

Stablecoins

Common Promises, Diverging Outcomes

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Foreword

To become mainstream, decentralized finance (DeFi) needs digital currencies that can dependably act as a bridge with the world of traditional finance. Various stablecoins—cryptocurrencies with a market value tied to an external indicator—have emerged to fulfill that role. These private-sector initiatives might ultimately compete with public-sector central bank digital currencies (CBDCs). But whereas in most cases CBDCs are still a few years away, stablecoins are already implemented and ready to act as this bridge. That said, the recent market rout has demonstrated that not all stablecoins are equal and contain idiosyncratic risks, where certain types are less likely to maintain their promised stability. In this report, we look into many of the implications around stablecoins and CBDCs, how they work, the roles they play, and the risks they pose. (For more background on the broader ecosystem emerging around blockchain technology, see [“Digitalization Of Markets: Framing The Emerging Ecosystem,”](#) Sept. 16, 2021.)

Stablecoins are attracting increasing regulatory scrutiny and constitute arguably the hottest regulatory topic in the crypto world at the moment. This is no surprise. The implications will only grow with volumes issued (see [“The Current Crypto Downturn Is A Timely Wake-Up Call,”](#) May 13, 2022). The implications are multifaceted—from traditional anti-money laundering (AML) issues to potential financial stability considerations, such as a run on a stablecoin leading to a fire sale of assets held as reserves. Policy stance varies across jurisdictions. In China, for instance, stablecoins and other cryptocurrencies are banned outright so that the focus is on the launch of a central bank-backed e-CNY. In the U.S., discussions are progressing on how to regulate them, and so far over 95% of outstanding stablecoins are linked to the U.S. dollar. The U.K. government has also made it a priority to legislate in this area to foster the country’s future role as a crypto-hub. Japan is allowing banks and other registered financial servicing entities to issue stablecoins from next year.

Regulating stablecoins will reduce some of the risks. It will also legitimize their use and likely accelerate both their adoption and that of DeFi applications. We expect much greater regulatory progress in the next 12 to 24 months. In fact, we see a real possibility that key jurisdictions—such as the U.S.—will require issuers of stablecoins to be regulated as banks. This would reflect the comparable promise offered by stablecoins and bank deposits: the ability to get one’s cash back on demand and in full. Moreover, the systemic implications of a failure of a large stablecoin could be comparable with those associated with the failure of a large bank.

For now, we don’t consider stablecoins—even those backed by fiat currency reserves—as akin to cash in our credit analysis when considering, for example, net debt calculations. We have, however, given some value to some Stablecoin, when backed 1:1 by short duration, high creditworthy government securities, and whose accounts are externally audited and when the stablecoin’s investment guidelines are clear and focused upon maintaining high creditworthiness and liquidity. While recently some have shown limited volatility compared to certain fiat currencies, we cannot ignore the risk of changes in reserve policies or operational issues affecting the timely convertibility back into fiat currency, for instance. We note that stablecoins, which are minted by corporate entities, also embed the credit risk of minting entity itself and this may be a limiting factor when considering giving value to Stablecoin in our analysis. But a clear and strong regulatory framework could lead us to revise our approach at some point. A material rise in their use and, relatedly, of DeFi applications could have other credit implications through changes in the competitive dynamics underpinning various sectors. An effective bridge between the two worlds would likely fundamentally transform both.

— **Chuck Mounts, Alexandre Birry**

The Why Behind The Transition From Fiat To Crypto

- Fiat to Crypto (F2C) instruments have increased the integration between the fiat and the digital worlds, becoming a frequently used method to convert fiat currencies into a decentralized finance-enabled vehicle.
- They can be used for a broad range of operations in DeFi—from payments to decentralized lending or investing.

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Why are they needed?

F2C vehicles were created to respond to the lack of integration between the real and digital worlds. To transact in the latter, users need to transform their fiat currencies into a vehicle that can be used in the crypto world. Cryptocurrencies continue to play that role, but for certain applications and in periods of extreme volatility, something more stable is often desired. This is where F2C vehicles came into play. In essence, these vehicles were created to provide a stable instrument that could be exchanged between parties in the digital space without volatility. Later, they became a common bridge between the digital and the real worlds. They are generally built atop various public and private blockchains, allowing their users to transact, hold, or trade digital assets. There are three main forms of F2C: stablecoins (which can be collateralized by fiat assets or crypto assets or backed by an algorithm), tokenized deposits, and CBDCs.

Chart 1

Cryptocurrencies Prices Are Still Very Volatile

Bitcoin



Ethereum



Source: [Coinmarketcap.com](https://coinmarketcap.com).

Use cases are broad ranging, from payments to decentralized lending or investing.

F2C vehicles are used to achieve various objectives, including payments, remittances, trading and settlement, lending, and even as safe assets in periods of turbulence. In short, F2C are supposed to help the exploitation of the benefits related to DeFi. In payments or remittances, for example, F2C allows for a significant reduction in real-world transaction costs and an increase in the speed of execution. When used for trading and settlement, F2C allows for the extension of operating hours, with parties able to transact and settle instantly. In lending, F2C permits a higher return on lending platforms than bank deposits or other similar instruments do, even if these can come with higher risks.

A Taxonomy Of F2C

- There are three main forms of F2C: stablecoins, tokenized deposits, and CBDCs.
- Except for CBDCs, where the stability is based on the central bank's backing, other instruments can be volatile, and their stability will depend on the quality of their reserve assets and the entity backing them.

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How do they work?

There are three different types of F2C:

1.0 **Stablecoins:** These are coins created on public or private blockchains. They can be managed by central counterparties or decentralized.

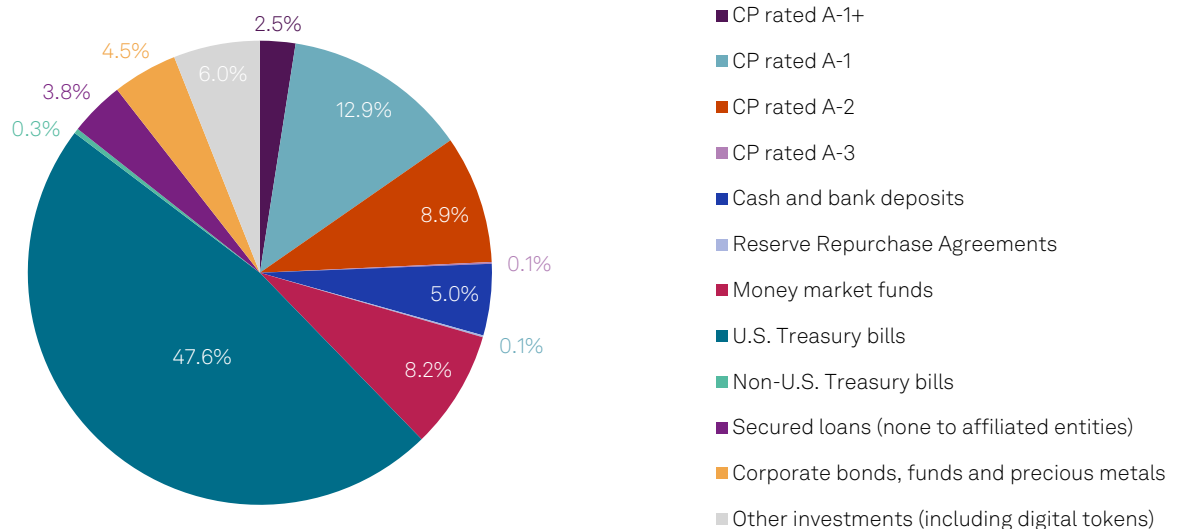
There are three main types of stablecoins:

1.1 **Stablecoins backed by fiat assets**, where the number of minted coins in circulation is backed by an equivalent amount of fiat assets such as Tether or USDC (see Chart 2). While Tether reserve assets are diversified and might contain risky assets, USDC is fully backed by cash and short-dated U.S. government obligations in a segregated account held by Circle Internet Financial LLC with U.S. regulated financial institutions on behalf of the USDC holders. In our view, the challenge in the stablecoin model is related to the quality of the assets held in reserves and the necessity to have an independent third party auditing the amount and quality. Moreover, blocking a large volume of high-quality assets could deprive other market participants from using them in their transactions or comply with regulatory requirements. It could even distort monetary policy transmission. Finally, the capacity of the coin holders to access the underlying fiat assets in case of extreme stress is an important consideration.

Chart 2

Tether Reserve Assets Composition

March 31, 2022



Source: Tether Assurance Consolidated Reserve Report, March 31, 2022.

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1.2. **Stablecoins backed by crypto assets:** To preserve the stability of their value, the coins in circulation were originally backed by crypto assets with a certain overcollateralization level to account for the volatility of these assets. Dai is an example of a crypto-collateralized stablecoin. The coin can be generated and used by any user by depositing crypto assets into vaults within the Maker Protocol, which is one of the dapps on the Ethereum blockchain.

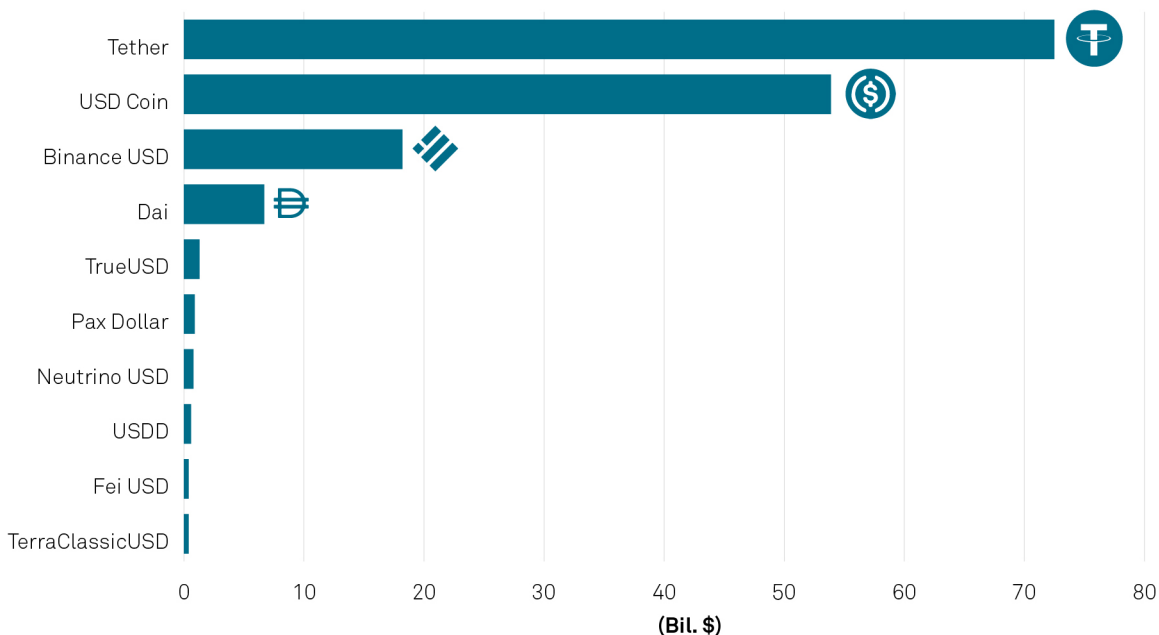
1.3. **Non-collateralized stablecoins:** To preserve the stability of its value, this type of stablecoin uses software or an agreed mechanism without holding a corresponding amount of reserve assets. These stablecoins can be prone to significant volatility, and their value can decrease in the event a substantial number of users decide to convert the coin into another coin or fiat currency. This is what happened with TerraUSD, when significant exchanges to other currencies (including other stablecoins) resulted in the break in the peg with the U.S. dollar and a significant decline in the value of the TerraUSD stablecoin.

1.4. **The market for stablecoins is heavily concentrated.** As of May 31, 2022, there were more than 50 stablecoins with a market capitalization of about \$156 billion. However, this market remains heavily concentrated, with the top three stablecoins constituting more than 90% of the market capitalization and the largest one (Tether) accounting for 47% of this amount (see Chart 3).

Chart 3

Stable Coins Market Cap

May 31, 2022



Source: [Coinmarketcap.com](https://coinmarketcap.com).

2.0 **Tokenized deposits:** These are F2C typically issued by financial institutions. One example is the JPM Coin. It is a permissioned, shared ledger system that serves as a payment rail and deposit account ledger, enabling participating J.P. Morgan clients to transact on the shared ledger.

3.0 **CBDCs:** A CBDC is a digital version of fiat currency, which is issued by a central bank, tied to the national currency, and is typically government-backed. Assuming it can be used on different blockchains, CBDC could disrupt the function currently fulfilled by stablecoins. They come with certain limitations though, the chief of which is the potential lack of privacy.

Stablecoins: Common Promises, Diverging Outcome

Table 1

Key Characteristics Of F2C

Instrument	Backing	Privacy	Ease of access	Potential challenge
Stablecoins backed by fiat	Generally high-quality fiat assets to ensure the stability of the value of the coin	Private-sector led	Available on certain public blockchains	Audit and ensuring the quality of the underlying assets
Stablecoins backed by crypto assets	Crypto assets with a certain ratio of overcollateralization	Private-sector led	Available on certain public blockchains	Potential volatility of underlying assets.
Stablecoins backed by an algorithm	Undercollateralized	Private-sector led	Available on certain public blockchains	Potential volatility of the value in case of run
Tokenized deposits	No collateral, issued by a financial institution subject to prudential regulation	Private-sector led	Available on private blockchains	Necessity to go through bridges to be used in some blockchains
Central bank digital currency	Government backed	Public sector lead and could have some privacy issues	Unclear (due to lack of examples for now)	Potential lack of integration with public and private blockchains

Source: S&P Global Ratings.

How F2C Vehicles Are Used

- F2C can be used as a store of value or a means of exchange for current transactions; they are aimed at helping support the growth of DeFi.
- Some F2C might not be appropriate for large-scale usage and could imply some systemic consequences.

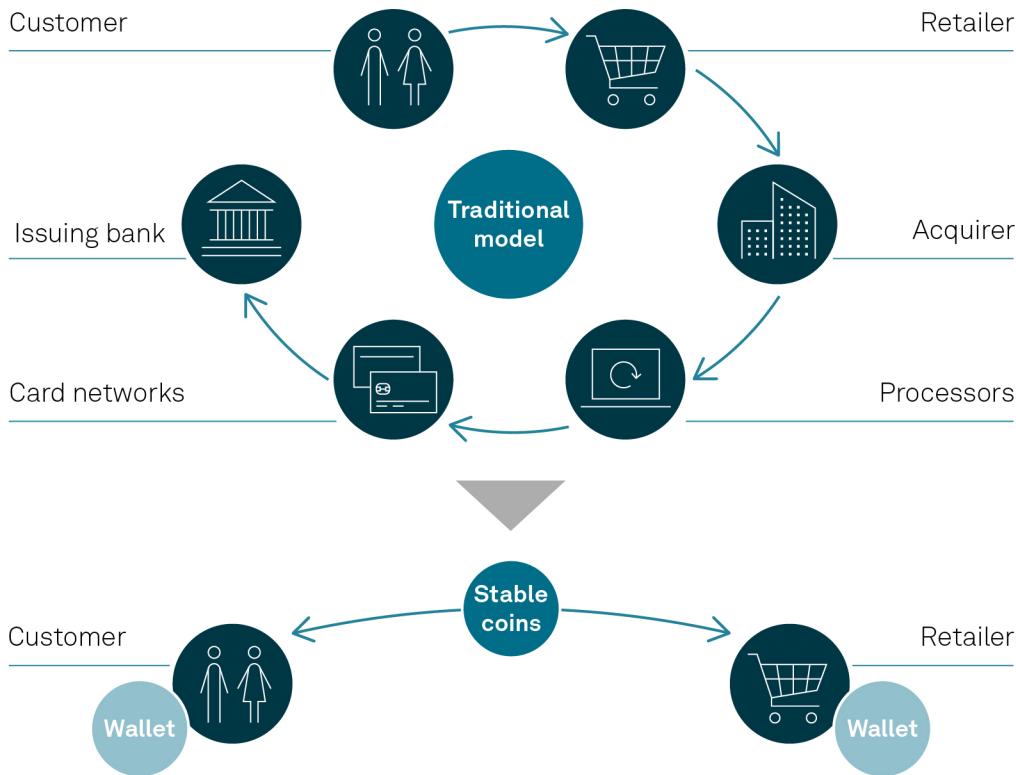
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F2C is supposed to help the exploitation of the benefits related to DeFi

They can be used as a store of value or a means of exchange for current transactions. F2C could be used in day-to-day spending, assuming the necessary infrastructure is in place. They can reduce the cost of transactions—for cross-currency conversion, for example—or the fees charged by real-world payment companies. F2C can also help international payments and remittances at a more effective cost than TradFi and at a significantly faster execution speed. The latter can also improve the efficacy of capital markets when F2C is used for trading and settlement. This could help the extension of operating hours with parties able to transact and settle instantly. F2C can also be used in lending on DeFi platforms, allowing potentially higher returns for lenders than with bank deposits or other similar instruments.

Chart 4

Example Of Use Case Of Stable Coins In Payments



Source: S&P Global Ratings.

In our view, some F2C might not be appropriate for large-scale usage and could imply some systemic consequences

For example, by blocking a large volume of high-quality assets, F2C could deprive other market participants from using them in their transactions or comply with regulatory requirements. It could even distort monetary policy transmission (for example, substitution of assets yielding negative rates with a non-interest bearing F2C, a substitution between F2C and bank deposits, etc.). Another example stems from the potential volatility of the value of stablecoins backed by crypto assets during episodes of extreme market swings. A large reduction in the overcollateralization ratio or an inability to liquidate real-world assets could trigger a loss of confidence and a subsequent run on the F2C. The same risk could materialize for algorithm-backed SC because of the undercollateralization of last resort underlying assets or sponsor. The decline in the value of TerraUSD in May 2022 is an example of such an event. That said, it appears that tokenized deposits and CBDCs (to a lesser extent due to privacy issues and lack of integration in the digital world) could be seen as the least-volatile and lowest-risk instrument for wholesale usage under the assumption of an adequate regulatory framework to protect users.

TerraUSD Falls To Earth

- TerraUSD, the third-largest stablecoin with a market cap of nearly \$19 billion, collapsed in mid-May along with its sister coin, Luna.
- This collapse highlights the difference between fiat-backed stablecoins (many of which hold a fully collateralized, liquid backing portfolio) and algorithm-backed stablecoins like TerraUSD (which do not).
- TerraUSD's collapse rattled crypto markets, but spillovers were negligible; nonetheless, this is a wake-up call for the industry and regulators.

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The spectacular collapse of the TerraUSD stablecoin has rattled cryptocurrency markets

This stablecoin, pegged one-to-one with the U.S. dollar, was the third-largest in circulation, with a market cap of almost \$19 billion. As of this writing, the price has fallen to just over 1cent, and the market cap is just \$132 million.

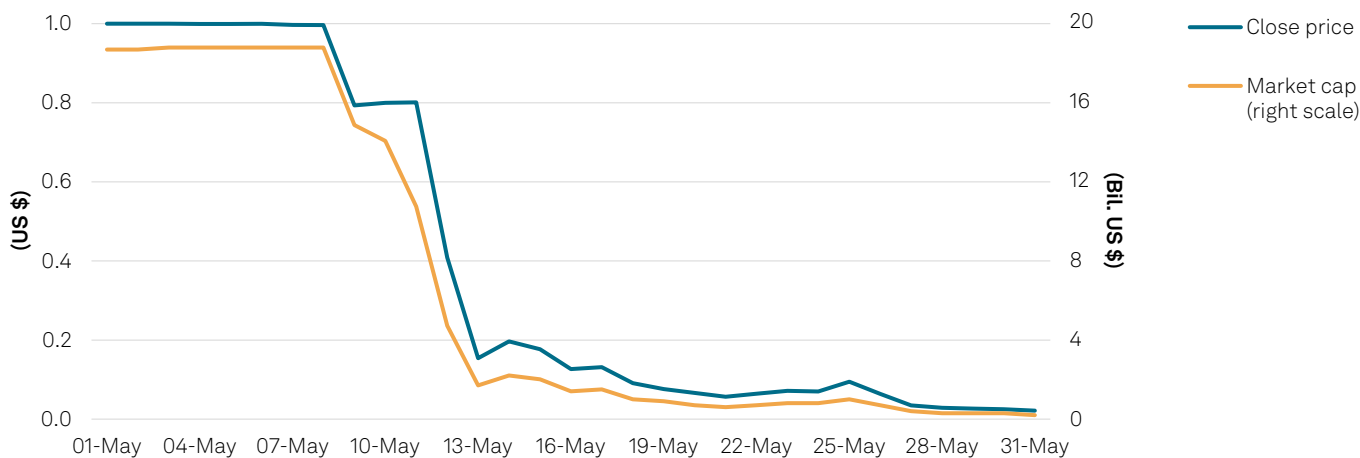
TerraUSD, like other stablecoins, was marketed as a stable-valued digital asset.

It was created owing to the high volatility of the price of cryptocurrencies like Bitcoin against the U.S. dollar. Like all crypto assets, TerraUSD coins are traded on a blockchain, with all the attendant benefits. Indeed, Terra has its own multi-purpose blockchain (described below).

Chart 5

Terra USD Stablecoin

May 2022



Source: [Coinmarketcap.com](https://coinmarketcap.com).

Fiat-backed, crypto-backed, algo-backed

The differences in the three types of stablecoins are vast, as illustrated by the TerraUSD collapse. Most real-world observers would recognize the fiat and—to a lesser extent—the crypto-backed variety.

Algorithmic stablecoins, in contrast, are more complicated. TerraUSD had a sister token named Luna, traded on the same blockchain, the price of which floated. This two-coin system was designed to keep TerraUSD's price close to \$1 by arbitraging price differences between the two

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coins, which typically moved in opposite directions. As demand for TerraUSD increased, the amount of Luna in circulation was reduced and its price increased, and vice-versa. A good overview of the system can be found [here](#).

In addition, demand for TerraUSD was incentivized by another element of the system called Anchor, which is also on the same blockchain. Anchor was a lending facility funded by TerraUSD deposits that paid interest rates of up to 20%. (Compare this with the return on the fiat backing portfolio above.) These attractive interest rates drove demand for TerraUSD, fueling its spectacular growth.

How the system was brought down is still a subject of debate. Anchor cut its deposit rates in early May, leading to outflows. As people converted their TerraUSD into other currencies, this was akin to a bank run. As demand for TerraUSD fell, the price of Luna also fell as new Luna stock was minted to try and maintain the TerraUSD peg. Eventually, the price of Luna approached zero, resulting in the full collapse of TerraUSD. Importantly, the Luna Foundation had accumulated Bitcoin since January for contingency purposes (essentially a backing portfolio), and this was largely sold to try and prop the price of TerraUSD. By the time the Bitcoin portfolio was deployed, it was too little, too late, with Terra and Luna prices plummeting. With the peg of TerraUSD to the U.S. dollar broken, and with the price of both currencies in freefall, there was no way to bring the system back to equilibrium.

Damage report

In our view, there was never any digital alchemy taking place. Higher returns on TerraUSD deposits in Anchor reflected higher, unrecognized risks in the system.

It appears that these returns were never backed by sufficient underlying assets and were heavily dependent on future inflows into the Terra ecosystem. Therefore, it's likely that the collapse of the system was inevitable. The system was arguably unsustainable and therefore vulnerable to the crypto version of a bank run.

The TerraUSD collapse also highlighted the role of preferred or whitelisted stablecoin holders.

These agents potentially have inside information or preferential trading access. This raises concerns about fairness, market manipulation, and—ultimately—consumer protections. There are also suggestions that whitelisted holders accelerated the fall of TerraUSD.

The TerraUSD episode has raised concerns about the legitimacy of stablecoins.

This includes some fiat-based coins as well, including those that continue to guard their so-called secret sauce. We share these concerns and think that market discipline would benefit from disclosure requirements to provide transparency and to alert investors as to the potential risks. Stablecoins were created to play an important role in DeFi, and in the absence of proper regulation, supervision, and transparency, they could endanger the stability of the sector.

The fallout from the TerraUSD blow-up was relatively modest and contained within the crypto world, though the impact to retail participants was very real and should be acknowledged.

There were spillovers to other stablecoins and other crypto currencies, but the fiat markets were largely unscathed. The crypto world is still relatively small. Recent events may just be a bump in the road given the popularity of crypto assets will likely continue to rise.

Fiat-Backed Stablecoins: Are They Safe?

- Fiat-backed stablecoins are fully reserved, but how they are reserved is the question that matters.
- Transparency standards are improving, but there is still scope for more.
- Top holder concentrations and asymmetric whitelisting for fiat conversion unlevel the playing field and raise consumer protection alarms if not managed well.

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Fiat-backed stablecoins are safer than algorithmic ones but still not equivalent to digital cash (see "[e-USD: The End Of Stablecoins?](#)," Jun 15, 2022) or electronic deposits.

Fiat-backed stablecoins are digital representations of the bank deposits backing it, not direct liabilities of the stablecoin issuer. Issuers act more as a custodian or trustee as opposed to a bank with both assets and liabilities. The deposits are held in the name of the stablecoin issuer, and crypto-to-fiat conversion is governed by whitepapers and DAOs where the legal standing and status are yet to be clarified. There are operational risks: For example, Tether's accidental creation of an additional 5 billion tokens, though quickly resolved, hurt confidence ([Number \(almost\) go up: Tether inadvertently prints five billion unbacked tethers](#), Jul. 15, 2019).

Better disclosure needed

There are recurring calls for better disclosure, and the recent temporary dollar parity deviation of the largest stablecoin, USDT (traded at \$0.95), indicate that this issue is significant. During the TerraUSD collapse, pegs on other major fiat-backed stablecoins were maintained (and, in some instances, slightly increased above parity). This indicates systematic differentiation (credit, software responsiveness, and liquidity, among others) and varied levels of market confidence on different fiat-backed stablecoins. This is underpinned by the quality and liquidity of reserves they hold.

Holder concentration and fiat conversion privileges create an unlevel playing field

While stablecoin issuers have been honoring fiat conversions and withdrawals, this is only available to whitelisted holders. As such, whitelisted holders have an advantage over non-whitelisted holders because they are better placed to arbitrage these opportunities.

Table 2

Stablecoin Holder Concentrations

	USDT	USDC	BUSD
Share of 10 holders (% of shares held)	32.77	26.26	40.38
Share of 20 holders (% of shares held)	39.64	34.46	47.36
Share of 50 holders (% of shares held)	46.51	43.81	55.44
Share of 100 holders (% of shares held)	51.31	50.39	60.01
Total holders (count)	4,282,676*	1,425,349*	3,073,652**

*Ethereum chain statistics. **BNB Chain, Data as of May 31, 2022. Source: Coincarp.

At the same time, market manipulations are possible. As non-whitelisted holders can only exit their positions via exchanges (as opposed to fiat conversion), large sub-parity sell orders could

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trigger further discounts and panic sales, particularly from non-whitelisted holders. While this is happening, whitelisted holders can benefit from a fiat conversion arbitrage opportunity. This raises the consumer protection alarm bells, and the risk is only heightened with the concentration among a small number of holders.

In the real world, to defend a currency peg (see "[Stablecoins: Currency Boards As An Analytical Framework](#)," Jun. 15, 2022), the central bank typically intervenes by buying the currency with reserves. If the currency is successfully defended and its value rebounds, the monetary authority profits from this trade. For stablecoin issuers, this is also possible with itself undertaking the intervention and profit from the arbitrage. While this reduces the chance of market manipulation from its substantial holders, it is tricky from a reputational point of view, as users could see that the profit is at their expense.

Confidence is not as easy as one-to-one backing. Transparency and governance are also very much part of the equation. Sometimes, the catch is in the details, where operational advantages can lead to bigger problems if not well managed, particularly when the sector is at its nascent stages and the regulatory guard rails are yet to be fully established.

Stablecoins: Currency Boards As An Analytical Framework

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- Cryptocurrency use is surging, but price stability—and therefore its usefulness as a means of payment—has been a concern; stablecoins were developed to address this need.
- How should we think about stablecoins from an analytical perspective? To us, there is a compelling analogy with currency boards in the fiat world, as a credible, liquid backing portfolio is key for both.
- The credibility of the issuer is key, which suggests a need for some future regulation.

The motivation behind stablecoins is similar to that behind currency boards in the fiat world: credible exchange rate stability and shelter against market volatility. The exchange rate is the price of one economy’s currency in terms of another. While bilateral exchange rates can fluctuate wildly at times, there is in many cases a desire on the part of economic agents for exchange rate stability or fixed exchange rates. For background, a full typology of exchange rate regimes has been published by the [IMF](#).

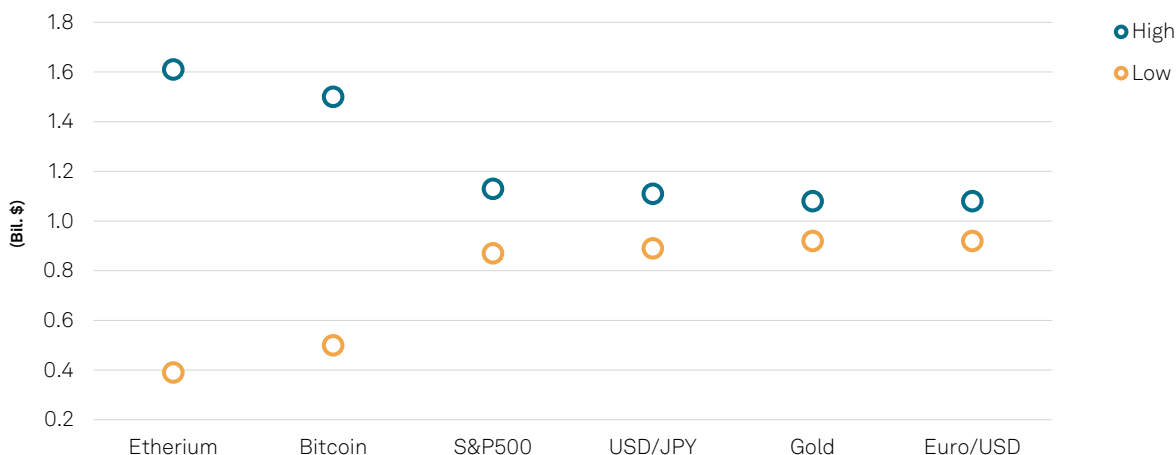
Digital cousin of currency boards

This stability line of thinking carries over to the digital world. In essence, the price of a digital currency (such as Bitcoin), which is typically expressed in U.S. dollars, can be thought of as an exchange rate. A higher value for Bitcoin means that it is appreciating against the U.S. dollar, and vice versa. The price of cryptocurrencies can be volatile relative to fiat currencies as well as other asset classes. While some agents might want to hold a digital currency that moves significantly against the U.S. dollar, including for speculative reasons, other agents could want more predictability and stability. This has fueled the demand for stablecoins.

Chart 6

Selected Financial Assets

52-week range, normalized



Source: Yahoo Finance.

Currency boards are a mechanism to credibly fix the value of a currency in the fiat world. Equivalently, stablecoins aim to replicate the credibility of a currency board in the digital world.

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This can be seen by looking at the characteristics of various stablecoins on Coinbase. These trade at a fixed rate of one-to-one with the U.S. dollar, with the supply of the digital currency backed by hard asset holdings. Many stablecoins are fully backed by U.S. dollars or their asset equivalents, while some are backed by gold or even by other cryptocurrencies or by algorithms. Some issuers, such as Binance, offer both floating-rate cryptocurrencies and stablecoins.

Achieving maximum credibility

A currency board is a special kind of fixed exchange rate regime designed for maximum credibility. In a fixed exchange rate regime, the local central bank pegs the value of its currency to another (anchor) currency at a fixed rate. ii A fixed exchange rate between two currencies allows for a degree of certainty and predictability because residents in one economy can exchange their currency for the anchor currency at a fixed rate. A currency board adds credibility by backing the entire local currency narrow money supply with foreign reserves, typically U.S. Treasury bonds. This backing portfolio ensures that the local money supply cannot be changed without a corresponding change in the backing portfolio, thereby ensuring the value of the currency. The IMF has an excellent summary of currency boards.

As with currency boards, the credibility stablecoin pegs will ultimately depend on the issuer following the rules. In other words, a stablecoin is only as credible as its issuer and the underlying assets. These rules relate to the value, transparency, and liquidity of the backing portfolio. The issuer needs to be able to redeem its stablecoins for the backing asset on demand, at par and at any time. Currency boards have encountered problems when the local currency is not fully backed by hard assets, and the same concerns have carried over to stablecoins, as the concerns around Tether illustrate. This suggests that to become mainstream, some form of regulation around the operations of stablecoins is likely in the future.

Stablecoins: Excess Returns Look Dubious

- Stablecoins were created to shelter against market volatility, providing the equivalent of physical cash in the digital world and delivering stable value and a convenient means of payment.
- To the extent that stablecoins are perfect substitutes for their reference fiat currency (assuming arbitrage) and their supply is credibly backed by assets denominated in the reference currency, their yield should closely approximate that of the reference currency.
- It follows that if excess returns for a particular stablecoin are on offer, then i) the backing portfolio is not credible, ii) arbitrage is somehow impaired, or iii) there is excess leakage in the traditional system from intermediaries that are not present in the crypto ecosystem; whatever the case: caveat emptor.

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The benefits of using stablecoins as a store of digital value and as an efficient means of purchasing digital assets are well known. Depending on the use case, they can be a vast improvement over cryptocurrencies in general, which tend to fluctuate widely in value. However, the notion—claimed by at least some stablecoins—that they are not only credibly linked to a reference fiat currency like the U.S. dollar but pay higher returns than that reference currency should be studied more closely. There are three parts to our skepticism.

Importance of the backing portfolio

The price of a stablecoin with respect to its reference currency can be thought of as an exchange rate with a structure analogous to a currency board. Credible currency boards have a backing portfolio consisting of the highest quality, liquid assets in the reference currency. Using the example of the U.S. dollar (the overwhelming reference currency of choice for stablecoins), a credible backing portfolio should consist of short-term, liquid U.S. government assets. This is the portfolio constructed when agents sell U.S. dollars to buy stablecoins. This hyper-conservative structure will minimize duration, liquidity, and credit risk. Critically, it will allow the stablecoin issuer to redeem requests for U.S. dollars on demand and at par.

This backing portfolio also implies that the rate of return on stablecoins is equal to the underlying asset pool: the short-term, risk-free US dollar rate. From this portfolio perspective, the only way a stablecoin issuer can pay more than the short-term risk-free U.S. dollar rate is to have a riskier or less liquid portfolio of assets or participate in an exchange system where exchanging the stablecoin for another cryptocurrency accrues yield back to holders of the stablecoin.

This yield pick-up comes at a cost: In certain times of market stress, a riskier or less-liquid portfolio might not fully retain its value, and it might be possible to buy and sell on demand. In other words, the nominal return might be higher, but the risk-adjusted return wouldn't be. In the case of yield coming from currency exchange, high fees are typically indicative of insufficient competition (including in crypto markets, where there are fewer intermediaries), which benefits stablecoin issuers that provide their coin directly into these systems.






The table below shows the portfolio composition of the five most popular stablecoins. Three of these appear to have credible backing portfolios, while the other two have algorithmic supply generation or backing by other cryptocurrencies and real-world assets.

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Table 3

Stablecoin Backing

Top 5 Coins as of end-April 2022

Stablecoin	Backing details
 Tether	USD asset backed
 USD Coin	USD asset backed
 TerraUSD	Algorithm backed
 Binance	USD asset backed, New York regulated
 Dai	Mix of USD asset and cryptocurrency backed

Source: [Coinmarketcap.com](https://coinmarketcap.com).

Importance of arbitrage

The second reason that a stablecoin may not have risk-adjusted excess returns relative to its reference currency relates to arbitrage. If Asset A and Asset B are equivalent, and the return on A is higher than B, then agents will sell Asset B and buy Asset A. This will reduce the yield differential, and the process will continue until the excess risk-adjusted returns of Asset A have been eliminated. The arbitrage just described applies to any two financial assets as long as agents have the unconstrained ability to buy and sell until yield differentials are eliminated.

Let's say Asset A in the example is a stablecoin and asset B is the reference currency asset in the backing portfolio. Risk-adjusted differences should not persist in competitive, liquid, and open markets. Given the libertarian leanings of many crypto investors, it appears reasonable to assume these conditions are met. This arbitrage condition, which is fundamental to market efficiency, is sometimes overlooked by the proponents of stablecoins.

Caveat emptor

Stablecoins are attractive additions to the financial ecosystem for a number of reasons. By using distributed ledger technology and training over the blockchain, they cut out the middleman by allowing peer-to-peer digital transfers, save on fees and transfer times, and simplify trading by doing everything through a digital wallet. Depending on the stablecoin, the issuer may also participate directly in these markets, cutting out traditional intermediaries and returning fees and other income streams to stablecoin holders.

But these benefits do not imply that stablecoins can somehow generate persistent, risk-free excess returns over their reference currency. To suggest otherwise would violate some basic principles of economics and finance.

Central Bank Digital Currencies: Will They Disrupt Or Innovate Banks?

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- Banks' current modus operandi intermediates the interaction between account holders and central banks.
- The introduction of CBDCs could enhance financial inclusiveness and efficiency. But if non-bank entities and individuals are allowed to hold CBDC accounts directly with the central banks, CBDCs could also disrupt banks' role.
- Independently of the final modus operandi, it will be critical to establish solid governance to foster financial inclusiveness, safeguard consumer privacy, limit illicit activities, and prevent potential government intrusions.

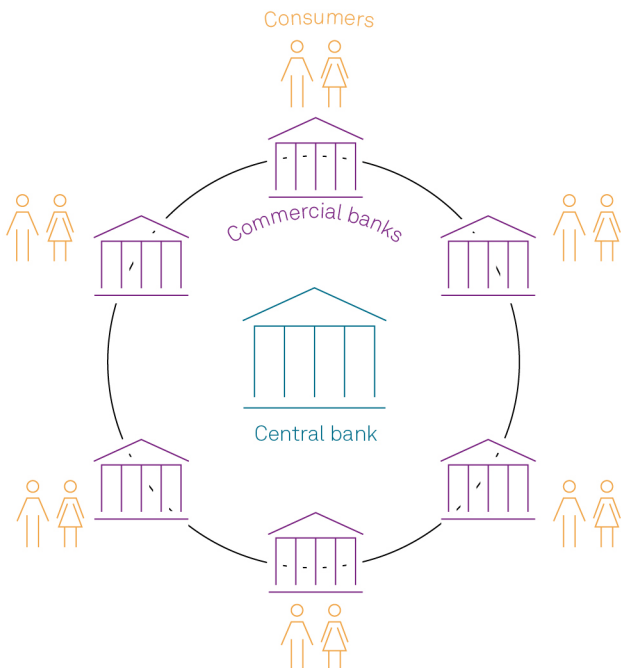
Current banking system: A two-tiered approach

When clients withdraw money from a bank's cash machine, they receive banknotes that were printed by a central bank and stored in the ATM by the bank. However, banknotes represent only 5%-10% of the total monetary mass (depending on the country). The majority is in the form of commercial bank deposits, reported in electronic format on a banking core system. In this two-tiered system, commercial bank deposits are fully interchangeable with central bank cash.

When accountholders transact with each other, commercial banks update clients' balances and settle the difference via the interbank market using reserves issued by the central bank. This is a reflection of the modern two-tiered banking system, with commercial banks intermediating between central banks and individuals or non-bank entities. Households and businesses are allowed to hold deposit accounts at and can receive loans from commercial banks, which in turn keep reserves at their central bank to be able to supply cash on demand to their clients.

Chart 7

Two-tiered Banking System



Source: S&P Global Market Intelligence.

Disrupt or innovate?

The introduction of CBDCs could completely overhaul this modus operandi if non-bank entities and individuals are allowed to hold CBDC accounts directly with the central banks. This would enable central banks to enhance the effectiveness and outreach of government stimulus measures, such as those provided during the latest pandemic. All households would get money credited promptly and automatically, without risks connected to mailed checks or pre-paid debit cards being lost or stolen.¹ It would also increase financial inclusiveness, as central banks could offer new services to consumers, such as interest-bearing accounts, or they could extend credit that commercial banks currently find unprofitable to offer. On the flip side, it could change the risk profile of central banks, and they might make commercial banks less relevant or more vulnerable because clients could prefer to migrate their deposits to central bank accounts, especially during periods of economic uncertainty, given their lack of credit and liquidity risk.

But there could also be some technological challenges regarding the scalability of consumers' payments and transfers, especially if central banks were to operate on blockchains and CBDCs replace current stablecoins. In 2020 alone, there were 14,000 transactions per second (tps) globally on just credit cards; ² if one includes other non-cash payments and all other transactions mediated by current stablecoins across other crypto-world, the available bandwidth offered by the most advanced blockchain (65,000 tps at peak)³ could be quickly saturated. This is why non-blockchain solutions are being explored in some jurisdictions or already in production, like China's e-CNY.

A less-disruptive approach could be introducing CBDCs within the current two-tier system as a complement to cash, as recently discussed by the U.S. Federal Reserve.⁴ In that case, commercial banks and other financial intermediaries would retain their role, acting as digital wallet custodians and focusing on credit and development of innovative financial services. Meanwhile, consumers would have access to money that is free from credit and liquidity risk, thus solving some of the major issues faced by current stablecoin issuers.

Independently of the adopted (single-tier or two-tier) operational model, it will be of paramount importance to establish robust governance that will help increase financial inclusiveness, limit tax evasion and money laundering activities, safeguard consumer privacy, and prevent abuses and potential government intrusions regarding how and when money is spent.

Sources

¹ [Economic Impact Payments being sent by prepaid debit cards, arrive in plain envelope; IRS.gov answers frequently asked questions | Internal Revenue Service](#), May 27, 2020

² [Visa, MasterCard, UnionPay transaction volume 2020 | Statista](#)

³ [Everything to Know About the Solana Blockchain and NFTs \(nftnow.com\)](#), Apr. 27, 2022

⁴ [Money and Payments: The U.S. Dollar in the Age of Digital Transformation \(federalreserve.gov\)](#), Jan. 2022

Central Bank Digital Currencies: Cyber Risks On The Horizon?

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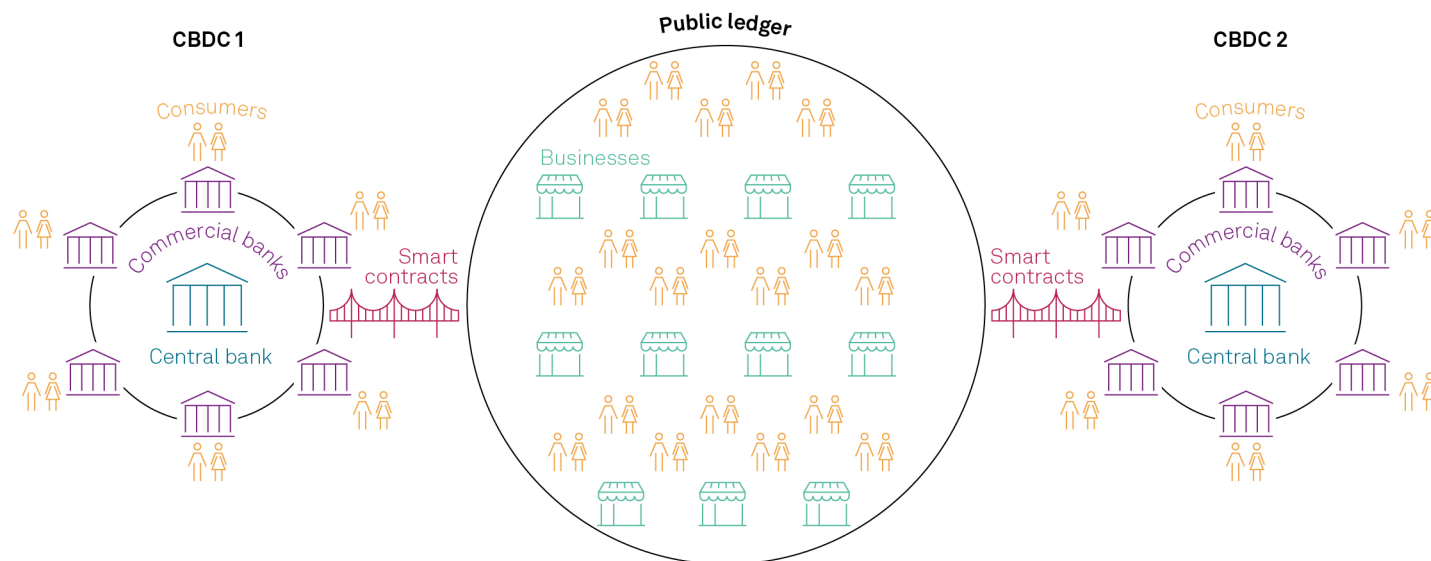
- More than 80 countries worldwide are exploring CBDCs due to promising cost savings, greater control, and increased speed of cross-border transactions.
- The lack of an established technological standard and the existence of heterogeneous systems expose the interaction of CBDCs to cyber risks, which could be partially mitigated with the use of trustless (non-custodial) bridges.
- We see the establishment of an international standard for government-related blockchains as an important prerequisite to the successful and safe interoperability of CBDCs.

CBDCs: A potential interoperability model

One of the touted advantages of the introduction of CBDCs is related to cost savings and increased speed of cross-border transactions. This is one of the reasons why more than 80 countries (representing 90% of global GDP) are exploring a CBDC, and nine countries (Bahamas, seven Eastern Caribbean nations, and Nigeria) had already launched a digital currency as of December 2021.¹ However, there is no established standard for CBDC systems, and without international coordination, we see significant interoperability issues that could slow progress. Assuming heterogeneous systems and a two-tiered banking system, a potential interoperability model could entail each central bank working along with its respective intermediaries within a walled garden, maintaining privacy and achieving local scalability. Cross-border settlements could be carried out on a public ledger. In this case, the interaction between each walled garden and the public ledger would be mediated via appropriate smart contracts, acting like bridges between public ledger and walled gardens.

Chart 8

A Potential Multi-chain Interoperability Model



Source: S&P Global Market Intelligence.

However, this approach is not free of technological risks. To understand this, let's take a look at how stablecoins, the private-sector version of a CBDC, currently operate in the crypto world.

Lessons from stablecoins

Stablecoins are used as fiat-to-crypto world ramps, as a medium of exchange between less liquid crypto-assets, as a store of value to manage market risk during periods of high volatility, or to hedge inflation risks of fiat currencies in frontier economies.

Many stablecoins operate on multiple chains with different protocols/consensus algorithms, speed, and fees. The current approach to enable interoperability and reduce crypto-world fragmentation is to leverage smart contracts that bridge two blockchains, often by burning the token on one blockchain and minting (or issuing) an equivalent amount of the token on the target blockchain. These pieces of code are common tools at centralized exchanges. In essence, they act as custodians of the tokens during transfer but open their flank to concentration risks in case of bugs in the smart contract code or cyber vulnerabilities of the custodian itself.

Indeed, some of the most recent and biggest hacks involved several hundred million dollars stolen from cross-chain protocols and platforms.^{2,3} Had these been stablecoins issued by a centralized entity, they might have offered a higher level of safety due to their ability to be frozen.⁴

An alternative solution could involve the use of trustless bridges that operate in a decentralized environment—directly using an investor’s or institution’s wallet—without the need for a third-party custodian. These trustless bridges could still be used in a controlled manner, when certain conditions are met, and thus better comply with legal, regulatory, and prudential needs. However, security issues could still surface if connected chains are not robust to “51% attacks,” where the transaction gets reverted in the first chain, exposing the second chain to lack of collateral.

To limit the operational risks potentially introduced by bridges, we see the adoption of an international standard for government-related blockchains as highly auspicious. This would ensure a successful interaction between CBDCs issued by multiple countries, in a similar vein to the original establishment of the internet with the introduction of the “http” standard. This could also help solve congestion and liquidity fragmentation in cases where CBDCs will be used for settlement of currencies as well as new, multiple assets (such as non-fungible tokens) in the crypto world. On the flip side, frictionless flow of capital between countries, especially in emerging economies, might increase during distress periods, leading to exchange rate volatility. This would need to be carefully moderated to avoid unwanted effects.

Ultimately, the launch of CBDCs has the potential to disrupt the standard economy and open new use cases and opportunities for the markets of the future.

Sources

¹ [Central Bank Digital Currency Tracker - Atlantic Council](#), as of Dec. 2021.

² [Wormhole token bridge loses \\$321M in largest hack so far in 2022](#), Feb. 03, 2022

³ [Qubit Bridge Collapse Exploited to the Tune of \\$80 Million](#), Jan. 28, 2022

⁴ [The Largest Hack in Decentralized Finance \(DeFi\) History Sees Over \\$600 Million Stolen from Ethereum, Binance Smart Chain, and Polygon | BitcoinKE](#), Aug. 11, 2021

Domestic And International Applications Of e-CNY

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- More Chinese cities are trialing the e-CNY, and the adoption should be strong. However, its use is still tiny compared to annual retail transaction volumes in the country.
- We see e-CNY as a public service and an alternative to existing retail payment rails. A broad use of e-CNY could lead to lower fee revenue for payment service intermediaries.
- e-CNY itself is unlikely to influence the international adoption of the Chinese renminbi. However, cross-border CBDC platforms would reduce the reliance on SWIFT for international bank transfers.

e-CNY and its impacts?

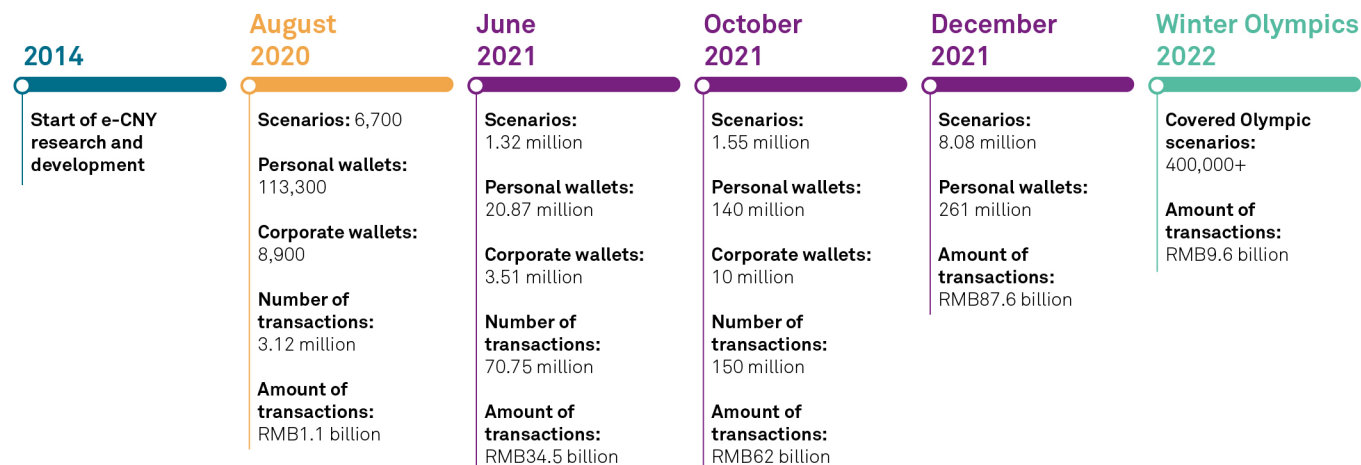
China is the first major economy to trial its central bank digital currency, the e-CNY. The e-CNY is digital cash issued by the People’s Bank of China (PBOC). It’s centrally managed, with records shared with trusted banks using a custom digital ledger that has attributes similar to blockchain technology. But importantly, it does not use blockchain technology due to concerns of scaling to high volumes of transactions.

China has banned cryptocurrencies and sees stablecoins as a risk to its financial system. However, the country is supportive of the underlying distributed ledger technology and is indirectly boosting many of its defining characteristics by being a global leader in implementing the e-CNY.

e-CNY is being used in several Chinese cities. Multiple merchants have signed up, and we expect strong adoption in 2021 to continue in 2022. As of the end of 2021, cumulative transaction value amounted to 87.6 billion Chinese renminbi (RMB; about US\$14 billion) across 261 million wallets. And in the first week of the 2022 Beijing Winter Olympics, RMB9.6 billion were transacted using e-CNY.

Chart 9

e-CNY Rollout Timeline



Figures are cumulative except for the Olympics data (first week only). No available data before Aug. 2020. "Scenarios" is defined as different use cases. Source: PBOC, State Council Information Office of the People’s Republic of China.

Being part of PBOC’s liabilities, e-CNY holders are in direct possession of digital legal tender that is back by the Chinese government’s credibility. This is in contrast to bank deposits, which are liabilities of commercial banks. We expect commercial banks to play an important intermediary role in customer account management, including meeting regulatory requirements, such as KYC

Stablecoins: Common Promises, Diverging Outcome

and AML. Commercial banks may choose their own technological path to connect with the PBOC's e-CNY system and continue to compete with one another in delivering the best customer service.

In this trusted e-CNY network, less computational power is needed to encrypt and decrypt, and consensus mechanisms can be simpler, therefore achieving greater scalability—an important consideration for this most populous country. The e-CNY has offline transaction capabilities, and identification is not required for small balances. This is an important characteristic that distinguishes it from traditional blockchain technologies.

e-CNY is currently retail focused and pays no interest. It can be seen as a public service and has the potential to expand financial inclusion. The clearing and settlement is also more efficient, with fewer intermediaries compared to other forms of electronic money. The concept is similar to offering a discount for paying in cash, and so broad use of e-CNY could lead to lower fee revenue for payment service intermediaries. This includes payment processors such as Unionpay and online payment platforms such as Alipay and WeChat Pay (see [“The Future of Banking: China's Digital Renminbi Could Hit Payment Platforms.”](#) Nov. 11, 2020).

...just a tool for internationalization

The e-CNY is a tool and not in itself representative of any policy change. The renminbi's international adoption is influenced by trade flows and fluidity of money movement and convertibility. The advent of e-CNY is unlikely to change restrictions on the capital account or any other policy around how the currency is managed. These factors may continue to weigh on economic actors that deal in renminbi.

That said, CBDCs—including the e-CNY—are expected to improve international money transfer efficiency. Assuming other CBDCs use distributed ledger technology or similar design paradigms, transaction data is synchronized across all parties, with process repetitions automated by smart contracts that are otherwise often duplicated by each party along the correspondent banking chain.

An alternative global payment and settlement system

Also, as CBDCs are central bank liabilities, cross-border clearing and settlements are ultimately between monetary authorities. In other words, while commercial banks and other private institutions may be allowed to read and send transaction requests across this payments network, they may not be able to write on the record. Accordingly, commercial banks place greater emphasis on local rules applying to each end of a global transaction. While prudent financial institutions tend to follow the most conservative of rules, judicial-specific rules become more relevant considerations when there are inconsistencies. An example is the application of sanctions and anti-sanction laws (see [“What Is the U.S. Sanction Risk for Banks Operating in Hong Kong?”](#) Sept. 17, 2020).

Cross-border CBDC platforms, though at very early stages, will likely run a parallel DLT-like enabled messaging system that could reduce the reliance on SWIFT for international bank transfers. Meanwhile, SWIFT remains the dominant leader in international financial messaging service and is looking to secure a role in CBDC for global payments.

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Currently, there isn't one global platform for CBDC clearing and settlement. PBOC is working with HKMA, Bank of Thailand, and Central bank of UAE on a cross border CBDC platform (the mBridge project, sponsored by BIS). This could expand to include other central banks, with the view to becoming global. Alternatively, multiple platforms could emerge to serve different trade routes, unions, and other alliances. As geopolitical tension rise, the latter path is more likely.

Source

¹ [Exploring central bank digital currencies: How they could work for international payments](#), SWIFT, May 2021

Regulations: The Goal Is To Curb Stablecoin Risks Before They Become Systemic

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- Globally, the regulatory direction of stablecoins is varied. What the U.S. does is especially relevant, as stablecoins predominately reference the U.S. dollar.
- Stablecoins are typically more efficient for international remittances, but their direct use in day-to-day payments is limited, as merchants need to observe relevant AML rules.
- Financial stability is front of mind for financial regulators. How stablecoins coexist with the traditional financial system without materially elevating systemic risks is key.

Fast growth and payment use accelerate stablecoin regulation

Stablecoins are typically more efficient for global payments and transfers than traditional finance, where the average international remittance fee is about 6% of the transfer value and could take several days to process. As adoption increases, there is an increasing propensity to use stablecoins as payment, a key foundation of traditional financial systems.

To proactively manage these financial stability concerns, we are seeing global regulators investigating and taking a stance on stablecoins. We believe the regulatory work on this will intensify over the next one to two years and could reshape how stablecoins are governed, managed, and used.

Table 4

Recent Developments On Stablecoin Regulation

Regulatory direction	Key regulators	Important recent rules and releases
U.S		
Prudential oversight and licensing; identification and AML/ATF compliance; financial stability; privacy protection, consumer protection; support for innovation; maintaining the status of the USD as global reserve currency.	The Board of Governors of the Federal Reserve System, U.S. Securities and Exchange Commission, Commodity Futures Trading Commission, Federal Deposit Insurance Corporation, The Office of the Comptroller of the Currency	<ul style="list-style-type: none"> • Board of Governors of the Federal Reserve System: Financial Stability Report, May 2022 • The Whitehouse: Executive Order on Ensuring Responsible Development of Digital Assets, March 2022 • Board of Governors of the Federal Reserve System: Money and Payments: The U.S. Dollar in the Age of Digital Transformation, Jan 2022 • Board of Governors of the Federal Reserve System: Stablecoins: Growth Potential and Impact on Banking, Jan 2022 • U.S. Department of the Treasury: President’s Working Group on Financial Markets Releases Report and Recommendations on Stablecoins, Nov 2021
European Union		
Prudential regulation, where ‘asset-referenced tokens’ are subject to stricter prudential requirements than ‘e-money token’ providers; financial stability; consumer protection and market integrity; support for	European Securities and Markets Authority, European Banking Authority, European Central Bank and national competent authorities, incl. national central banks.	<ul style="list-style-type: none"> • Proposal of Markets in Crypto Assets Regulation, March 2022

Stablecoins: Common Promises, Diverging Outcome

innovation; fair competition; environmental sustainability.

China

Cryptocurrencies, including stablecoins are banned. This is in consideration of economic and financial stability, maintaining the safety of household assets, curb illegal financing activities and other factors.

People's Bank of China, Cyberspace Administration of China, Ministry of Industry and Information Technology, China Banking and Insurance Regulatory Commission, China Securities Regulatory Commission, and Foreign Exchange Administration

- Joint Statement from 11 Government Agencies: Notice on Further Preventing and Dealing with the Risk of Speculation in Virtual Currency Transactions, Oct 2021
- PBOC: A discussion on virtual currency transactions with banks and payment companies, June 2021

Japan

Control financial systemic risks; strengthen investor protection; allow Yen-linked stablecoins; only banks and other registered financial servicing entities can issue these stablecoins (applicable to asset backed stablecoins).

Financial Services Agency

- Revised Payment Services Act (implement from June 2023), Jun 2022.

U.K.

Promote competition, innovation and support UK competitiveness; protect financial stability and market integrity; and deliver robust consumer protection; Lawmakers intend to amend existing legislation on electronic money and payments to cover stablecoins properly and update insolvency law for systemically important stablecoin issuers. The Bank of England will likely act as lead regulator to enforce rules

HM Treasury, Bank of England, Financial Conduct Authority

- Managing the failure of systemic digital settlement asset (including stablecoin) firms: Consultation, May 2022
- U.K. regulatory approach to cryptoassets, stablecoins, and distributed ledger technology in financial markets. Response to the consultation and call for Evidence, Apr 2022
[New forms of digital money](#), Jun. 7, 2021
- U.K. regulatory approach to cryptoassets and stablecoins: Consultation and call for evidence, Jan 2021

Source: S&P Global.

Using stablecoins for payments needs regulatory certainty

While the private sector is exploring stablecoin retail payment applications, progress has been slow absent clear regulations and licensing, which are still largely in development around the globe. This includes the U.S., where an executive order signed in March highlights the policy direction for which digital assets will be regulated. As over 95% of stablecoin values are linked to the U.S. dollar, stablecoin regulation—and the potential development of the U.S. CBDC (for simplicity, e-USD)—could reshape the utilities, competitive dynamics, and perceptions of stablecoins. Early implementations of stablecoin debit cards, such as Coinbase's USDC debit card, have been rolled out in the U.S. and Europe. Announcements from Stripe to support USDC payments will likely further accelerate stablecoin adoption into payment services.

By replacing the chain of intermediaries and service providers linking payers and payees, smart contracts automate backend processes and simplify transactions on a commonly distributed digital ledger.

Stablecoin's advantage over domestic digital retail payments are narrower, as they also instantaneously settle. However, they have the potential to decrease fees to merchants due to fewer intermediaries, especially the closer transactions approach peer-to-peer in nature. Stablecoins have the potential as an alternative means of payment for households and businesses, and their adoption could be rapid due to network effects and increasing crypto awareness. While there are risks, stablecoins also aspire to help the underbanked to better

Stablecoins: Common Promises, Diverging Outcome

access financial services, with a positive impact on financial inclusion, particularly in emerging markets.

Globally, the regulatory response has been varied from an outright ban to full crypto adoption. In the U.S., a licensed approach is being discussed. There is broad consensus on the efficiency gains of blockchain-based transactions, though expectation gaps remain between authorities and parts of the crypto community (including stablecoin holders) around the degree of decentralization lost to handle concerns such as KYC and AML. Cryptocurrencies are a global phenomenon, and related activities could move from one jurisdiction to another to benefit from regulatory arbitrage.

While there are investor protection concerns, the crypto ecosystem can also be a source of wealth and fiscal income. The status as the dominant international reserve currency could be another consideration in the legislative process for e-USD adoption. We believe non-reserve currency-backed stablecoins could come under heavier regulatory scrutiny because issues around non-credit-based shadow money supply and seigniorage could surface. These matters would be more pronounced for undercollateralized stablecoins.

It is unclear if regulations could reach stablecoins issuers wishing to remain unregulated by moving their operations outside of applicable jurisdictions. We expect that assigning regulatory approval and deposit insurance for regulated stablecoins will relegate unregulated stablecoins to lesser, more speculative roles and slow their growth without institutional adoption.

Systemic risk is the primary regulatory focus

How stablecoins coexist with the traditional financial system without materially elevating systemic risks is one of financial regulators' main concerns. Issues such as adequate and transparent reserve backing, asset fire sales under stress, and the consequential shock to financial institutions and markets are actively discussed. Market concentration with existing stablecoin providers could also heighten the impact in a risk event. While the impact to payment systems is also mentioned, the risk is thus far limited, as stablecoins are not yet used as a widespread means of payment.

At the financial-institutions level, operational and cyber risk management and controls are likely focus points for prudential supervisors. In addition, stablecoin and crypto related customer protection and anti-money laundering efforts are likely to be integrated with existing regulatory frameworks once the necessary infrastructure and policies for identity verification are embedded.

Sources

¹ [Remittance Prices Worldwide, World Bank](#), Dec. 2021

² [Inthanon-LionRock to mBridge, Building a Multi CBDC Platform for International Payments, BIS Innovation Hub](#), Sep. 2021

³ [16% of Americans say they have ever invested in, traded or used cryptocurrency](#), Nov. 11, 2021

⁴ [BIS Working Papers No 973 What does digital money mean for emerging market and developing economies?](#), Oct. 2021

Tokenized Deposits: The Pros And Cons Of Proposed Regulatory Frameworks

- In some key jurisdictions, issuers of stablecoins might be regulated as banks with the stablecoins becoming tokenized deposits.
- Because a high level of trust and payment utility are expectations typically associated with a banking license, regulating stablecoin issuers as banks could expand crypto adoption.
- Traditional banks could also tokenize existing deposits to compete with stablecoin issuers. This is easier to do if tokenization occurs under a fractional reserve system.

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Tokenization is the digital representation of ownership rights on a blockchain. Bank deposits can also be tokenized, and we call this “tokenized deposits.”

To address the risks and systemic issues of stablecoins, two methods of regulation are being proposed: regulating stablecoin issuers directly as banks (either general bank or narrow bank license) or projecting regulatory influence via a two-tiered intermediation framework, where stablecoin issuers will not become banks but their reserves are deposited in banks. Holder identification and other transparency requirements are indirectly projected onto stablecoin issuers as clients of these insured depository institutions.

Stablecoin regulation, which framework and what considerations?

General bank license:

Under a fractional reserve system, a general bank license would allow eligible stablecoin issuers to expand their product offerings and mix illiquid and riskier assets to their balance sheets. This would be a significant deviation from the current practice, where fiat-backed stablecoins are supposedly backed one-to-one with hard currency. But it is also an avenue into traditional finance. On the other hand, by going down this regulatory path, it would also make it easy for traditional banks to tokenize existing deposits to interact with the blockchains. By having the same fractional reserve and other regulatory requirements, the long-term playing field is level, though an uphill battle in the near term for new stablecoin issuing banks because of their nascent developmental stage and smaller client networks.

Stablecoins: Common Promises, Diverging Outcome

Table 5

Stablecoin Reserve Framework

Source of inflow	Narrow bank: Stablecoin deposits placed in segregated accounts with full reserves held at the central bank	Two-tiered intermediation: Stablecoin deposits held as transactional deposits in commercial banks.	Security holdings: Cash-equivalent securities held as reserve collateral for stablecoins
Cash substitution	Neutral - Physical cash is tokenized and backed with full reserves held at the central bank.	Positive - Physical cash is replaced with stablecoins, which are backed by deposits held at commercial banks performing fractional reserve credit intermediation.	Positive - Physical cash is used by stablecoin issuers to purchase securities, lowering the overall equilibrium financing cost. Security sellers likely deposit proceeds in the banking system.
Deposit substitution	Negative - As regular commercial bank deposits migrate to segregated stablecoin deposit accounts that hold full reserves at the central bank, the deposit-backed funding for credit intermediation is reduced.	Neutral - Deposits from stablecoin issuers replace deposits from households dollar-for-dollar at commercial banks. The effect is neutral if stablecoin deposits are treated the same as retail deposits.	Neutral to possibly negative. - Commercial bank deposits are converted to stablecoin issuers' security holdings. Security seller deposits proceeds back into banks. Commercial banks partly substitute the lost deposits with other debt liabilities and may contract the overall balance sheet.
Security substitution	Neutral - The conversion of cash-equivalent securities and money market fund holdings into stablecoins effectively tokenizes the securities. The conversion has minimal impact on the overall deposits held at commercial banks and bank-led credit creation.		

Source: Board of Governors of the Federal Reserve System.

Narrow bank license:

Under a narrow-bank reserve framework, while the stablecoin issuer has full reserves held at the central bank, it can still expand its balance sheet by issue debt securities. It can also facilitate asset management, among other services to its customers, who would be more trusting given the bank name association.

We have seen this narrow-bank reserve framework applied elsewhere. In China, dominant retail payment service providers Ant Financial and WePay are required to deposit all reserves with the central bank. This is in part in response to the second-largest economy having to deal with substantial bank deposit outflows in the past, with asset management products provided by related nonbank institutions such as Yuerbao shaking the competitive dynamics for domestic deposits in 2013 and 2014.

In our view, a high level of trust and payment utility expectations is typically associated with any banking license. And these stamps of regulatory approval on stablecoin providers could expand crypto adoption among the masses. In addition, stablecoin and crypto-linked products could redirect deposits and asset management funds away from more traditional banking entities. These systemic considerations become more prominent as yield gaps widen between these different categories of product offerings. These yield gaps are already being leveraged by financial service providers. For example, the USDC-linked Voyager card allows holders to use the stablecoin for repayment, while unused balances earn a relatively high return. ([Mastercard, Voyager Team to Make USDC Stablecoin Spendable and Mainstream](#), Nov. 16, 2021)

Two-tiered intermediation:

A two-tiered intermediation framework is the closest to the status quo for stablecoin issuers that are already fiat backed. Following this line of thought, a security-holding reserve framework expands the asset-backing pool to include securities. Asset backing would be required, which

Stablecoins: Common Promises, Diverging Outcome

complicates matters for undercollateralized stablecoins. Algorithm-heavy stablecoins would find it more difficult to comply in these regulatory scenarios.

Irrespective of the regulatory route, the direction is to increase user identification and project centralized rule-setting and governance standards onto the crypto world. While some would welcome this compliance, others could resist it, with certain stablecoin providers servicing that niche.

Table 6

Weighing The Different Approaches To Stablecoin Regulation'

Regulatory approach for stablecoin issuers	Positives	Negatives
General bank license		
Stablecoin issuers become banks under a fractional reserve system. The stablecoins become tokenized deposits.	<ul style="list-style-type: none"> Established framework for bank regulation with clear oversight rules. Direct prudential supervision. Stablecoin (now tokenized deposit) holders likely to be protected by deposit insurance. Level playing field (both under fractional reserve system) for traditional banks to also tokenize existing deposits. This promotes competition between traditional banks and new stablecoin issuing banks. 	<ul style="list-style-type: none"> 'stamp of approval' could fuel risky crypto adoptions that are incommensurate with investor capacity to take on risk. Crypto linked products could redirect deposits and asset management funds away from more traditional banking entities, increasing risks to financial stability. Bank runs may affect system stability if new stablecoin issuing bank is financially interconnected. It may need central bank intervention.
Narrow bank license		
Stablecoin issuers become banks under a 100% reserve system. Stablecoins are tokenized deposits.	<ul style="list-style-type: none"> Established framework for bank regulation with clear oversight rules. Direct prudential supervision. Stablecoin (now tokenized deposits) holders benefits from full reserves held at the central bank. 	<ul style="list-style-type: none"> 'stamp of approval' could fuel risky crypto adoptions that are incommensurate with investor capacity to take on risk. Crypto linked products could redirect deposits and asset management funds away from more traditional banking entities, increasing risks to financial stability. New stablecoin issuing banks could expand their product and service offerings outside of their current expertise, such as providing loans and asset management products and services. Not all the bank prudential rules are applicable to the current business models of new stablecoin issuing banks (not one size fits all). For example, capital adequacy rules if lending is not permitted.
Two tiered intermediation		
Stablecoin issuers will not become banks. Their reserves are deposited in commercial banks. They are clients of commercial banks.	<ul style="list-style-type: none"> Formalizes the promise made by fiat backed stablecoins. Less financial stability risk from unintended consequences and disruptions to traditional finance if stablecoin issuers are not seen as 'banks'. Indirect regulatory influence from insured depository institutions. 	<ul style="list-style-type: none"> Partnering banks could be 'cherry picked' and lead to inconsistent supervision and governance. Unclear if fiat conversion and transfer made by partnering banks is direct to stablecoin holders or indirect via the stablecoin issuer. The latter entails more operational and credit risks. It is unclear if stablecoin holders would benefit from deposit insurance. A confidence loss on the stablecoin issuer could pose liquidity risk to the partnering bank.

Source: S&P Global.

e-USD: The End Of Stablecoins?

- The e-USD could offer users an alternate set of risks, yield, privacy, and convenience characteristics to interact with crypto assets.
- It could substitute for stablecoins if cross-chain functionalities are achieved.
- Identification requirements versus crypto anonymity could divide the cryptocurrencies world if e-USD gains a foothold as an alternative for stablecoins.

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e-USD, a new F2C link?

The role of stablecoins could be diminished by the introduction of relevant CBDCs if those CBDCs achieve cross-chain functionalities across various blockchain services. A CBDC is a digital version of fiat currency, which is issued by a central bank, tied to the national currency, and backed by the issuing government's credibility. Stablecoins are currently privately managed digital currency with perceived stability that is tied to the governance rules under which it operates, or investment guidelines when the stablecoin is backed by assets. Some stablecoins are not fully backed by assets, such as algorithmic stablecoins that use supply manipulations to maintain a peg.

Stablecoins peg their value to one or more assets, and over 95% of stablecoin values are linked to the U.S. dollar. We expect the adoption of CBDCs in the U.S. (for simplicity, e-USD) to change the competitive dynamics of stablecoins. This is because the e-USD could offer users an alternate set of risks, yield, privacy, and convenience characteristics to interact with crypto assets.

In January 2022, the Fed published a paper on e-USD. While no commitment was made on its implementation, the report discussed the key principles, including privacy protection and identity verification. The Fed described potential benefits and risks from an e-USD but indicated it would not proceed without clear support from the Federal government, "ideally in the form of a specific authorizing law." The March 2022 Executive Order on Ensuring Responsible Development of Digital Assets highlights that e-USD is still in the research and development phase, with relevant agencies looking into "potential design and deployment options." In our view, if it does proceed, it likely would do so with a non-interest-bearing e-USD under an intermediated model, where commercial banks facilitate the management of e-USD holdings and payments.

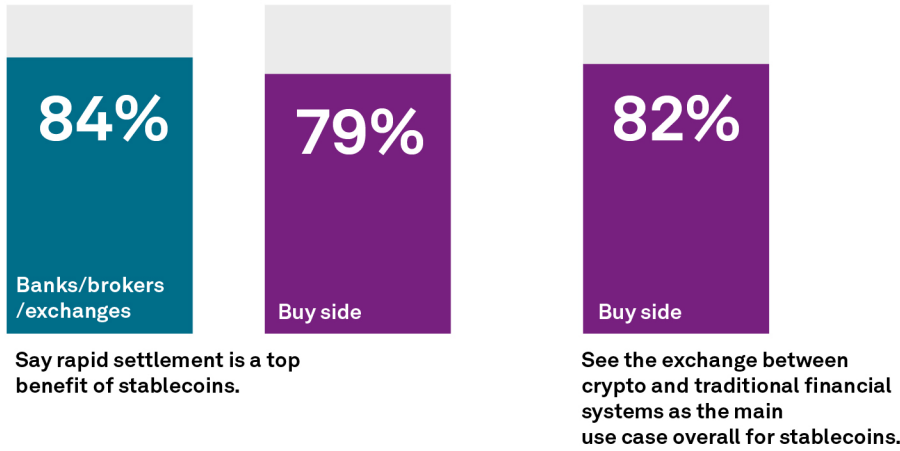
What do users want?

According to a research study compiled by Coalition Greenwich, rapid transaction settlement, transparency and auditability, and yield opportunities were billed as the three top benefits of stablecoins. Security issues connected to centralized powers of stablecoin issuers were cited as the main disadvantage.

Stablecoins: Common Promises, Diverging Outcome

Chart 10

**What Executives At Financial Institutions And Technology Firms Say About Stablecoins
Q4 2021**



Source: Coalition Greenwich, a division of CRISIL, an S&P Global company.

A e-USD would likely offer users of stablecoins rapid transaction settlements and convenient interactions with crypto assets while greatly reducing risk concerns. Among those risk concerns is private stablecoins might not have adequate liquidity or sufficiently efficient smart contracts to satisfy large volumes of currency conversions. This is what led to TerraUSD losing its peg in May 2022, and it was unable to recover its peg to the dollar because of insufficient asset backing. Tether also lost \$10 billion in market cap by the end of May to less volatile stablecoins, such as USDC.

Chart 11

e-USD, A Different Proposition But With Similarities

Stablecoins		e-USD
<ul style="list-style-type: none"> ● Privately run, multiple issuers ● Asset backing varies from fiat, commodities, and other cryptos to non-backed algorithm SCs ● Yield from staking and farming ● Anonymity is a choice ● Inherent governance risks ● dApp network effect ● Interacts with crypto assets ● Potential payment applications ● Decentralized settlement verification 	<ul style="list-style-type: none"> ○ Runs on distributed ledger technology ○ Stable unit of pricing ○ Transferrable with instant settlement ○ Nil to low transaction costs ○ International use ○ Centralized token management 	<ul style="list-style-type: none"> ● Public good, Fed is the sole issuer ● Backed by the Fed and U.S government credibility ● Digital cash ● Identification verified with privacy protection ● Operational risks should be remote ● Interoperability yet to be established ● Payment system integrated ● Potential crypto applications ● Centralized settlement verification

Source: S&P Global.

e-USD, the big disruptor?

While stablecoins providers may switch U.S. dollar holdings (subject to custodian counterparty risk) to e-USD holdings (backed by U.S. government credibility), the governance risk gap is difficult to completely eliminate, even with the advent of stablecoin regulation. To stay competitive, stablecoins would have to compete on staking yields and service. This would be especially challenging if the e-USD operates as a public good and is interoperable across blockchains with zero transaction fees. New stablecoins could also be forged that are backed by e-USD with easier convertibility. Either way, the network effect of existing stablecoins could unwind if this competition is not well managed.

Users with a desire to maintain anonymity could be less likely to move to a e-USD from stablecoins. On the other hand, identification can help reduce money laundering, scams, and other nefarious crypto activities. There are proponents on both sides, and the market share of privately managed stablecoins could diminish with the advent of e-USD.

Identification requirement to split crypto into two worlds.

Identity verification is a core principle for e-USD adoption, and this can be handled by financial institutions using well-established KYC frameworks. In crypto, the dynamic is rather mixed, and a great deal of the various service providers remain unregulated. Very strict identification criterion could slow e-USD adoption on chain by retail users and limit any indirect regulatory influence projected on the future development of cryptocurrencies. At the same time, higher regulatory barriers could also render it more difficult for stablecoins to expand into the traditional world, such as using them for payments and institutional adoption could outpace retail adoption.

How risk mitigation and innovation are balanced will be important policy decisions that will reshape the future development of stablecoins and digital assets in general. We see e-USD as an alternative F2C medium that could dilute the market share of existing stablecoins. New stablecoins backed by e-USD offering more convenient convertibility could also be forged, changing the current competitive dynamics. As new crypto regulations kick in and e-USD F2C adoption increases, identification requirements are likely to split the crypto world into those that have gone through KYC and those that have not. Regulated institutional offerings, including stablecoin for payments services, would be limited to the former group.

Future Of Stablecoins: Disruption Is Coming

- The world of stablecoins is about to undergo a potentially radical transformation as they are brought into the fiat financial system and traditional banks issue digital liabilities.
- There are likely to be different responses to this development from different parts of the stablecoin ecosystem, depending on their business model.
- The challenge for authorities is to find the right balance between letting digital innovation flourish and safeguarding financial stability.

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Doomed from the start?

Stablecoins were in some ways always destined to be a transitory phenomenon. Since the digital finance world was evolving and innovating faster than the traditional finance world, the first generation of bridges connecting the two worlds were built from the digital side. These bridges started with cryptocurrencies and, due to their high volatility against fiat currencies, were followed by the development of stablecoins. In the next phase, the bridges are likely to be built from the other side.

That digital finance world now looks set to change quickly for several reasons. First, the benefits and potential of decentralized finance—from efficiencies to financial inclusion—are becoming clearer, and policymakers in the traditional finance world want to be at the table. Second, banks want a piece of the action, even though the *raison d'être* of decentralized finance is to take out the intermediaries. Finally, following the collapse of TerraUSD in May, the DeFi world is seen as risky and in need of some guardrails, regulatory structure, and professional management.

TradFi goes DeFi

The next phase for stablecoin issuers will be their inclusion into the traditional finance system and regulatory apparatus and the arrival of direct fiat-world competition. The question is what form this will take rather than whether it will happen. And the timeline now appears to be sooner rather than later.

The challenge might not be in the form of CBDCs, especially as regards the U.S. dollar. This is because CBDCs are likely to struggle with interoperability across the many blockchain services and other customer service activities that are too cumbersome for central banks to carry out. Therefore, private-sector involvement is needed for these competitive dynamics to shift, in our view.

The more likely competitive threat is from banks and the advent of tokenized deposits. This would be consistent with the current two-tier banking model. This approach presents a number of options for the current crop of stablecoin issuers as well as for existing banks.

Options for stablecoin issuers

What are the potential options for including stablecoin issuers into the fiat financial system? We see three possible options, and the one chosen will depend on the direction of the regulations. The options include:

- Stablecoin issuers become stand-alone narrow banks. They would continue to have an asset portfolio in fully reserves with the central bank to back their issued coins. Depending on licensing conditions, narrow banks could borrow from the capital markets to fund lending and other activities. A narrow bank license is not restrictive to existing stablecoin issuers

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with full asset backing but poses challenges to others. License holders could marginally expand their product offerings to include some lending. Stable coins' holders could be exposed to scenarios where the issuer of stablecoins incur losses above that exceed their capitalization.

- Stablecoin issuers become licensed general banks or banks issue tokenized deposits. This model may appeal more to issuers that are part of a digital ecosystem and wish to expand into traditional finance. Like a bank, these stablecoin issuers would have only fractional reserve requirements and be regulated in the same way as a commercial bank. A general bank license is not restrictive to existing stablecoin issuers with adequate asset backing and may pose challenges to those without any asset backing.
- Stablecoin issuers partner with a commercial bank, shifting their asset base to bank deposits. In this approach, the stablecoins are backed by deposits in a commercial bank, which are in turn backstopped by the central bank.

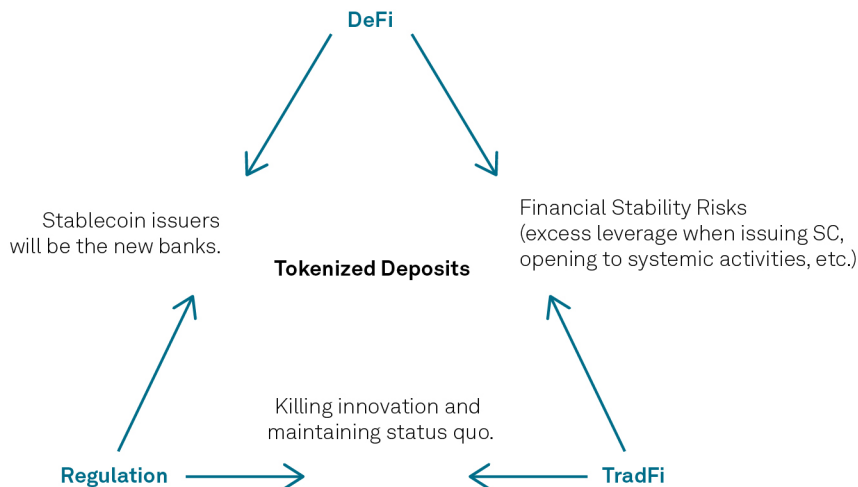
Note that in Option 2, assets that were previously used as a backing portfolio for stablecoins would become unencumbered. These amounts could be substantial.

It is also possible that some current stablecoin issuers will remain outside of reach of any regulated system. While conjectural, this group could include issuers that do not issue fiat-backed stablecoins (such as algorithmic-backed issuers), issuers that for various political reasons and beliefs want to remain separate from the fiat-backed system altogether, and dark-money types who wish to avoid any regulation altogether.

Regulation will need to strike the right balance. It seems clear that country authorities are aiming to bring parts of the digital world into the regulatory tent. Setting regulations too tight runs the risk of harming crypto innovation—with the attendant welfare losses. It also risks driving parts of the crypto world into the so-called dark corners, perhaps taking illegal activities with them. Setting regulation too loose runs the risk of threatening financial stability under the assumption that the DeFi world continues to grow quickly, and the risks remain poorly identified and understood.

Chart 12

The Trilemma Of Stablecoin Regulation



Source: S&P Global Ratings.

Stablecoins: Common Promises, Diverging Outcome

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