Stablecoins: Market Developments, Risks and Regulation

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Photo: piranka – Getty Images

Abstract

Stablecoins – a type of crypto-asset designed to maintain a stable value – have grown in popularity over recent years. Market developments, however, have highlighted the risks stablecoins can pose to investors, particularly if they are not fully backed by high-quality liquid assets. Stablecoins currently pose limited risks to the broader Australian financial system, but this could change if they become more widely used in the future – for example, in payments and other financial services. As such, regulators across the world are seeking to bring greater clarity to the regulatory treatment of stablecoins, not only to manage risks but also to support innovation in the market. This article considers the rise of stablecoins, the risks they pose and the response of regulators so far.

Introduction

Stablecoins are a type of crypto-asset designed to maintain a stable value relative to a specified unit of account or store of value, such as a national currency (often the US dollar) or a commodity (e.g. gold). They aim to overcome some of the shortcomings of 'unbacked crypto-assets' (e.g. Bitcoin), particularly price volatility, potentially making them more attractive as a means of payment or store of value (Dark *et al* 2019).

Stablecoins play an important role in the systems underpinning the trading and use of crypto-assets (the 'crypto ecosystem'). They are commonly used as a 'bridge' to facilitate trade between traditional currency and other crypto-assets or between different crypto-assets; this improves the functioning of crypto-asset markets. More than 75 per cent of trading on a selection of large crypto exchanges in 2022 has involved a stablecoin on one or both sides of the trade (Graph 1). Stablecoins also act as a safer store of value in the crypto ecosystem. Globally, the total value of stablecoins on issue

reached around US$185 billion in April 2022, up from around US$30 billion at the start of 2021. More recently, the value of stablecoins on issue has fallen to around US$150 billion following the collapse of a large algorithmic stablecoin and associated widespread volatility in crypto-asset markets that occurred around May 2022.

Stablecoin issuers are increasingly considering use cases that extend beyond the crypto ecosystem and there is significant interest globally in the potential for well-regulated stablecoins to enhance the efficiency and functionality of a range of payment and other financial services. More widespread use of stablecoins for payments would generate similar risks for customers and merchants as other payment systems (e.g. credit, liquidity, operational and settlement risks), although the relatively new underlying technology could change the nature or severity of some of these risks. In light of this, the international regulatory community is focusing attention on 'payment stablecoins' – a subset of stablecoin arrangements with features that are specifically designed to facilitate their widespread use as a means of payment. Consistent with the international focus, the Council of Financial Regulators (CFR) in Australia is working on options to incorporate payment stablecoins into the regulatory framework for stored-value facilities.

This article considers the rise of stablecoins and their potential expansion into new use cases. It details some of the risks stablecoins could pose to investors and to financial stability, and how regulators are responding in both global and domestic contexts.

The rapid rise of the stablecoin market

The stablecoin market has grown considerably over the past few years, with activity concentrated in a few US dollar denominated stablecoins. These stablecoins are primarily being used to facilitate speculative trading in crypto-assets, where they are often used as a bridge between national currencies and other crypto-assets. Using stablecoins to transact in crypto-assets reduces the need for market participants to convert funds into and out of national currencies, which can incur higher fees and reduce the efficiency of trades. Stablecoins are also commonly used to facilitate trading, lending and borrowing activity in crypto-asset markets, including through decentralised finance (DeFi) platforms.[1] For example, they can allow market participants to borrow funds to enable leveraged trading.

At the time of its announcement in mid-2019, Meta's proposed Diem stablecoin was envisaged as a new global 'cryptocurrency' that would facilitate person-to-person payments through digital wallets. The project attracted close scrutiny from the international regulatory community due to its potential to grow rapidly – potentially to a size where it would have had systemic importance. Regulators in several jurisdictions indicated that Diem would not be permitted to launch until it had addressed all regulatory concerns. Following several changes to the structure and scope of the Diem project aimed at addressing regulators' concerns, it was announced in early 2022 that the project was being wound down and the remaining assets sold to the owners of Silvergate Bank.

The two largest stablecoins on issue right now are Tether and USD Coin, which have market capitalisations of around US$65 billion and US$45 billion, respectively (Graph 2). Both are 'asset-backed' stablecoins – that is, the issuer holds (or claims to hold) assets that fully back the value of the coins on issue. These 'reserve assets' may include relatively safe and liquid assets (such as bank

Graph 1

Crypto-asset Trading Volumes*

Stablecoins ■ Unbacked crypto-assets ■ National currencies
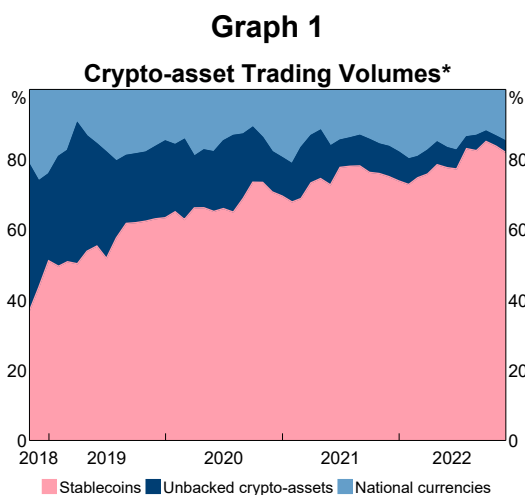
* Share of monthly trade volumes on selected crypto exchanges involving stablecoins, unbacked crypto-assets or national currencies on at least one side of the trade. Exchanges included in calculation: Binance, Poloniex, Bitfinex, Huobi, OKEx, Bittrex, Coinbase, Kraken, Bitstamp.

Sources: RBA; Theblock.co

deposits and US Treasury bills) that can be quickly liquidated in order to meet requests by holders of stablecoins to withdraw their funds on demand (i.e. redemption requests). However, the composition of reserve assets can differ substantially across stablecoins and there may not always be full transparency and oversight into the ability of issuers to return investor capital at par and on demand; in some cases, regulators have raised concerns about the liquidity, quality and valuation of the reserve assets held by stablecoin issuers (discussed below).

There are also so-called 'algorithmic stablecoins' that are not backed by high-quality liquid assets but instead attempt to maintain a stable value by adjusting the supply of the stablecoin on issue in response to changes in demand through various types of algorithms and incentive mechanisms. In early May 2022, the value of TerraUSD – at the time, one of the largest algorithmic stablecoins, with a market capitalisation of around US$18 billion – collapsed when a failure to maintain its peg to the US dollar led to significant investor withdrawals and an apparent breakdown of its stabilisation mechanism (Graph 3). There was also considerable focus on Tether at the time, which faced selling pressure from a loss of investor confidence. Tether temporarily lost its peg to the US dollar, falling to a low of around US$0.95. Investor uncertainty associated with these events spread to broader crypto-asset markets where there was heightened price volatility (RBA 2022a). In November, Tether again temporarily lost its peg to the US dollar, falling to a low of US$0.98.

Issuance of Australian dollar denominated stablecoins has been relatively limited to date. TrueAUD, issued by US-based TrustToken, appears to be the largest with around A$40 million on issue. However, Australian banks and payment service providers are showing increasing interest in issuing or supporting Australian dollar stablecoins.

## Applications beyond the crypto ecosystem

Stablecoin issuers are increasingly considering use cases for stablecoins that extend beyond the crypto ecosystem with a view to enhancing the efficiency and functionality of payments and other financial services. These use cases have tended to focus on stablecoins as a means of payment, including for person-to-person and cross-border payments, and as a settlement asset in transactions involving 'tokenised' or other types of digital assets. 'Tokenisation' refers to creating a digital representation of a physical asset or existing asset class on distributed ledger technology. This is an emerging area of research in financial markets, with participants exploring how these new forms of digital assets will be traded and what new markets may develop. It is possible that stablecoins could facilitate trading in these markets as a payment token and/or settlement asset.

Domestically, there have been a number of recent initiatives involving stablecoins – including pilots undertaken by ANZ, announcements of the launch of Australian dollar denominated stablecoins by several non-bank entities, and the launch of stablecoin-based investment products. One of the
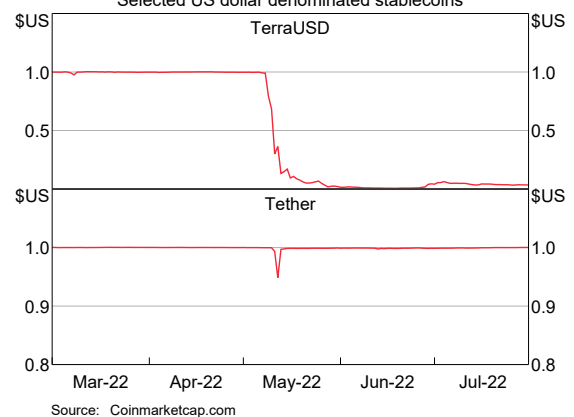
Graph 2

Market Capitalisation
Selected US dollar denominated stablecoins

Source: Coinmarketcap.com
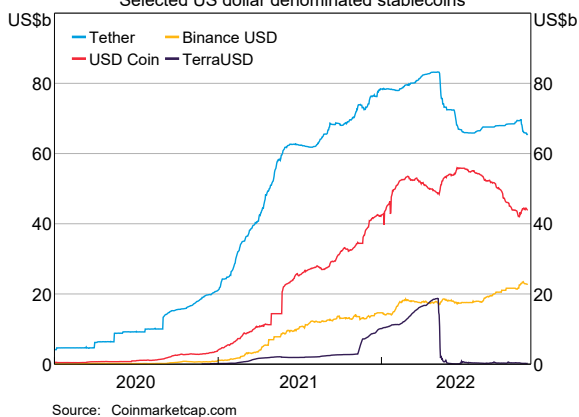
Graph 3

Stablecoin Prices
Selected US dollar denominated stablecoins

Source: Coinmarketcap.com

Table 1: Risks from Stablecoins

Risks to investors and users	
Market and liquidity risks	Redemption in full and on demand at par is not guaranteed due to the possibility of a 'run' (rapid withdrawal of funds with redemption compromised by illiquidity of assets). Algorithmic stablecoins not backed by financial assets are highly susceptible to runs.
	Reserves held by asset-backed stablecoins are subject to market, credit and liquidity risks.
Operational risks, including cyber-attacks and fraud	There are heightened risks due to unregulated issuers and service providers, opacity and complexity of the crypto ecosystem, and a lack of recourse for lost or stolen crypto-assets. There is also potential legal uncertainty around redemption rights and claims on issuer.
Future potential risks to financial stability	
Risks to banks and other important financial institutions	Deposits held on behalf of stablecoin issuers could be vulnerable to sudden outflows.
	Stablecoins held as investments or collateral could result in potential losses.
	There are legal, operational and reputational risks from provision of crypto services (e.g. custody).
	Banks issuing stablecoins face risks depending on the design and use case.
Funding markets	A run on a stablecoin could disrupt funding markets by triggering asset fire sales.
Future use in payments	Widespread use in payments would involve risks, depending on scale and design.
Climate risks	Continued or increased use of energy-intensive distributed ledger technologies could exacerbate energy and climate-related financial risks.

Source: RBA

ANZ pilots examined how Australian dollar stablecoins could improve compliance with Australian tax regulations by using distributed ledger technology and stablecoins to automate the payment of tax when a taxable event occurs. Another ANZ pilot explored how Australian dollar stablecoins could reduce frictions for Australian investors accessing crypto markets by removing the need to convert Australian dollars to US dollars in the foreign exchange market before purchasing US dollar stablecoins and other crypto-assets.

Current and emerging risks

Similar to other financial products, stablecoins carry risks for investors and users (Table 1). These risks depend on a range of factors, including the design of the stablecoin arrangement and its applications. Stablecoins that are fully backed by high-quality liquid assets carry substantially lower risks for investors and users than other stablecoins, particularly algorithmic stablecoins. Due to the relatively small size of the market and the limited use of stablecoins outside the crypto ecosystem,

stablecoins do not yet pose broader risks to financial stability. However, continued growth could see risks emerge in the future.

Risks to investors and users

Market and liquidity risks

Stablecoins can be vulnerable to runs, whereby a sudden spike in redemption requests – triggered by, for example, a price fall, rumours of instability or concerns about underlying asset quality – results in a 'fire sale' of the assets backing the stablecoin. This risks further outflows as investors become concerned that the issuer may be unable to meet future redemption requests in full. This vulnerability is similar to that of other investment products – and particularly certain money market funds (MMFs) that aim to maintain a stable net asset value – but may be magnified for some stablecoins due to incomplete regulation across the crypto ecosystem.

The design of a stablecoin arrangement can limit its vulnerability to runs and other risks. For example, issuers can overcollateralise stablecoins with high-

quality liquid assets, such that full redemption may be possible even during periods of stress. Transparent governance arrangements (such as regular independent audits) can provide investors with confidence in the issuer's assertions regarding the value and liquidity of its reserve assets. Stablecoin issuers can also provide investors with legal certainty around their redemption rights, including in the event of an issuer insolvency.

In practice, some large asset-backed stablecoins fall short of these standards. For example, Tether has faced scrutiny over claims that its stablecoin is 'fully backed by US dollars', which led to it being fined twice by US regulators in 2021. Tether continues to invest a portion of its reserves in risky and illiquid assets, and holds only a slim capital buffer to cover potential losses on these assets (Graph 4).[2] Some large stablecoin issuers also impose restrictions on redemptions (such as high minimum redemption amounts) or make redemption conditional on the performance of reserve assets (Hermans *et al* 2022). The legal claims that stablecoin investors have on issuers under different scenarios can also be unclear, meaning that investors could have an unsecured credit exposure in some cases.

Algorithmic stablecoins, which are not backed by financial assets, are inherently fragile as the stability of the peg depends on investors' confidence in the value of a related unbacked crypto-asset. The fragility of such stablecoins was recently highlighted by the collapse of TerraUSD.

Graph 4

Stablecoin Reserves*

*   As at September 2022
** Includes commercial paper, certificates of deposit, secured loans, corporate bonds, investment funds, precious metals, crypto-assets and non-US government debt securities.

Source: Stablecoin issuer disclosures

The stabilisation mechanism for TerraUSD operated via a related unbacked crypto-asset known as TerraLuna. TerraLuna was designed to act as the counterbalance to TerraUSD, absorbing any price pressures on the stablecoin.[3] The trigger for the recent disruption appears to have been a small number of large trades that included a sudden withdrawal of a large amount of TerraUSD from a decentralised stablecoin exchange on the Terra platform (Chainalysis 2022). This led to the initial de-pegging of TerraUSD, which appears to have prompted a broader loss of confidence in the Terra platform and an accelerated sell-off of TerraUSD and TerraLuna as holders of these tokens 'ran' to other assets. In an attempt to maintain the stabilisation mechanism, the smart contract issued increasing amounts of TerraLuna tokens, further depressing TerraLuna's price and causing it to enter a 'death spiral'. Algorithmic stablecoins typically do not offer a mechanism to redeem stablecoins from the issuer, meaning that investors needed to accept low prices on secondary crypto-asset markets if they wanted to exchange their TerraUSD or TerraLuna into national currency. The market value of TerraUSD has remained below US$0.10 since the collapse.

Operational risks

Stablecoins and other crypto-assets are also susceptible to operational risks, including fraud and cyber risks. These risks arise from a number of sources, including the opacity and complexity of the crypto ecosystem, the widespread use of third-party service providers such as exchanges and custody services, and a lack of recourse for lost or stolen crypto-assets. These issues are compounded by incomplete regulation across the crypto ecosystem, including with regards to the operational and financial resilience of stablecoin issuers and third-party service providers. Regulators are highly attentive to these risks and are in the process of developing regulatory frameworks for stablecoins, other crypto-assets, and crypto-asset service providers.

Financial stability risks

Stablecoins currently pose minimal risks to financial stability because of the small size of the market
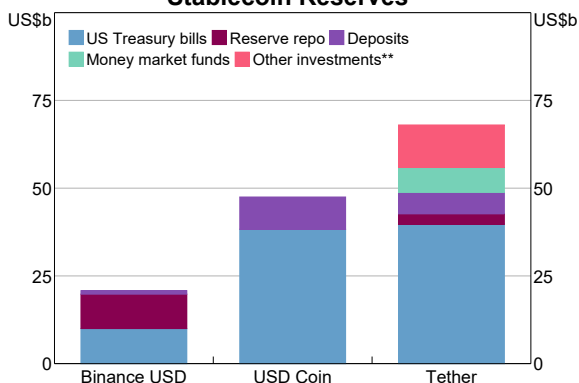
relative to other asset classes and the limited use of stablecoins outside the crypto ecosystem (RBA 2022b). In this sense, stablecoins and other crypto-assets operate in what is still largely a self-referential system. However, continued growth and new use cases could introduce risks, including by strengthening the links between the crypto ecosystem and the 'traditional' financial system. Potential financial stability risks posed by asset-backed stablecoins are akin to those posed by financial products with similar features, including certain types of investment funds, bank deposits and payment instruments. Algorithmic stablecoins appear less likely to pose systemic risks as they do not invest in traditional financial assets and are less likely to become widely adopted by systemically important financial institutions (due to higher risks and consequently higher capital charges under proposed capital frameworks).

Increased bank exposure

Financial stability risks could emerge if stablecoins become more widely used by banks and other financial institutions. Exposures to stablecoins and other crypto-assets among advanced economy banks remain very small at present, although banks have been increasingly willing to provide crypto-related services and integrate crypto-assets into existing services over the past couple of years. Banks could face a number of risks from stablecoins, including:

- A run on a stablecoin could result in sharp deposit outflows from some banks or disruptions to other sources of bank funding (such as commercial paper), as stablecoin issuers typically hold a portion of their reserves in at-call bank deposits and/or short-term debt securities.

- Banks that have direct exposures to stablecoins – either by holding stablecoins directly or by accepting stablecoins as collateral – could face losses on those exposures in the event they declined in value.

- Banks may perform broking, trading or other services that involve little market exposure but carry legal, operational and reputational risks – for example, due to rules related to anti-money

laundering and counter-terrorism financing or sanctions enforcement, or if customers make large losses on crypto investments facilitated by the bank.

- Banks that issue their own stablecoins may face implications for their liquidity management and operational resilience, as well as for customer and payment systems, depending on factors such as the intended use case and the scale of the issuance. These risks are likely to be similar to those associated with equivalent types of bank deposits. As discussed above, banks have begun issuing stablecoins in experimental settings and issuance may become more widespread in the future.

Disruptions to funding markets

A run on a stablecoin could trigger fire sales of reserve assets, such as short-term government debt or commercial paper. This could cause or exacerbate dysfunction in important funding markets, particularly if such an event occurred during a period of broader market stress. Runs on MMFs, which invest in similar assets, have exacerbated disruptions in commercial paper markets during previous episodes of market-wide stress (including during 2008 and 2020) (Eren *et al* 2020). The three largest stablecoins are comparable in size to some US MMFs, although the total value of stablecoins on issue is much smaller than the MMF market (Graph 5). As a result, total holdings of reserve assets remain small relative to measures of market depth – such as turnover or issuance – limiting systemic risks for the time being.

Risks to the payments system

More widespread use of stablecoins for payments would generate similar risks for customers and merchants as other payment systems (e.g. credit, liquidity, operational and settlement risks). The extent of any resulting financial stability risks would depend on the scale and nature of the system and its use in critical financial services. Relative to existing payment systems, a stablecoin-based payment system could carry new or greater risks – for example, the underlying distributed ledger technology, which is relatively new, may have

unforeseen vulnerabilities. Conversely, a stablecoin-based payment system may reduce certain risks (e.g. by facilitating delivery versus payment for the settlement of digital assets).

Energy and climate-related impacts

Some existing stablecoin technologies rely on proof-of-work consensus mechanisms to validate transactions, which involve so-called 'miners' competing to solve complex cryptographic problems (Adachi *et al* 2022). Proof-of-work mechanisms are highly energy-intensive and therefore have the potential to contribute to climate change. Proof-of-work is also slower and less scalable than some less energy-intensive mechanisms such as proof-of-stake, which instead require validators to 'stake' capital in the form of crypto-assets to participate in validating transactions. As a result, more widespread adoption of stablecoins for applications such as payments may depend on issuers migrating to less energy-intensive technologies. Indeed, some stablecoin issuers are now using proof-of-stake or proof-of-history consensus mechanisms – including those on the Ethereum platform, which moved to proof-of-stake consensus in September 2022.

Emerging regulation of stablecoins

Regulators and international organisations have been consulting stakeholders and developing regulatory proposals to address risks arising from stablecoin activity. One focus is on identifying the
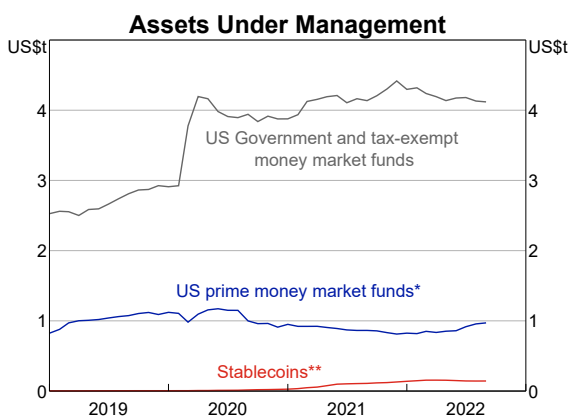
Graph 5

Assets Under Management

* Prime money market funds primarily invest in corporate debt securities.
** Market capitalisation; predominantly US dollar stablecoins.
Sources: Coinmarketcap.com; RBA; US Office of Financial Research

extent to which stablecoin arrangements share common features with the traditional financial system, with the goal of producing 'technology neutral' regulation (i.e. same activity, same risk, same regulation). A common theme emerging across jurisdictions is to consider regulatory requirements for payment-related stablecoins as a priority.

International regulation: Developing a consistent approach

Central banks, domestic authorities and international bodies are undertaking significant work to understand the financial stability risks stemming from the crypto ecosystem and the need for regulatory adjustments. In particular, international bodies are leading work to develop a consistent and comprehensive regulatory approach for 'global stablecoins' – that is, stablecoins with a potential reach and use across multiple jurisdictions, which could become systemically important in and across one or many jurisdictions. Regulatory initiatives in this area include the following:

- The Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions recently published guidance confirming that if a stablecoin arrangement facilitates the transfer of value and is determined to be systemically important, it is expected to observe the Principles for Financial Market Infrastructures, which are the international standards for the design and operation of financial market infrastructures to mitigate financial stability risks (CPMI-IOSCO 2022).

- The Financial Stability Board is currently consulting on revisions to a set of 10 high-level recommendations for regulating global stablecoins and stablecoins with the potential to become global stablecoins (FSB 2022). The recommendations aim to promote consistent and effective regulation, supervision and oversight of global stablecoins to address financial stability risks, while supporting innovation.

- The Basel Committee on Banking Supervision has proposed standards for the prudential

treatment of bank exposures to crypto-assets, including stablecoins (BCBS 2022). Under this proposed framework, exposures to asset-backed stablecoins that satisfy certain requirements relating to the composition of their reserve assets and price stability would typically carry a lower capital charge than exposures to other stablecoins and unbacked crypto-assets.

Australian regulation: CFR focusing on payment stablecoins

Work on a regulatory framework for crypto-assets in Australia is being led by the Treasury with support from CFR agencies and other regulators. Consistent with the international focus, the CFR has agreed that developing a framework for regulating 'payment stablecoins' is a priority in the near term, given the potential for these arrangements to become widely used as a means of payment and a store of value (CFR 2022).

Payment stablecoins are a subset of stablecoin arrangements with features that are specifically designed to facilitate their widespread use as a means of payment in the economy (i.e. to function as a form of 'money') – in particular, the ability (or implied promise) for customers to be able to withdraw their funds on demand and 'at par' (full value) in national currency. The CFR has noted that the risks posed to users of payment stablecoins can be similar to those posed by certain stored-value

facilities, including the risk of user losses due to failure of the issuer to meet their obligations (e.g. because of a failure to appropriately safeguard customer funds, illiquidity and/or insolvency). Accordingly, the CFR is working on options for incorporating payment stablecoins into the proposed regulatory framework for stored-value facilities. This is one element of broader reforms to the payments regulatory framework following the Treasury Review of the Australian Payments System.

Conclusion

Stablecoins have the potential to enhance the efficiency and functionality of a range of payment and other financial services, but they also carry risks for investors, users and potentially the broader financial system. These risks depend on a range of factors, including the design of the stablecoin and its links with the traditional financial system. Interest in Australian dollar stablecoins is growing, albeit from a low base, and the market could develop rapidly as use cases emerge – in particular, as a means of payment or settlement asset. Regulators are undertaking significant work to understand how stablecoins can support innovation while providing appropriate safeguards for investors and users, consistent with the overall stability of the financial system. ⚐

Endnotes

[*] Cameron Dark and Nick Rowbotham are from Payments Policy Department; Eleanor Rogerson and Peter Wallis are from Financial Stability Department. This article draws on work completed with Chay Fisher, Chris Thompson and Shayan Omidi.

[1] DeFi describes a range of automated financial services such as insurance, lending and borrowing, which do not rely on financial intermediaries and operate peer-to-peer through decentralised exchanges.

[2] For example, Tether's September 2022 Consolidated Reserves Report stated that the value of its assets was US$68.1 billion, relative to stablecoins on issue of US$67.8 billion. Tether's Reserves Reports are reviewed by an independent auditor but do not attest to the value or

composition of Tether's reserves outside of end-of-quarter reporting dates.

[3] Through a smart contract, one TerraUSD token was always exchangeable for US$1 of TerraLuna tokens. This was intended to create the incentives for arbitrage trading that would keep TerraUSD at its peg. For example, if the price of TerraUSD fell below US$1 due to reduced demand, investors would (in theory) be incentivised to 'burn' their TerraUSD and 'mint' TerraLuna (at 1 TerraUSD for US$1 worth of TerraLuna) via the smart contract and thereby earn an arbitrage profit. This would reduce the supply of TerraUSD, putting upward pressure on its price until it regained its peg.

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