Making Sense of CRYPTO

Central banks and regulators need to take a differentiated approach to various crypto innovations

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Central banks and regulators cannot afford to wait for clarity on how crypto-related innovations will shape the future of money and finance. These innovations—including digital assets, cryptocurrencies, stablecoins, and central bank digital currencies (CBDCs)—are rapidly gathering momentum.

Some already pose risks that must be understood and addressed. But they also present potential benefits worth harnessing. Central banks and regulators around the world are developing frameworks that seek to balance risks and opportunities judiciously. The frameworks need to evolve continually, as technologies, business models, and market practices change.

The Monetary Authority of Singapore (MAS), Singapore's central bank and integrated financial regulator, aims to develop an innovative and responsible digital asset ecosystem. It has looked at the various crypto innovations individually, taking into account their specific risks and potential uses.

Digital assets

MAS actively promotes the innovative and responsible use of **digital assets**.

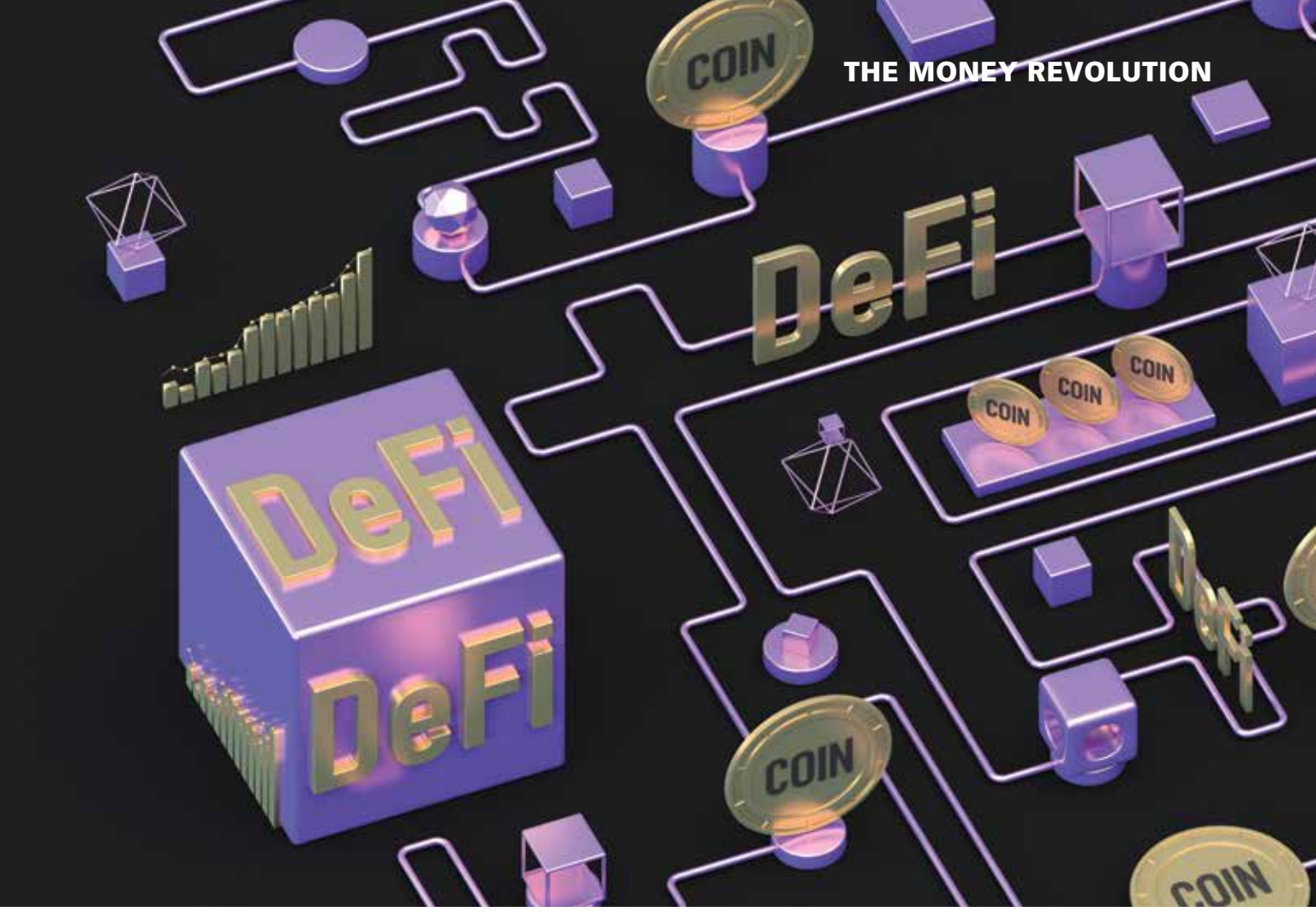
A digital asset is anything of value whose ownership is represented in a digital or computerized form. It could be a financial asset, say a bond; a real asset, such as a work of art; or even something intangible, like computing resources. The digital asset ecosystem has three distinct features:

- *Tokenization*, which involves using software programs to convert ownership rights over an asset into a digital token that can be stored, sold, or used as collateral.
- *A distributed ledger, or blockchain*, which is an immutable computerized record of the ownership and transfer of ownership of a token.
- *Cryptography,* which uses advanced encryption techniques to ensure that transactions in these tokens are secure.

The digital asset ecosystem offers significant economic potential. It can facilitate more efficient transactions and unlock untapped economic value. The most promising use cases of digital assets in financial services are in cross-border trade and settlement, trade finance, and pre- and post-trade capital market activities.

In *cross-border payments and settlements*, common settlement networks using distributed ledger technologies are achieving reductions in settlement time from two-to- three days to less than 10 minutes and in transactions costs from 6 percent of transfer value to less than 1 percent. In *trade finance*, common ledgers that permit transactions to be traced have achieved reductions in processing time for letters of credit from five to 10 days to less than 24 hours. In *capital markets*, distributed ledgers are reducing the time to clear and settle securities transactions from two days to less than 30 minutes.

In Singapore, United Overseas Bank Ltd. has piloted the issuance of a S$600 million digital bond



on Marketnode's servicing platform that facilitates a seamless workflow through smart contracts. Smart contracts are computer programs embedded in a distributed ledger that automatically execute actions—for example, a coupon payout—when pre-set conditions are met. Marketnode is a joint venture between the Singapore Exchange and the investment firm Temasek.

MAS itself has launched an initiative—called Project Guardian—to explore digital asset applications in wholesale funding markets. Led by DBS Bank, JP Morgan, and Marketnode, the first pilot involves creating a liquidity pool, comprising a collection of tokenized bonds and deposits locked in a series of smart contracts. The aim is to achieve seamless secured borrowing and lending of these tokenized bonds through the smart contracts.

The concept of tokenization to create digital assets has potential beyond finance. First, it can enable the monetization of any tangible or intangible asset. Second, tokenization makes it easier to fractionalize an asset (that is, split up the ownership of the asset, much as ownership of a company is split into shares of stock). Third, tokenization makes it easier to trade the assets securely and seamlessly without the need for intermediaries. Assets that can be tokenized and traded include works of art, real estate, commodities, even livestock. Not all tokenized assets make sense, but those that do could help unlock hitherto untapped economic value.

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In Singapore, OCBC Bank has partnered with the digital exchange MetaVerse Green Exchange to develop green financing products using tokenized carbon credits. Tokenizing the carbon credits generated from green projects such as reforestation and placing them on a distributed ledger helps ensure their provenance and reduces the risk of double-counting of credits. Companies can buy these credits with confidence, to offset their carbon emissions.

A digital asset ecosystem will need a tokenized medium of exchange to facilitate transactions. Three popular candidates are cryptocurrencies, stablecoins, and central bank digital currencies (CBDCs).

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Cryptocurrencies

Private cryptocurrencies—of which Bitcoin is probably the best known—fail as money. They perform poorly as a *medium of exchange*, as a *store of value*, and as a *unit of account*. Many of the cryptocurrencies that are widely traded today are really utility tokens that represent a stake in blockchain projects. But they have taken a life of their own outside the blockchain. They are actively traded and heavily speculated on, with prices that are divorced from any underlying economic value on the blockchain. The extreme price volatility of cryptocurrencies rules them out as a viable form of tokenized currency or investment asset.

Because users of cryptocurrencies operate through e-wallet addresses or pseudonyms, cryptocurrencies have made it easier to conduct illicit transactions, including money laundering. Cryptocurrencies have also helped to fuel ransomware—one of the fastest growing crimes in cyberspace.

MAS has consistently warned the public of the hazards of trading in cryptocurrencies. It has also made it harder for individuals to have access to cryptocurrencies—employing such measures as banning the advertisement or promotion of cryptocurrencies to the general public. MAS plans to impose further restrictions on retail access to cryptocurrencies.

Stablecoins

MAS sees good potential in stablecoins, provided they are well regulated and securely backed by high quality reserves.

Stablecoins are tokens whose value is tied to another asset—usually fiat currencies, such as the U.S. dollar. They seek to combine the benefits of stability and tokenization, thereby enabling them to be used as payment instruments on distributed ledgers.

Stablecoins are beginning to find acceptance outside the crypto ecosystem. Some technology firms have integrated popular stablecoins into their payment services. Visa and Mastercard allow transactions to be settled using USD Coin. This can be a positive development if stablecoins can make payments cheaper, faster, and safer. The competitive challenge that stablecoins pose to established players can also spur improvements in traditional payments.

But to reap the benefits of stablecoins, regulators must ensure that they are indeed stable. Being pegged to a fiat currency is not enough; their stability depends on the quality of the reserve assets backing the coins. The recent meltdown of the stablecoin TerraUSD demonstrates the need for such quality backing. TerraUSD sought to achieve stability by relying on algorithms to control its supply through a complicated relationship with its unbacked sister cryptocurrency, Luna, rather than through secure asset backing.

National authorities recognize the potential of stablecoins and are developing proposals to regulate their issuance and circulation. The focus has been on governing the reserve assets that back the peg—the liquidity, credit, and market risks of the assets, the auditability of the reserves held, and the ability to redeem stablecoins at par.

But stablecoins are not without potential risks. Being collateralized by financial assets means they are more closely intertwined with the broader financial system than are unbacked cryptocurrencies. If faced with liquidity stresses, a stablecoin issuer that holds financial assets in reserve could be forced into a fire sale of those assets, which could have repercussions for the financial system.

While the risk of such contagion to the financial system is small at this point, appropriate regulatory levers are being considered in case the risk becomes significant. The Financial Stability Board (FSB) and other international standard setting bodies continue to update their guidance on this front. MAS will soon issue proposals to regulate stablecoins in Singapore.

Wholesale CBDCs

A CBDC is a direct liability and payment instrument of a central bank. Wholesale CBDCs are restricted to use by financial intermediaries and are akin to the balances commercial banks now place with a central bank. MAS sees a strong case for wholesale CBDCs, especially in cross-border payments and settlements.

Cross-border payments today are slow, expensive, and opaque. Payments have to go through multiple banks before they reach their final destination. Directly linking instant payment systems across countries—such as between Singapore's PayNow and Thailand's PromptPay—achieves real-time payments and at considerably lower cost. But settlement is still not instant. The goal is to achieve cheaper, instantaneous cross-border payments that settle round-the-clock in real time.

It is not unreasonable to imagine a future in which the digital asset ecosystem is a permanent feature of the financial landscape.

Wholesale CBDCs on a distributed ledger have the potential to achieve atomic settlement, or the exchange of two linked assets in real-time. The Bank for International Settlements Innovation Hub has embarked on Project Dunbar to explore a common multi-CBDC platform to enable atomic settlement across multiple countries. It is a partnership of the MAS, Reserve Bank of Australia, Bank Negara Malaysia, and South African Reserve Bank.

Retail CBDCs

The case for retail CBDCs— essentially digital cash issued by a central bank to the general public—is less strong. The unique attribute of a retail CBDC relative to other regulated digital currencies (like stablecoins or tokenized bank deposits) is that it would be a liability of the central bank.

Interest in retail CBDCs has risen sharply in recent years, with many central banks experimenting with them. There are three commonly cited arguments for retail CBDCs.

First, a retail CBDC would preserve direct access to public money in a digital economy in which cash has disappeared. Members of the public may feel that they have a right to digital money that is always stable and free of credit and liquidity risks—as they do with cash today. But the differences between the liabilities of central banks and commercial banks are generally of little practical concern to most individuals. As long as people trust that their money is safe and that central banks stand ready to backstop the system during crises, direct access to public money may not be necessary.

Second, there may be a case for direct public provision of new digital money to act as a constraint on any monopoly power exercised in the retail payment space by banks or e-wallet providers. But there are other ways of enabling greater competition and ensuring that payments systems meet the required standards:

- opening up retail payment systems to more participants, including non-banks;
- capping interchange fees that merchants pay on credit and debit sales;
- setting minimum standards for speed, access, and interoperability (to enable payments across different payment networks).

The use of regulations should, of course, be weighed against the possibility that regulations could discourage new entrants to the payments system.

Third, a retail CBDC could offer greater privacy and control over personal information and transactions than provided by today's electronic payment system. But here too, enhancements to regulations or legislation to protect users' privacy and ensure sound data governance are possible alternatives to issuing retail CBDCs.

MAS believes that the case for a retail CBDC in Singapore is not compelling for now, given well-functioning payment systems and broad financial inclusion. Retail electronic payment systems are fast, efficient, and cost nothing, while a residual amount of cash remains in circulation and is unlikely to disappear. Nevertheless, MAS is building a technology infrastructure that would permit issuance of retail CBDCs should conditions change.

Future state

It would be foolhardy to be too definitive about how these various innovations will pan out. Central banks and regulators must continually monitor trends and developments and adapt their polices and strategies accordingly.

But it is not unreasonable to imagine a future in which the digital asset ecosystem is a permanent feature of the financial landscape, co-existing with today's intermediary-based system. Traditional fiat currencies will continue to dominate, but securely backed private stablecoins and wholesale CBDCs could be expected to play an important role in cross-border payment and settlement. Retail CBDCs may well emerge as a small component of the monetary base—similar to the role played by cash today. FD

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