

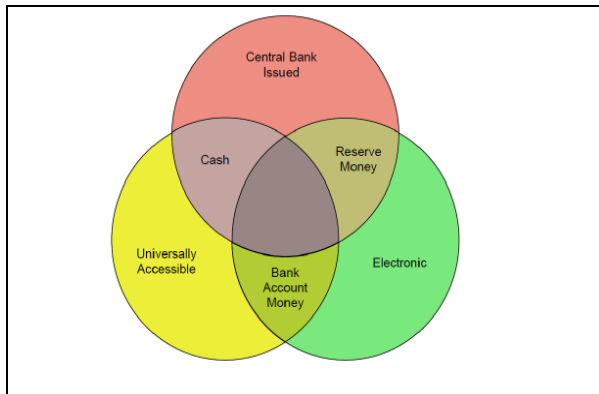
March 22, 2021

## The Geopolitics of Central Bank Digital Currencies (CBDC): Part II

In Part I, we discussed the metaphysics of money. This week, we will examine the current structure of money and the potentially complicated impact of CBDC.

### The Current Structure

Here is a Venn diagram of the current structure of money in most developed markets.



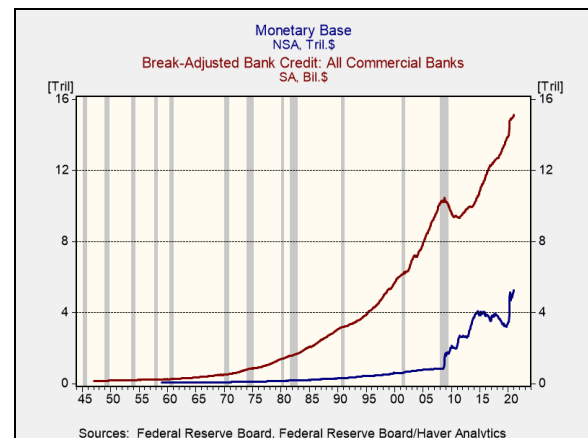
(Source: [Designing New Money: The Policy Trilemma of CBDC](#), Bjerg)

First, there are two forms of money that are electronic only—*reserve money* and *bank account money*. *Reserve money* is part of the monetary base and it is money that banks “hold” at the central bank. Only banks can access reserve money, or, put another way, only banks have direct access to the balance sheet of the central bank.

*Bank account money* is money held in household or firm bank accounts. It is mostly created by banks through the lending process. The central bank issues two forms

of money—*cash*, which is an anonymous bearer instrument, and *reserve money*. Finally, cash and bank account money are held by anyone, therefore they are universally accessible.

The form of money most widely available, by far, is bank account money. Currency represents about 11% of non-currency M2. Another way of looking at bank account money is bank credit relative to the money base (reserves + cash).



Currently, the monetary base is about 34.7% of total bank credit, but prior to the Great Financial Crisis this percentage was around 8%. The expansion of monetary stimulus has far exceeded the ability of the banking system to find places to lend. In other words, the Federal Reserve has increased reserves, but the banking system hasn't found outlets to lend. But, in general, the bulk of what we consider to be “money” is really credit money.

In a sense, in the modern financial system, governments have outsourced money creation to banks narrowly, and the financial

system more broadly through the “shadow” banking system. However, for this to work, the public must believe that credit money is equivalent to cash. This means that at least some portion of credit money is redeemable as cash on demand. Of course, banks and other financial entities can create a “hierarchy” of money based on credit risk and immediate access. To bolster faith in immediate demand credit money, governments have created a web of regulations (e.g., capital requirements, reserve requirements, examinations, stress tests), primarily on banks. In addition, deposit insurance is widely used in developed economy banking systems. Deposit insurance relieves depositors from the responsibility of determining a bank’s soundness. But, in the final analysis, the most potent support for the equivalence of cash and credit money is that banks have access to the central bank and its ability to create reserves.

To a great extent, the financial system, and money, rest on faith. The goal of financial regulators is to reduce the risk that depositors lose faith in credit money and demand cash, commonly known as a bank run. The regulators also must reduce the need of banks to demand reserves from the central bank in response to a bank run; otherwise, an “open tap” of central bank reserves would create moral hazard.

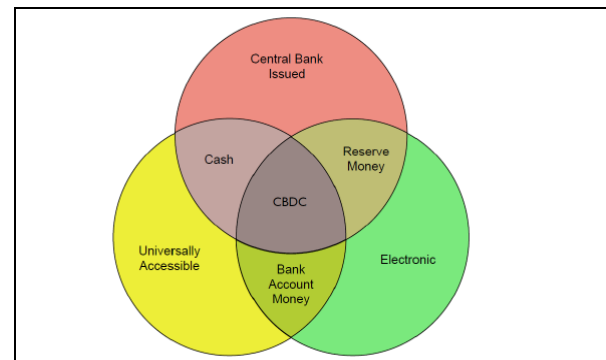
Before we move on to discussing the potential impact of CBDC, there is one more item to discuss. When money and banking are taught, banks are usually framed as mere intermediaries between depositors and borrowers. As we noted in Part I, the usual origin narrative harkens back to the goldsmith example. Goldsmiths would hold gold for safekeeping; at some point, an enterprising goldsmith realized that most of the time the gold sat idle in his vault.

Lending out other people’s gold for profit worked because it was unusual for all the “depositors” to redeem their gold simultaneously. Thus, in this narrative, the gold (deposits) leads to loans. It gives the impression that lending can only occur once deposits are made; in fact, that is the textbook description of how banking works.

However, that is not how it actually works. In a concentrated and linked banking system, a loan to one party creates a corresponding deposit. If a household borrows to buy a car, the loan to the buyer becomes a deposit received from the dealer. [Banks loan first and find the reserves later.](#) So, if the lack of deposits doesn’t limit lending, what does? Essentially, loan quality and capital requirements.

### The Structure and Disruption of Central Bank Digital Currencies

Using the earlier Venn diagram, see below for where CBDC resides.



(Source: [Designing New Money: The Policy Trilemma of CBDC](#), Bjerg)

In comparison to the earlier diagram, CBDC inhabits the zone of overlap. In other words, it is simultaneously electronic, universally acceptable, and central bank issued. Given this power, the structure of CBDC becomes critically important.

The following decisions will be required by central banks and their regulators in determining the structure of CBDC.

***Decision #1: Central clearing or distributed ledger?***

Currently, the financial system works by centralized clearing. Mostly banks, this means that a single party monitors the buys and sells, credit and debt. This structure gives great power to the clearing agent. Private digital currencies, such as bitcoin, use a distributed ledger that deploys a “miner” who solves a puzzle. Once solved, the miner establishes valid transactions on a “blockchain” that is both public and pseudo-anonymous. The miner is rewarded with a certain number of bitcoins for this proof of work.<sup>1</sup> The numbered accounts are visible to the public but not obviously knowable without the account numbers. In a sense, bitcoin and similar currencies are attempting to get the best of both worlds. The problem of centralization is avoided, and yet, transactions are essentially anonymous. However, there is a downside; [transaction costs are high](#), currently around \$11.66 per transaction. [Credit cards can execute 65,000 transactions per second, while blockchain is only 10 per second](#). Cracking the puzzles (crypto) to maintain the blockchain is a massive consumer of electricity. [Currently, it is estimated that mining transactions globally consumes the annual energy consumption of Argentina](#).

Given these issues, it is much more likely that CBDC will use central clearing. However, the risk of moving in this direction raises privacy fears. In developed democracies, we would expect privacy protections to be put in place, but that may not be the case in authoritarian regimes.

***Decision #2: Token or account?***

CBDC could be issued as a bearer token, held in a digital wallet. That would avoid

the privacy issues but restrict other features that the central banks would probably like to implement, as we will note in later decisions. There was [some movement in Congress](#) to create accounts at the Federal Reserve which would provide banking services to the unbanked. Under a proposed bill, commercial banks would be required to service digital dollar pass-through accounts; in addition, the postal service would also be a venue for such accounts. Although tokens and digital wallets could accomplish similar outcomes, [having an account would allow the government to more easily move funds to households and businesses during crises](#).

***Decision #3: Interest bearing or not (and beyond)?***

Cash is a bearer instrument that does not pay interest. Central banks may want the ability to pay interest on CBDC. Paying interest would require an account for tax-reporting purposes (further reducing the likelihood of a digital token system). Paying interest may just be part of the features of a programmable currency. [It is feasible that CBDC could be indexed to inflation](#), meaning that currency would no longer lose value to rising price levels. If policymakers wanted to give a short-term boost to the economy, they could issue CBDC with an expiration date, which would encourage it to be spent. Or, the central bank could apply a negative interest rate; depositors who want to avoid the negative interest rate could opt for physical cash (if it continues to exist), a foreign CBDC (if it is allowed), or spend the currency. But, the latter action would simply transfer the problem to someone else.

***Decision #4: Keep non-digital currency in existence?***

Once CBDC is issued, should governments continue to issue paper currency and coins? In some nations, such as Sweden, currency usage has declined to the [point where only](#)

<sup>1</sup> The design of bitcoin reduces the reward for mining over time to encourage efficiency.

[1% of GDP is circulating as cash](#). However, moving to only CBDC is risky if the currency requires electricity to operate. In the case of power failure, it would become nearly impossible to conduct transactions. At the same time, there is an important benefit to eliminating cash. Handling cash is expensive, costing an [estimated 0.5% of GDP](#). Additionally, because cash is a bearer instrument, it is often used in organized crime. Thus, there is an incentive to reduce the use of cash.

***Decision #5: Will firms and households get direct access to central bank digital money?***

Banks already have access to central bank digital money, otherwise known as bank reserves. The rest of the financial system, or households and firms, generally do not.<sup>2</sup> CBDC would open up this possibility, especially if the result of the first decision discussed above is to create accounts for digital currencies.

There are benefits to creating direct access. For those unbanked in developed economies, these accounts would provide access to the financial system that the private sector refuses to provide. But there is a potential hazard as well. One of the problems in a bank run is that depositors, suddenly aware that credit money may not be equivalent to commodity or state money, demand liquidity from banks. However, “going to cash” is impractical for a business. [A stack of \\$50 million in \\$100 bills would require a pallet measuring 3’6” x 2’8” x 2’6”](#). In a panic, allowing unlimited access

<sup>2</sup> Although it should be noted that in the 2008 Great Financial Crisis, investment banks were given bank licenses retroactively to give them direct access to central bank liquidity. During the financial panic in March 2020, the Federal Reserve created backstop facilities for various forms of financial assets, which provided liquidity for the non-bank financial system.

to CBDC accounts could facilitate a bank run as it would require no physical space.

Coupling the account and direct access to paying interest or indexing could have serious repercussions for the banking system. The developed world universally uses fractional reserve banking. Banks are able to create money almost out of nothing; all that is required is a worthy borrower. But if CBDC provided a deposit alternative that was deemed superior to a bank deposit (and it looks like it would be), commercial banks would be in a position similar to the textbook account, or, perhaps even more disruptive, a financial entity that lends only from equity.<sup>3</sup>

***Decision #6: Will foreign entities have access to domestic CBDC?***

Currencies are traded across borders. The bulk of exchanges occur with credit money in the form of derivatives (currency swaps and forwards) and in actual exchange translations. At the central bank level, currency swap lines have been established although they are far from universal. In addition, large banks are multinational entities and often conduct banking operations in foreign nations. As such, these

<sup>3</sup> This sort of system was proposed during the Great Depression by a group of University of Chicago economists. Known as the “[Chicago Plan](#),” the system would have created deposit banks which would have accepted deposits that were backed by Treasury bonds and notes and investment trusts, which lent to businesses and households. The deposits would clearly be safe, and the investment trusts could not loan more than the firm’s equity. It was designed to create a financial system that would protect depositors from risk. Such a system would (a) reduce leverage, and (b) avoid the moral hazard of deposit insurance. The Roosevelt administration opted to maintain the established system, with a hard division between investment and commercial banks and with strict regulations.

foreign banks are usually creating credit money in the domestic economy.

During the Great Financial Crisis, because of the dollar's reserve currency status, the world was struggling to access dollars. The Federal Reserve and the central banks of other major nations created swap lines to ensure there would be adequate supply. We do note this action by the U.S. central bank was not without controversy. Congress and regulators were concerned that the U.S. was protecting foreign banks that had made bad loans and argued this was the responsibility of the various foreign central banks where the commercial banks were located.

Although much of foreign exchange is digital, efficiency only comes with scale. At the large transaction level, moving money across borders is fairly seamless. But, at smaller amounts (\$5 million or less), transaction spreads widen and corresponding bank relationships are often involved, raising costs even further. The expense of transferring money abroad for low-paid expat workers is a clear burden. Allowing households or small businesses to hold CBDC accounts issued by foreign banks would make forex transactions seamless.

At the same time, granting these accounts to foreigners opens up numerous issues. First, it may limit the ability of a central bank to conduct monetary policy. For example, if a central bank implemented negative interest rates, households and businesses may be tempted to move their liquidity into a foreign CBDC account to avoid the punitive interest rate. Second, it could undermine America's ability to implement financial sanctions. Since 9/11, the U.S. Treasury has found that denying foreigners access to the U.S. financial system is an effective sanctions tool. Coupled with denying access

to the SWIFT network, financial sanctions on Iran, for example, crippled its economy and encouraged Tehran to enter negotiations over its nuclear weapons program.

Under CBDC, foreign entities could conduct financial transactions in their own currencies and avoid the sanctions net. For example, a Chinese firm could conduct trade with a Canadian firm, and as long as both parties are comfortable dealing in Chinese yuan and Canadian dollars, then the transaction could occur outside the current financial system. If a Chinese exporter was selling goods to a Canadian firm, the Peoples Bank of China could give the Canadian firm a CBDC account. If the Chinese central bank was willing to exchange Canadian dollars for yuan, then the U.S. financial system could be skirted under a sanctions regime.

There would be limits to this situation. Foreign central banks may be reluctant to provide foreigners with currency. The availability of these foreign currency accounts may make it difficult to conduct monetary policy. Using the above example, if the Canadian firm was worried about a depreciating yuan, it might reduce its holdings of digital yuan for Canadian dollars, exacerbating the depreciation of the yuan. On the contrary, if a country is resigned to allowing its currency to float, then letting foreigners hold CBDC accounts would not be a significant hurdle.

### **Part III**

Next week, we will analyze the geopolitics of CBDC. The series will conclude in Part IV with potential market ramifications.

Bill O'Grady  
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