US Daily: A Status Report on Central Bank Digital Currencies Around the World (Mericle/Nicolae)

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- Fed officials are still in the early stages of researching a potential central bank digital currency (CBDC), but other central banks are further along in the process. We provide a status report on CBDCs around the world, focusing on the reasons that foreign central banks are considering a CBDC, their design choices, and their approaches to managing the risks that a CBDC could pose.
- Central banks cite several reasons for considering a CBDC. Emerging economy central banks emphasize increasing financial inclusion and payments efficiency. Advanced economy central banks, including the Fed, instead emphasize increasing the robustness of the payments system, though most consider it an open question whether a CBDC would accomplish this. Many central banks also appear concerned about potential competition from cryptocurrencies or stablecoins.
- Early CBDCs take a range of forms, but many share common features. Central banks have tended to choose or are exploring designs that feature both tokens and accounts, are intermediated by commercial banks, use distributed ledger technology or both that and centralized clearing, do not pay interest, and permit at least small-scale offline transactions.
- Central banks have been cautious to avoid two key risks that CBDCs could pose. To avoid disintermediating banks by depriving them of their deposit base, central banks have imposed caps on balances, paid no interest on CBDC, or considered imposing a penalty interest rate on holdings above some threshold. To avoid facilitating illicit activity, central banks have mostly decided against fully anonymous accounts or capped anonymous transactions, and have tasked commercial bank intermediaries with monitoring customers and transactions.

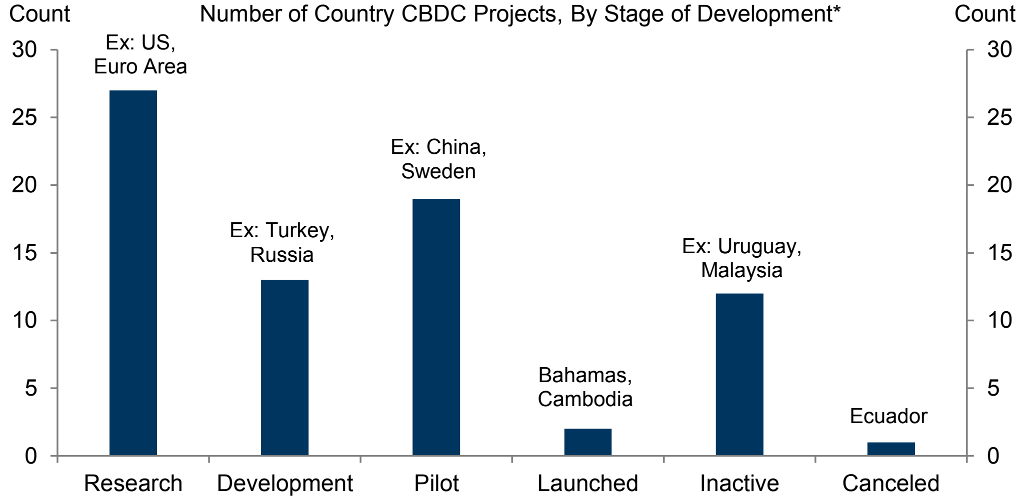
A Status Report on Central Bank Digital Currencies Around the World

We recently discussed the possibility of introducing a central bank digital currency (CBDC) in the US and the potential consequences for the financial system and for monetary and fiscal policy. We took a skeptical view of the case for a CBDC, arguing that many of the alleged benefits could be attained in more traditional ways or would require a more radical form of CBDC than policymakers are willing to adopt.

Fed officials are still in the early stages of researching a potential CBDC and have offered few clues so far about what a potential US CBDC might look like. But some other central banks are further along in the process. Because central bankers are likely to share common concerns about CBDCs, the early plans and experiences of other countries might be instructive for the US. In today's note, we provide a status report on CBDCs around the world. We focus on the reasons that other central banks are considering a CBDC, their design choices, and their approaches to managing the risks that a CBDC could pose.

We focus on retail CBDCs intended for public use rather than wholesale CBDCs intended for interbank payments. In a survey conducted by the Bank of International Settlements, most central banks reported that they are at least researching a potential CBDC. Exhibit 1 shows that 19 countries already have pilot projects and two have launched CBDCs for public use. The first was the Bahamas, which introduced the Sand Dollar last year. Several countries have concluded that a CBDC is not worth pursuing and canceled their projects. Canada concluded that "there is currently no compelling case to issue a CBDC," but decided to develop one as a contingency plan for emergencies.

Exhibit 1: Many Countries Have Active CBDC Pilot Projects and a Couple Have Launched CBDCs for Public Use



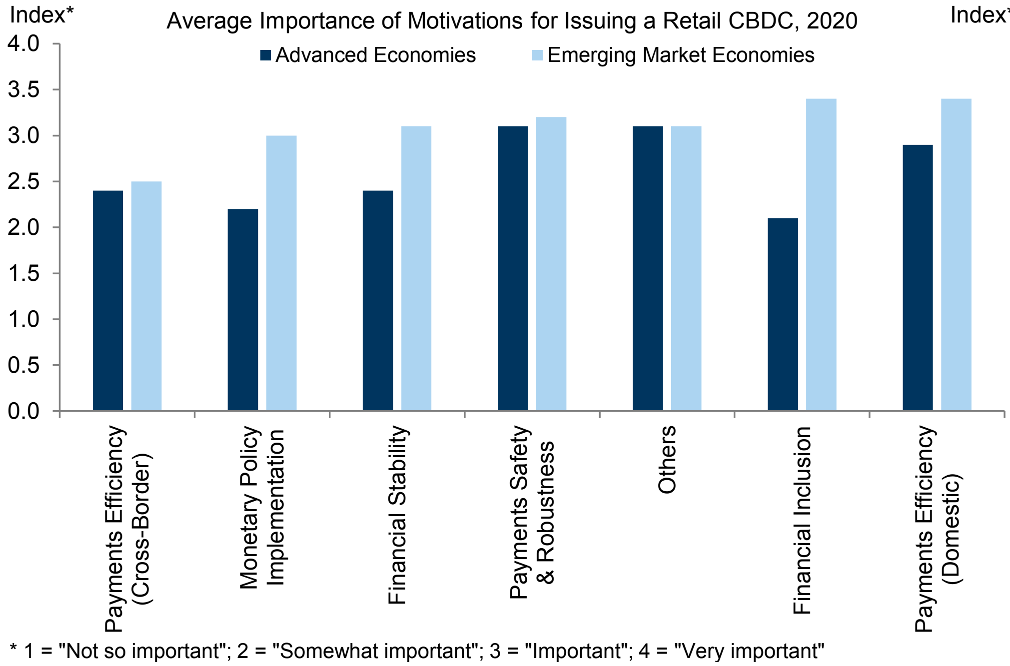
* Research = Established working groups to explore the use cases, impact, and feasibility of CBDC. Development = Initiated technical build and early testing in controlled environments. Pilot = Initiated small-scale testing of CBDC in a real environment with limited number of participants. Launched = Issued CBDC for widespread retail and/or wholesale use. Inactive = Previously announced research or testing of a CBDC, but with no new developments for several years. Canceled = Canceled a previously launched CBDC.

Source: Bank for International Settlements, Goldman Sachs Global Investment Research

Exhibit 2 shows that countries cite a range of motivations for considering a CBDC. Emerging economy central banks put the greatest emphasis on increasing financial inclusion and payments efficiency. This is particularly the case in countries where significant parts of the population do not have access to a local bank, or where rapidly growing app-based payment providers might otherwise establish monopoly control over the payments systems. Advanced economy central banks—including the Fed—have instead put the greatest emphasis on increasing the safety and robustness of the payments system, though most still consider it an open question whether a CBDC would accomplish this.

As research into CBDCs has accelerated sharply around the world over the last couple of years, it has become clear that many central bankers are also motivated by concern that private cryptocurrencies or stablecoins or even foreign CBDCs could displace use of the national currency, which could create financial stability risks or weaken the impact of monetary policy.

Exhibit 2: Emerging Economies Hope CBDCs Can Increase Financial Inclusion and Payments Efficiency, While Advanced Economies Are Most Focused on the Safety and Robustness of the Payments System



Source: Bank for International Settlements, Goldman Sachs Global Investment Research

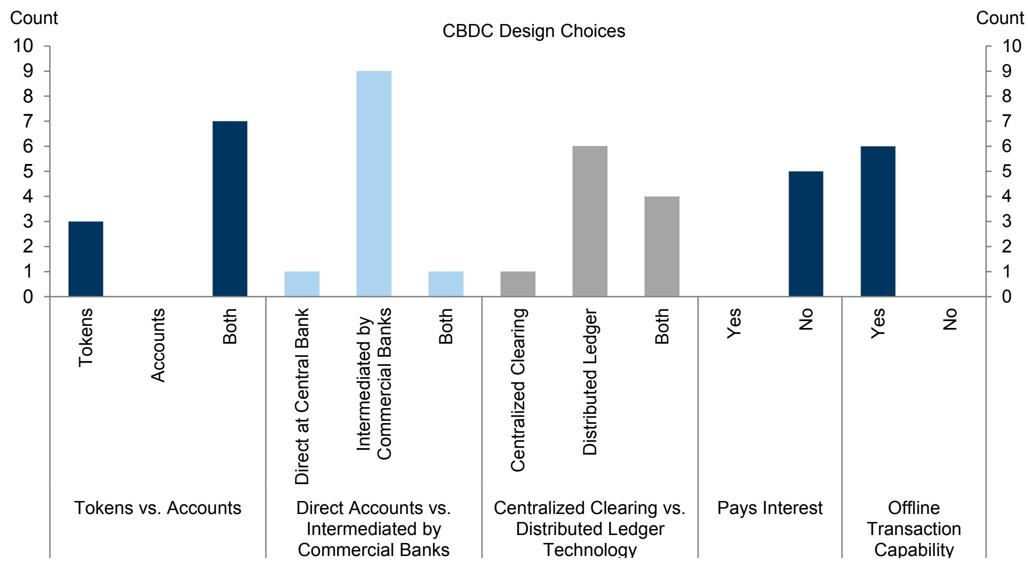
In our earlier report on central bank digital currencies, we described a number of design options for the key features of a CBDC. Exhibit 3 shows which options central banks have chosen or are leaning toward, in the case of those still in the research and development phase. For some features, information is only available for a handful of countries. Countries have mostly taken similar approaches; for example, no country intends for a CBDC to fully replace cash. We see several trends:

- *Tokens vs. accounts*. So far countries have either introduced token-based CBDCs or approaches with both tokens and accounts. In practice the distinction is sometimes blurry—the Swedish pilot, for example, is token-based, but offers users the option to have trusted banks store their tokens and conduct their exchanges in order to provide security against accidental loss of their tokens. This appears account-based, but the accounts transact tokens via a distributed ledger.
- *Direct vs. intermediated accounts*. Most countries have chosen approaches intermediated by commercial banks rather than offering the public direct accounts at the central bank.
- *Clearing mechanism*. More central banks are considering using a distributed ledger technology than traditional centralized clearing. However, all central banks using a distributed ledger are using a permissioned version that allows them to choose who can participate in the ledger rather than a permissionless approach open to the public like Bitcoin.
- *Payment of interest*. Several central banks have decided that their CBDC will not pay interest. Some are exploring tiered interest schemes that would pay a normal

interest rate on a modest amount of CBDC and a lower rate on additional CBDC, in order to discourage large deposits.

- *Offline transactions*. Many CBDCs permit at least some offline transactions.

Exhibit 3: Central Banks Have Tended to Choose CBDC Designs That Feature Both Tokens and Accounts, Are Intermediated by Commercial Banks, Do Not Pay Interest, and Allow for Offline Transactions



Source: Bank for International Settlements, Goldman Sachs Global Investment Research

A CBDC could pose two key risks if not designed thoughtfully: disintermediating banks and facilitating illicit activity. Exhibit 4 shows how central banks are designing their CBDCs to minimize these risks.

The first risk is disintermediating banks by depriving them of their current deposit base if customers prefer to hold CBDC, a central bank liability. To address this, central banks have designed their CBDCs to not pay interest or are considering setting a penalty rate on holdings above a certain threshold. Some central banks have also imposed caps on total balances or allowed commercial bank intermediaries to limit the degree to which customers can exchange existing deposits for CBDC.

The second risk is that a CBDC could make it easier to conduct criminal activity by permitting anonymous transactions unburdened by large volumes of physical cash. To address this, central banks have mostly decided against fully anonymous accounts or have capped the size of anonymous transactions. Governments have varying degrees of insight into transactions and have generally put the burden of monitoring CBDC customers and transactions on commercial bank intermediaries.

Exhibit 4: Central Banks Are Designing Their CBDCs to Minimize the Risks of Disintermediating Banks and Facilitating Illicit Activity

Approaches Central Banks Have Taken to Managing the Risks Posed by CBDCs
Risk #1: Disintermediating banks by absorbing customer deposits.
- No country currently plans to adopt a CBDC that pays interest.
- The ECB is considering imposing balance limits or setting tiered interest rates that would pay less than the rate on safe assets on holdings beyond some threshold.
- Sweden is considering imposing balance caps on wallets and potentially charging negative interest rates on CBDC.
- In China digital wallets have balance caps and transaction limits.
- In the Eastern Caribbean, financial institutions can limit the amount of deposits that can be exchanged for CBDC.
Risk #2: Facilitating illicit activity via anonymous transactions that do not require large volumes of cash.
- A number of countries have determined that financial regulatory laws prohibit fully anonymous CBDC accounts.
- Most countries require ID verification for access to digital wallets, with some exceptions for those subject to strict balance caps and transaction limits.
- Countries generally require commercial bank intermediaries who provide access to CBDC to the public to follow Anti-Money Laundering and Know-Your-Customer laws and to report large or suspicous transactions.
- The ECB is considering granting financial intelligence units access to user identities on individual transactions in special cases when criminal activity is suspected.

Source: Goldman Sachs Global Investment Research

The Fed is likely still years away from making a final decision on a CBDC. In his April press conference, Fed Chair Powell voiced skepticism about how much a CBDC would really add in the US, especially once the Fed introduces the FedNow service, which will provide immediate 24/7 interbank settlement to support instant payments and access to funds. Fed officials will likely want to wait until that service is in operation to assess whether a CBDC would provide additional benefits that are worth the potential risks.

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Disclosure Appendix

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