MONETARY POLICY IN THE DIGITAL AGE

Crypto assets may one day reduce demand for central bank money

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The global financial crisis and the bailouts of major financial institutions renewed skepticism in some quarters about central banks' monopoly on the issuance of currency. Such skepticism fueled the creation of Bitcoin and other crypto assets, which challenged the paradigm of state-supported currencies and the dominant role of central banks and conventional institutions in the financial system (He and others, 2016).

Twenty years ago, when the Internet came of age, a group of prominent economists and central bankers wondered whether advances in information technology would render central banks obsolete (King 1999). While those predictions haven't yet come to pass, the rise of crypto assets has rekindled the debate. These assets may one day serve as alternative means of payment and, possibly, units of account, which would reduce the demand for fiat currencies or central bank money. It's time to revisit the question, will monetary policy remain effective in a world without central bank money (Woodford 2000)?

For the time being, crypto assets are too volatile and too risky to pose much of a threat to fiat currencies. What is more, they do not enjoy the same degree of trust that citizens have in fiat currencies: they have been afflicted by notorious cases of fraud, security breaches, and operational failures and have been associated with illicit activities.

Addressing deficiencies

But continued technological innovation may be able to address some of these deficiencies. To fend off potential competitive pressure from crypto assets, central banks must continue to carry out effective monetary policies. They can also learn from the properties of crypto assets and the underlying technology and make fiat currencies more attractive for the digital age.

What are crypto assets? They are digital representations of value, made possible by advances in cryptography and distributed ledger technology. They are denominated in their own units of account and can be transferred peer to peer without an intermediary.

Crypto assets derive market value from their potential to be exchanged for other currencies, to be used for payments, and to be used as a store of value. Unlike the value of fiat currencies, which is anchored by monetary policy and their status as legal tender, the value of crypto assets rests solely on the expectation that others will also value and use them. Since valuation is largely based on beliefs that are not well anchored, price volatility has been high.

Deflation risk

Some crypto assets, such as Bitcoin, in principle have limited inflation risk because supply is limited. However, they lack three critical functions that stable monetary regimes are expected to fulfill: protection against the risk of structural deflation, the ability to respond flexibly to temporary shocks to money demand and thus smooth the business cycle, and the capacity to function as a lender of last resort.

But will they be more widely used in the future? A longer track record may reduce volatility, boosting further adoption. And with better issuance rules—perhaps, "smart" rules based on artificial intelligence—their valuation could become more stable. "Stable" coins are already appearing: some are pegged to existing fiat currencies, while others attempt issuance rules that mimic inflation- or price-targeting policies ("algorithmic central banking").

As a medium of exchange, crypto assets have certain advantages. They offer much of the anonymity of cash while also allowing transactions at long distances, and the unit of transaction can potentially be more divisible. These properties make crypto assets especially attractive for micro payments in the new sharing and service-based digital economy.

And unlike bank transfers, crypto asset transactions can be cleared and settled quickly without an intermediary. The advantages are especially apparent in cross-border payments, which are costly, cumbersome, and opaque. New services using distributed ledger technology and crypto assets have slashed the time it takes for cross-border payments to reach their destination from days to seconds by bypassing correspondent banking networks.

So we cannot rule out the possibility that some crypto assets will eventually be more widely adopted and fulfill more of the functions of money in some regions or private e-commerce networks.

Payment shift

More broadly, the rise of crypto assets and wider adoption of distributed ledger technologies may point to a shift from an account-based payment system to one that is value or token based (He and others 2017). In account-based systems the transfer of claims is recorded in an account with an intermediary, such as a bank. In contrast, value- or token-based systems involve simply the transfer of a payment object such as a commodity or paper currency. If the value or authenticity of the payment object can be verified, the transaction can go through, regardless of trust in the intermediary or the counterparty.

Such a shift could also portend a change in the way money is created in the digital age: from credit money to commodity money, we may move full circle back to where we were in the Renaissance! In the 20th century, money was based predominantly on credit relationships: central bank money, or base money, represents a credit relationship between the central bank and citizens (in the case of cash) and between the central bank and commercial banks (in the case of reserves). Commercial bank money (demand deposits) represents a credit relationship between the bank and its customers. Crypto assets, in contrast, are not based on any credit relationship, are not liabilities of any entities, and are more like commodity money in nature.

Economists continue to debate the origins of money, and why monetary systems seem to have alternated between commodity and credit money throughout history. If crypto assets indeed lead to a more prominent role for commodity money in the digital age, the demand for central bank money is likely to decline.

Monopoly supplier

But would this shift matter for monetary policy? Would diminished demand for central bank money reduce the ability of central banks to control short-term interest rates? Central banks typically conduct monetary policy by setting short-term interest rates in the interbank market for reserves (or clearing balances they keep with the central bank). According to King (1999), ceasing to be the monopoly supplier of such reserves would indeed deprive central banks of their ability to carry out monetary policy.

Economists disagree about whether massive adjustments in central bank balance sheets would be necessary to move interest rates in a world where central bank liabilities ceased to perform any settlement functions. Would the central bank need to buy and sell a lot of crypto assets to move interest rates in a crypto world?

Regardless of such disagreements, the ultimate concern is similar: "The only real question about such a future is how much the central banks' monetary policies would matter" (Woodford 2000). To Benjamin Friedman, the real challenge is that "the interest rates that the central bank can set . . . become less closely—in the limit, not at all—connected to the interest rates and other asset prices that matter for ordinary economic transactions" (Friedman 2000).

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In other words, if central bank money no longer defines the unit of account for most economic activities—and if those units of account are instead provided by crypto assets—then the central bank's monetary policy becomes irrelevant. Dollarization in some developing economies provides an analogy. When a large part of the domestic financial system operates with a foreign currency, monetary policy for the local currency becomes disconnected from the local economy.

Competitive pressure

How should central banks respond? How can they forestall the competitive pressure crypto assets may exert on fiat currencies?

First, they should continue to strive to make fiat currencies better and more stable units of account. As IMF Managing Director Christine Lagarde noted in a speech at the Bank of England last year, "The best response by central banks is to continue running effective monetary policy, while being open to fresh ideas and new demands, as economies evolve." Modern monetary policy, based on the collective wisdom and knowledge of monetary

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policy committee members—and supported by central bank independence—offers the best hope for maintaining stable units of account. Monetary policymaking can also benefit from technology: central banks will likely be able to improve their economic forecasts by making use of big data, artificial intelligence, and machine learning.

Second, government authorities should regulate the use of crypto assets to prevent regulatory arbitrage and any unfair competitive advantage crypto assets may derive from lighter regulation. That means rigorously applying measures to prevent money laundering and the financing of terrorism, strengthening consumer protection, and effectively taxing crypto transactions.

Third, central banks should continue to make their money attractive for use as a settlement vehicle. For example, they could make central bank money user-friendly in the digital world by issuing digital tokens of their own to supplement physical cash and bank reserves. Such central bank digital currency could be exchanged, peer to peer in a decentralized manner, much as crypto assets are.

Safeguarding independence

Central bank digital currency could help counter the monopoly power that strong network externalities can confer on private payment networks. It could help reduce transaction costs for individuals and small businesses that have little or costly access to banking services, and enable long-distance transactions. Unlike cash, a digital currency wouldn't be limited in its number of denominations.

From a monetary policy perspective, interest-carrying central bank digital currency would help transmit the policy interest rate to the rest of the economy when demand for reserves diminishes. The use of such currencies would also help central banks continue to earn income from currency issuance, which would allow them to continue to finance their operations and distribute profits to governments. For central banks in many emerging market and developing economies, seigniorage is the main source of revenue and an important safeguard of their independence.

To be sure, there are choices and policy trade-offs that would require careful consideration when it comes to designing central bank digital currency, including how to avoid any additional risk of bank runs brought about by the convenience of digital cash. More broadly, views on the balance of benefits and risks are likely to differ from country to country, depending on circumstances such as the degree of financial and technological development.

There are both challenges and opportunities for central banks in the digital age. Central banks must maintain the public's trust in fiat currencies and stay in the game in a digital, sharing, and decentralized service economy. They can remain relevant by providing more stable units of account than crypto assets and by making central bank money attractive as a medium of exchange in the digital economy. FD

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