the public. Central banks support commercial bank money by (i) enabling interbank settlements in central bank money, (ii) allowing cash withdrawals to convert deposits, and (iii) providing emergency liquidity as a lender of last resort. Unlike commercial deposits, cash and reserves are central bank liabilities. A CBDC would introduce a new type of central bank money.

A **wholesale CBDC** is designed exclusively for financial institutions, enabling them to settle large interbank transactions and manage liquidity directly with the central bank. The most often

[1] https://www.bis.org/publ/bppdf/bispap147.htm
[2] https://www3.weforum.org/docs/WEF_Modernizing_Financial_Markets_with_Wholesale_Central_Bank_Digital_Currency_2024.pdf
[3] https://www.bis.org/publ/othp33.pdf

mentioned use cases for wholesale CBDCs are settlement of interbank payments; delivery versus payment; foreign exchange transactions; and/or payment-versus-payment transactions.

In contrast, a **retail CBDC** is intended for public use, functioning like digital cash that can be held by individuals and businesses for everyday transactions. At the time of writing, it is more likely that we will see wholesale CBDCs being launched within the next five years than retail. Potential use cases include person-to-person payments; government payments; online payments; and, point-of-sale purchases.

2. Benefits of CBDCs to Public Markets

A CBDC is valuable **to enable a tokenised ecosystem**. A CBDC could enforce the role of central bank money as a settlement asset in a tokenised ecosystem. Principle 9 of the CPMI-IOSCO Principles for Financial Market Infrastructure (PFMI) says:

> *"Principle 9: Money settlements*
>
> *An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money."*[4]

In a paper the WFE published in June 2024, the WFE demonstrated that there were several challenges associated with implementing tokenisation of real-world assets on proper financial markets.[5] A CBDC could be used to avoid using commercial bank money and to avoid the credit and liquidity risks that would arise from their use. A tokenised central bank currency could help to facilitate the move towards tokenisation at scale.

CBDCs could also be **used as collateral**. Compared to commercial bank deposits, which carry some risk of bank failure, or government bonds, which require time to convert to cash, CBDCs provide a direct claim on central bank money that can be settled in real time. This could make CBDCs an especially reliable and accessible form of collateral, reducing counterparty risk and enhancing liquidity across financial transactions.

CBDCs, like other assets developed on distributed-ledger technology (DLT), can provide a **secure, traceable audit trail** for all transactions. This could make it easier for brokers and exchanges to detect suspicious activities, ensure compliance and meet regulatory requirements. This could lower costs across the market and help ensure market integrity. However, this is dependent upon skilled individuals or complex computer programming that can read and identify issues on the ledger itself. This is particularly valuable on a retail CBDC where exchanges permit individuals to have securities accounts.

A CBDC could help **facilitate cross-border payments** by enabling direct, instant, and transparent transactions between central banks or financial institutions across different countries, bypassing the traditional correspondent banking network. Compared to strictly domestic transfers, cross-border payments are by nature more complicated. They include additional players, time zones, jurisdictions, and regulations—in some situations, a lot more. They are therefore frequently costly, slow, and

[4] https://www.bis.org/cpmi/publ/d101a.pdf
[5] https://www.world-exchanges.org/our-work/articles/demystifying-tokenisation-embracing-future

opaque. Enhancing cross-border payments may be possible with an interoperable CBDC, or one that is generally compatible with others. This could help to facilitate international activities on exchanges by reducing the cost, both in time and money, of doing business across borders.

CBDCs could improve Delivery versus Payment (DvP) by enabling **instant, simultaneous settlement of assets and payments**. Real-Time Gross Settlement (RTGS) systems, which central banks around the world have instituted over the past decades, usually settle transactions within a few seconds they can take up to 30 minutes. CBDCs may not make a huge leap in settlement time but it would be guaranteed to be instant, and a marginal improvement is still an efficiency gain that could have significant effect if it accumulates across the financial system.

A CBDC could also **complement existing RTGS systems**. Most RTGS systems are fully open during the daytime, offer an early/late service with limited capabilities and are shut down weekends and weekdays sometime around midnight to allow for maintenance breaks. For example, the EU's TARGET2 system is open for the processing of payments every working day from 07:00 to 18:00 CET. A CBDC could complement the existing system by being available outside of these hours. Of course, a central bank could choose instead to simply extend the hours of its more traditional system.

Finally, CBDCs could enhance resilience by providing a **direct, stable payment rail** that operates alongside traditional systems, thereby reducing reliance on commercial bank money and interbank networks for trade settlements. If there is a disruption in the interbank payment systems or commercial banking liquidity, a CBDC can act as an independent alternative for settling transactions directly and instantly, ensuring continuity in trade and settlement activities.

3. Challenges And Risks of CBDCs

Many exchanges around the world focus a large amount of effort on minimising the time it takes to execute a trade to microseconds. However, DLT is currently not fast enough to be able to cope with these microsecond transactions. This is equally true of CBDCs. They do not settle quickly enough for them to be used as settlement assets in many trades.

As with tokenisation of real-world assets, some will argue that CBDCs are necessary or even desirable because they can operate 24/7. There is certainly value in an always available currency as we explain above but there is also a cost-benefit question that needs to be answered. What is the benefit of a CBDC if it is only used in the 12 hours where market activity is minimal? Could we simply extend current RTGS hours instead? These questions should be considered. This ties into the broader cost-benefit question that markets need to consider before moving to tokenisation more broadly and the large sunk costs that come with fundamentally changing the financial system which we cover more below in section 4.

Others have argued that with instant settlement using CBDC, the risk of a counterparty defaulting before a trade is settled would be greatly minimized. However, central clearing also achieves this and much more besides. Central clearing consolidates and nets out trades, reducing the number of individual transactions that need to be settled. This reduces the capital and collateral requirements for participants, enhancing liquidity and making the trading process more cost-effective. Netting also decreases the operational load of processing and settling trades, leading to faster, more efficient transactions. So, it is not clear that this is a benefit.

Legal concerns persist for many jurisdictions. Legislation and law would need to be updated to include the possibility of CBDCs as settlement assets and to ensure settlement finality. For cross-border settlements in particular, the lack of regulatory harmonization between different countries' CBDCs could create bottlenecks or legal disputes, leading to delays and added costs for market participants. Additionally, regulatory oversight might become more complex when trading across jurisdictions with differing legal frameworks for CBDC use.

Small and medium-sized firms, or new entrants into the market, might find it difficult to comply with the infrastructure and technological demands required to integrate with a CBDC system. This could create a **higher barrier to entry**, concentrating market power among larger firms.

4. Difficulties Implementing CBDCs on Public Markets

Implementing CBDCs in public markets poses several challenges. **Interoperability** is the first challenge. CBDCs would need to work seamlessly alongside existing forms of money domestically, and with other CBDCs and financial systems internationally. If not, CBDCs could cause operational issues that may undermine market integrity.

Similarly, **integration with legacy systems** is another hurdle which could cause operational risk. Adapting existing trading, clearing, and settlement infrastructures for CBDC use would require considerable investment and time. This adaptation process may disrupt current operations due to the complexity and extensive technical upgrades needed.

Without widespread use, there is little value to firms and exchanges to update their technology stacks to incorporate CBDCs. And, without firms and exchanges updating their technology stacks, there will not be widespread use. So, it would seem that coordinated action by industry is needed to undertake a transition. During this adjustment phase, large-scale shifts in collateral and liquidity management from traditional to CBDC-based systems might trigger volatility, as institutions recalibrate their operations and liquidity practices.

Regulators would also need to adapt to CBDCs and ensure that proper **regulatory frameworks** are in place to handle the instant nature of transactions and associated risks. This could be mitigated by enhanced cross-border cooperation but that could not be guaranteed.

5. Conclusion

CBDCs could be a necessary component of a tokenised ecosystem within the financial services industry. They could also vastly improve efficiency, particularly of cross-border transactions and could complement existing systems and improve resilience.

Legal challenges continue to exist in many jurisdictions, but these are relatively easy to solve by amending legislation. The lack of speed from current DLT is a much more intractable problem. Given the large sunk costs in updating legacy systems and inventing new ones to handle new technologies there is a cost benefit question that markets need to answer before moving to this tokenised ecosystem.

Rather than assuming a CBDC will automatically attract users once implemented, a more realistic perspective is that its presence is necessary to encourage adoption, though its success is not guaranteed simply by its existence.

Background

Established in 1961, the WFE is the global industry association for exchanges and clearing houses. Headquartered in London, it represents the providers of over 250 pieces of market infrastructure, including standalone CCPs that are not part of exchange groups. Of our members, 36% are in Asia Pacific, 43% in EMEA and 21% in the Americas. The WFE's 87 member CCPs and clearing services collectively ensure that risk takers post some $1.3 trillion (equivalent) of resources to back their positions, in the form of initial margin and default fund requirements. The exchanges covered by WFE data are home to over 55,000 listed companies, and the market capitalization of these entities is over $111tr; around $124tr in trading annually passes through WFE members (at end-2023).

The WFE is the definitive source for exchange-traded statistics and publishes over 350 market data indicators. Its free statistics database stretches back more than 40 years and provides information and insight into developments on global exchanges. The WFE works with standard-setters, policy makers, regulators and government organisations around the world to support and promote the development of fair, transparent, stable and efficient markets. The WFE shares regulatory authorities' goals of ensuring the safety and soundness of the global financial system.

With extensive experience of developing and enforcing high standards of conduct, the WFE and its members support an orderly, secure, fair and transparent environment for investors; for companies that raise capital; and for all who deal with financial risk. We seek outcomes that maximise the common good, consumer confidence and economic growth. And we engage with policy makers and regulators in an open, collaborative way, reflecting the central, public role that exchanges and CCPs play in a globally integrated financial system.

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