Navigating Multiplicity: Stakeholder Dynamics in CBDC Ecosystem Formation

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As more countries embark on research and pilot projects for their central bank digital currencies (CBDCs), and with several countries having already implemented them, understanding the intricate dynamics between key stakeholders is increasingly important.

According to a 2023 survey by the Bank for International Settlements, 94 percent of surveyed central banks were considering the adoption of a CBDC. In addition to central banks, an increasing number of technology providers, commercial banks, and other private sector organizations are becoming more deeply involved in CBDC initiatives. While discussions and studies on CBDC have typically focused on the technical aspects of CBDC, the interplay between these stakeholders is equally, if not more, important for the success of a CBDC, which is impossible without close collaboration and coordination.

How can this coordination process be initiated and sustained over time? What are the roles of these various stakeholders in this ecosystem formation process, and how could they benefit from being part of it? These are some of the questions that the ongoing research of Oxford University's Future of Finance and Technology Initiative aims to answer. The research analyzes CBDC initiatives in different countries with an ecosystem perspective, focusing on the dynamics between key ecosystem stakeholders, such as central banks, technology providers, and commercial banks.

There is no universal CBDC ecosystem formation formula

Our research findings indicate that there is no universal way of forming a CBDC ecosystem as there exist several areas of divergence, which are described below. These divergent emergence paths are driven largely by the fact that a CBDC ecosystem comprises various stakeholders with different interests and roles, which are summarized in Figure 1. It is worth noting that, given their different scopes, a retail CBDC ecosystem involves a larger number of stakeholders and tends to encompass more complex stakeholder dynamics compared to a wholesale CBDC ecosystem.

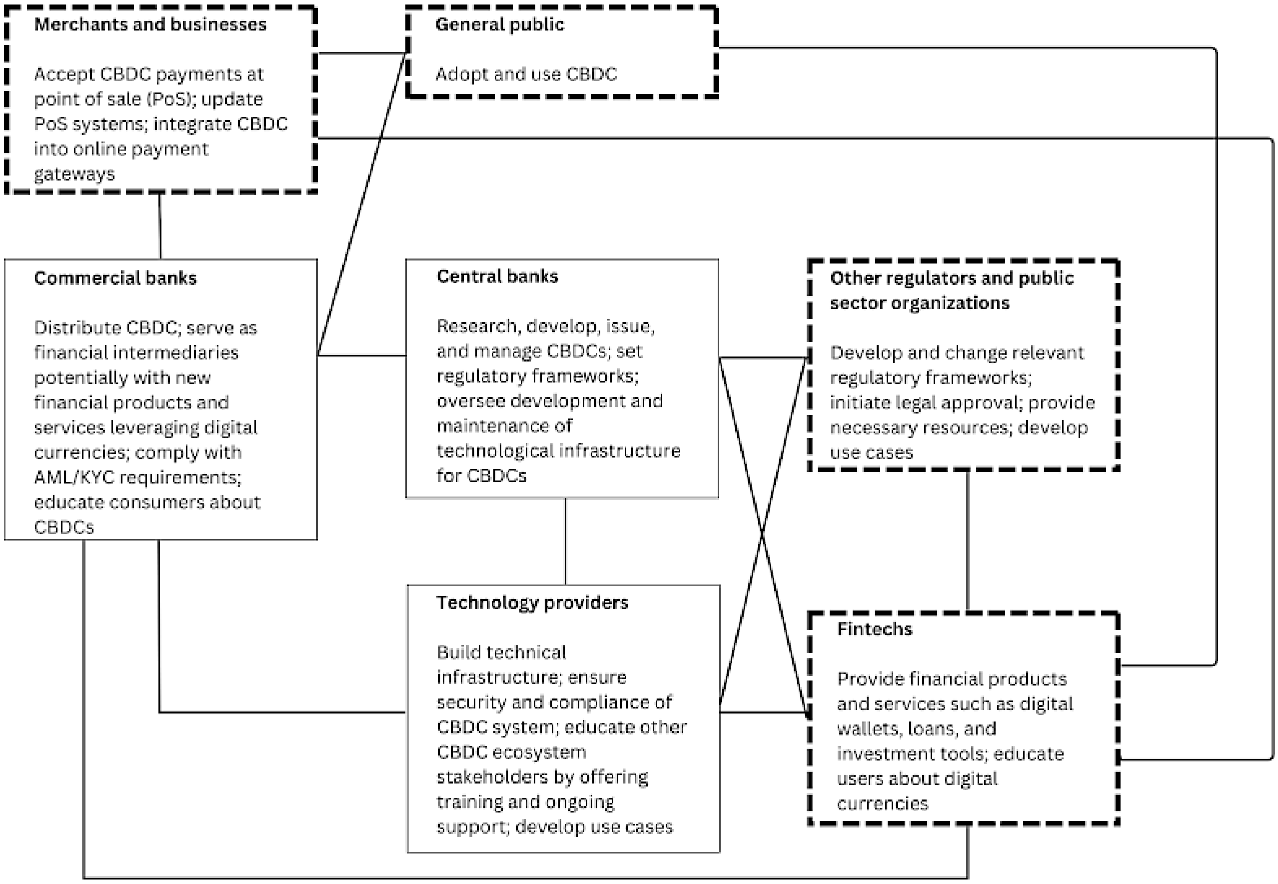

Figure 1. Key stakeholders in a CBDC ecosystem

Note: Stakeholders indicated by solid line boxes are part of the wholesale CBDC ecosystem. Stakeholders indicated by dotted line boxes are part of the retail CBDC ecosystem, which includes stakeholders from the wholesale CBDC ecosystem.

Motivations and Priorities: Countries pursue CBDC for different reasons. While some countries aim to address critical paint points with their CBDCs, others are more interested in forward-looking applications that a CBDC could enable. For instance, one of the key motivations for the Bahamas' Sand Dollar was to improve financial inclusion by reducing service delivery costs as the country is an archipelago of nearly 700 islands, while India's Digital Rupee was launched to increase payment efficiency and curb black money. With the Digital Yuan (e-CNY), China aims to not only enhance the government's ability to oversee financial transactions but also bolster its global influence by positioning the digital yuan as a global digital currency.

Due to varying motivations and economic structures, countries also have different priorities for their CBDC implementations. For example, some countries are primarily interested in retail CBDCs that could enhance financial inclusion by providing a secure and accessible digital payment method for everyone. This is particularly relevant in countries where large segments of the population remain unbanked or underbanked, such as Jamaica and the Bahamas. On the other hand, some countries focus on wholesale CBDCs to streamline interbank transactions and improve the efficiency and security of their financial markets. For instance, the Bank of Canada and the Swiss National Bank have explored wholesale CBDCs through pilot projects, Project Jasper and Project Helvetia, respectively.

Maturity of local financial system: The level of maturity of the existing local financial sector also impacts a country's stance towards CBDC. For instance, if the existing financial system is already highly efficient, we find that countries tend to take a cautious approach to CBDC as they need to weigh benefits and risks stemming from redundancy. This tends to be the case mostly with developed economies. On the other hand, when the existing financial system is weak with clear pain points, countries tend to take a more aggressive stance driven by the urgent need to tackle the issues. Some other considerations include whether the domestic banking sector is dominated by a small/large number of financial institutions, the size of the economy, and the level of technological infrastructure available to support a digital currency.

Strategic approaches to CBDC ecosystem formation

Given the above areas of divergence, emerging findings from our research show that countries take varied strategic approaches to CBDC ecosystem formation, some of which are summarized below.

Centralized vs. participatory approach: Centralized versus participatory approaches to creating and orchestrating a CBDC ecosystem each come with distinct characteristics and implications for central banks and ecosystem participants. In countries with a centralized approach, central banks play a leading role in setting standards, infrastructure, and regulations. In many cases, a key figure in the central bank, such as the governor, initiates the country's CBDC agenda with specific use cases in mind. In other cases, central banks become interested in CBDC through their routine exploratory research on emerging global trends. In either case, central banks lead the design and implementation of their CBDCs. The centralized approach can be beneficial for countries that prioritize efficient decision-making and regulatory consistency. However, it risks facing resistance from ecosystem stakeholders due to its exclusive nature. For example, fearing that a CBDC could lead to bank disintermediation, commercial banks may resist cooperating with the central bank's CBDC implementation efforts. This resistance could result in lower adoption rates of the CBDC, undermining its overall effectiveness.

A participatory approach, on the other hand, relies more on consultation and collaboration with stakeholders, such as financial institutions, technology providers, and international organizations. Although central banks adopting this approach still play a crucial role as orchestrators, they actively involve key stakeholders, from public and private sectors, in their research and pilots. They also partner with private sector entities such as technology providers to leverage their expertise and seek guidance from international communities. The participatory approach can lead to smoother transitions and help policymakers tailor their CBDC offering to the specific needs of the country. However, when stakeholders' interests are not aligned, coordination challenges may complicate the integration and collaboration process, requiring significant resources from central banks. Unlike the centralized approach, where risks stem from perceived threats, the participatory approach's risk lies in managing the high level of diversity in expectations and interests, which can slow down decision-making and implementation.

To minimize disruptions while tapping into the full potential of their CBDC, central banks considering a CBDC should strategically weigh these approaches as balancing control with collaboration will be crucial.

Phased engagement of stakeholders: Our ongoing data analysis has also revealed specific phases or timelines of entry into the retail CBDC ecosystem for both public and private sector stakeholders. Universal observation across the geographies shows that central banks are cautious about simultaneously engaging all key stakeholders in the formation of the ecosystem, avoiding the risk of managing diverse interests too early in the process.

In most countries in our study, the central bank teams responsible for the research and implementation of CBDCs, through constant dialogue, decide which organizations should be involved and in what order. In many cases, they first involve other teams within the central banks to allow smooth approval and development of CBDC projects within the central banks' organizational structure. The next group of stakeholders usually includes technology companies that provide core technology platforms and technical support. Central banks often do not have extensive experience in digital currency infrastructure, which makes technology providers critical process enablers and educators of current trends in digital money. Central banks generally develop a comprehensive selection process for technology partners and look for those with an understanding of specific features that may be needed in their local setting.

The critical difference we observed between different countries is regarding which organizations join the CBDC project after technology partners. In some cases, where central banks focus on working closely on use cases related to the private sector and CBDC's distribution channels, commercial banks and smaller fintech players become active contributors to CBDC development. In other cases where public sector use cases are a priority, other public organizations such as the Ministry of Finance, Ministry of Economic Development, organizations responsible for cyber security, and other related entities start to be involved early on.

These observed phases of key stakeholder entry in the ecosystem formation process have shown that the timing of entry depends, among other factors, on the nature of CBDC use cases, technological features, and characteristics of the local financial system. The question remains whether different phases of key stakeholders' entry into the ecosystem might speed up CBDC adoption.

Conclusion

Our proposed ecosystem perspective goes beyond the discussions around CBDC's technological challenges, emphasizing the crucial role of stakeholder dynamics in its implementation. This perspective reveals that the formation and orchestration of CBDC ecosystems are a multifaceted process that involves diverse stakeholders with unique motivations, roles, and influences. For central banks, the orchestration of the CBDC ecosystem requires strategically balancing control with collaboration with stakeholders.

The fact that there exist complex dynamics between stakeholders even from the onset of an ecosystem implies that the direction of ecosystem development could be significantly shaped by their strategic actions. In addition, our ongoing research at the Oxford Future of Finance and Technology Initiative reveals that ecosystem emergence patterns may be influenced by multistakeholder interactions on issues like sovereignty risks, interoperability with existing systems, monetary policy, and privacy. Our future work in this space will uncover the intricate process of navigating this multiplicity in the formation of CBDC ecosystems.