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The financial stability considerations of stablecoins in South Africa

Abstract

Note: Although this Topical Briefing Note may be read as a standalone document, an earlier Topical Briefing titled “A primer on stablecoins” provides useful context on the development of the crypto asset ecosystem both globally and in South Africa. It is available at https://www.resbank.co.za/en/home/what-we-do/financial-stability.

South Africa, like numerous other jurisdictions, continues to face the challenge of obtaining regular and relevant information on crypto assets and related activities, including on stablecoin usage and adoption. Domestically, the resulting data gaps mean that the South African regulatory authorities may increasingly struggle to retain line of sight of crypto asset-related developments until the roadmap for bringing crypto asset service providers into the South African regulatory remit – as announced by the Intergovernmental Fintech Working Group in June 2021 – is implemented. To address the lack of data availability for financial stability monitoring purposes, this note draws on recent stablecoin-specific scenarios developed by the Bank of England and the US Federal Reserve, among others. Subsequently, four hypothetical scenarios are

employed to more deeply understand and analyse the existing vulnerabilities in the domestic financial system with regard to stablecoins. It is concluded that although stablecoins do not currently pose a risk to domestic financial stability, the lack of an explicit domestic regulatory framework for stablecoins remains a pertinent vulnerability. In particular, limited regulatory influence over stablecoin issuers – whether domiciled domestically or abroad – may result in spillovers from the crypto asset ecosystem to the traditional financial system, particularly if South African regulatory authorities are unable to impose prudential requirements on stablecoin issuers to guarantee redeemability at par during a run on the stablecoin.

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Glossary of terms

Term	Definition
algorithmic stablecoin	Protocols that increase or decrease the supply of the stablecoins in issue in response to changes in demand and market activity.
asset-backed stablecoin	There are four types of asset-backed stablecoins, namely (i) currency-based; (ii) financial instrument-based; (iii) commodity-based; and (iv) crypto asset-based (or combination of the four types).
burning	The process of removing issued stablecoin tokens from circulation (i.e. redeeming and destroying issued stablecoin tokens).
minting	The process of creating new stablecoin tokens (i.e. issuance).
peg	The ratio at which the stablecoin is pegged to the underlying reference asset. Most, but not all, stablecoins are pegged 1-1 to the underlying reference asset.
reserve asset	The asset serving as collateral for the stablecoins in issue. The reserve asset guarantees the value of the stablecoin and ensures that stablecoins can be redeemed at par.
stabilisation mechanism	The process through which the stablecoin maintains a stable value relative to its peg.
staking	Decentralised finance (DeFi) applications and protocols require sufficient liquidity to ensure efficient execution of transactions. In order to stabilise the value of transactions, stablecoins are the preferred vehicle for entering the DeFi space. In the DeFi context, stablecoins allow crypto asset holders to lock their crypto asset holdings in liquidity pools, and earn a return based on the fees generated in the relevant liquidity pool.
underlying reference asset	The asset to which the stablecoin is pegged (i.e. the asset to which the stablecoin aims to remain pegged).

1 Introduction and scope

This paper is the second in a two-part series on the financial stability considerations of stablecoins[1]. The first paper covered the fundamentals of stablecoins, including definitions, design options, use cases, risks, benefits and – based on two case studies - the transmission channels through which stablecoins could impact financial stability. Drawing on the extensive reflections of the Bank for International Settlements (BIS) on the issue of public versus private money, this paper first considers the similarities and differences between central bank digital currency (CBDC) – a form of public money – and stablecoins (a form of private money). The paper then expands on the transmission channels through which stablecoins could threaten financial stability in South Africa under four hypothetical but plausible future scenarios: (i) widespread adoption and use of a foreign-issued, foreign currency denominated stablecoin; (ii) rapid growth in the adoption and use of a domestically issued Rand stablecoin by a registered bank or consortium of banks; and (iii) rapid growth in the issuance of a domestic Rand stablecoin by a non-bank entity.

2 Stablecoins versus CBDC: Similarities and differences

2.1 The need for stablecoins

The surge in stablecoin issuance and use over the last few years[2] suggests there is growing demand for these instruments, and the fact that the demand is currently being met by private-sector solutions poses fundamental questions about the role of and interaction between public and private money. For some (see e.g. Shin, 2022:1-2), the growing prevalence of stablecoins demonstrates that crypto assets *"need to piggyback on the credibility of the central bank"* and *"the fact that stablecoins play such a prominent role is a salient marker of crypto's search for a nominal anchor. … stablecoins show that if central bank money did not exist, it would need to be invented."* The key question is then why does stablecoin issuance and use keep growing? In short, it is due to the lack of a suitable alternative as discussed next.

[1] The SARB uses the Financial Stability Board (FSB) definition of a stablecoin being a "crypto asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets" (FSB, 2020:5).

[2] The value of stablecoins in issue increased from around $10 million at the start of 2017 to approximately $142 billion at the time of writing (July 2022), having peaked at $182 billion in March 2022 (The Block, 2022).

2.2 The complementarity between public and private money

In recent years, the BIS (see, e.g. Carstens, 2018; 2019; 2022; BIS, 2020; Brainard, 2021; Cœuré, 2021; Panetta, 2022; De Galhau, 2022; Shin, 2022;) has consistently argued that money is ultimately a public good that needs to be provided by the public sector – ideally a central bank – given that private-sector entities may be differently incentivised (e.g. through profit motives) to consistently act in the public interest, and its stability and use need to be protected by the public sector. However, the monetary system is based on the complementarity of public and private money, and this symbiotic coexistence has been a strong driver of stability and innovation.

Following the launch of Bitcoin, private-sector alternatives (e.g. crypto assets, stablecoins and offerings by bigtechs) are threatening this symbiotic relationship in an increasingly digital world. Stablecoins therefore pose a systemic threat should they become widely adopted, which would upset the complementarity between public and private money by skewing the issuance and use of money – as a public good – to private-sector offerings at the expense of public-sector offerings. This policy challenge requires a two-pronged approach: meeting the growing demand for a digitally native currency pegged 1-1 to a sovereign currency, and appropriate regulation of private-sector offerings. It is evident that there is growing demand for stablecoins – if this demand is not met by the public sector, the private sector will step in. Stablecoins may therefore become more widely adopted simply due to the lack of an appropriate public-sector offering that meets users' requirements.

Carstens (2019) argues that at the heart of the monetary system is trust in the currency, and likens the complementarity between public and private actors to a skyscraper: the foundation of the skyscraper is not visible at first glance, yet it is the most important determinant of the skyscraper's ability to remain upright. In the context of the monetary system, it is therefore the role of the public sector (i.e. central banks) to provide a solid foundation on which the private sector can innovate. In the context of stablecoins, CBDC is the public sector equivalent of a stablecoin: fundamentally, and noting the numerous design options and implications for a stablecoin's stability discussed in the first paper in this series, CBDC and the most stable stablecoins are similar in most aspects, with the main difference being that the one is issued by a public-sector entity (i.e. a central bank), while the other is issued by a private entity.

Two opposing, but not necessarily mutually exclusive, vantage points emerge from the discussion on the complementarity between public and private money: (i) if a stablecoin could be made sufficiently safe through appropriate regulation, there may not be a need for CBDC (i.e. if the same level of trust can be ensured); and (ii) by contrast, if central banks issue CBDCs that meet user requirements, there may not be a need for stablecoins (though central to this debate is the issue of data and transactional privacy and anonymity). Although these scenarios are two extremes on the same continuum, if the complementary relationship between public and private money is perpetuated, a scenario may emerge where both stablecoins and CBDC are held and used. In reality, it is likely that individuals would hold a combination of private and public money depending on their utility (i.e. certain types of digital money may be more efficient for certain types of use cases)[3]. However, increased uptake of stablecoins is likely to be influenced by the design features of a retail CBDC, and vice versa. For example, CBDCs could infringe on holders' privacy rights, such that their transactions would be immediately visible to a central authority (again, this may be addressed through CBDC design choices). Furthermore, the success of CBDC is largely dependent on the success (or failure) of the underlying design and implementation of domestic macroeconomic policy.

The issue of stablecoin regulation is discussed next, while the topic of CBDC is deferred for the purposes of this paper and in view of the SARB's ongoing research into the feasibility, desirability and appropriateness of CBDC for general-purpose retail use as announced in May 2021[4].

2.3 Overview of stablecoin regulation internationally

In a now-famous speech, BIS General Manager Augustin Carstens (2022) argues that the soul of money is trust. To this end, the Bank of England (BoE, 2021) has set out its expectations for stablecoins, crucially requiring that public trust and confidence in stablecoins, both as a means of payment and store of value, should be the same as for commercial bank money. This, however, requires an appropriate regulatory framework for stablecoins, which is the topic of ongoing discussion and debate

[3] This issue is discussed in detail by Brunnermeier (2019).
[4] The press release is available at https://www.resbank.co.za/en/home/publications/publication-detail-pages/media-releases/2021/SARB-commences-feasibility-study-for-a-general-purpose-retail-central-bank-digital-currency.

globally. Table 1 below provides an overview of selected jurisdictions and standard-setting bodies' (SSBs) approaches or proposed approaches to stablecoin regulation.

Table 1: Overview of selected jurisdictions and SSBs' approaches to stablecoin regulation

Jurisdiction or SSB	Regulatory approach to stablecoins
United States	If passed, the Stablecoin Transparency of Reserves and Uniform Safe Transactions Act of 2022 (TRUST Act) would require US dollar-pegged stablecoin issuers to: • Keep reserves exclusively in Treasury Bills and cash. • Obtain an Office of the Comptroller of the Currency (OCC) license, a state money transmitter, or similar license or a traditional bank charter. • Be subject to a disclosure regime that would require them to secure regular audits, detail clear redemption policies and specify what actually backs the stablecoins they issue (US Senate, 2022). In addition, the report on stablecoins by the President's Working Group on Financial Markets (PWG), in collaboration with the Federal Deposit Insurance Corporation (FDIC) and the OCC, recommended that stablecoins be subject to prudential oversight, and that only insured depository institutions should issue stablecoins (PWG, FDIC and OCC, 2021).
United Kingdom	The BoE's (2021) Financial Policy Committee published non-binding expectations for stablecoins, including the following: • unless the stablecoin is operating as a bank, the backing assets for stablecoins cover the outstanding coin issuance at all times; • stablecoins should have equivalent protections to those for commercial bank money; and • stablecoins must be fully interchangeable with existing forms of money. The BoE further notes that one option is to subject stablecoin issuers to the existing banking regulatory framework, while another option is to require stablecoin reserves to be backed by commercial bank deposits.
European Union	The European Commission's Regulation of Markets in Crypto-assets (MiCA) proposes designating single-currency pegged stablecoins as e-money tokens and imposing the existing e-money requirements as defined in Article 2, point 2, of Directive 2009/110/EC on them, which stipulates that e-money holders have (i) a claim on the e-money issuing institution; and (ii) a contractual right to redeem their e-money at any time against an official currency of a country at par value with that currency (Council of the European Union, 2021).
Japan	Japan's Parliament passed a law on 3 June 2022 that stipulates that only licensed banks, registered money transfer agents and trust companies may issue fiat-pegged stablecoins (Iwata and Sekiguchi, 2022).
Singapore	Certain fiat-pegged stablecoins may, subject to meeting stringent requirements, be designated as e-money by the Monetary Authority of Singapore (MAS), thereby bringing them within the MAS's regulatory remit (2021). Stablecoins that do not meet the e-money requirements may be, but are not automatically, designated as a 'digital payment token', which would

Jurisdiction or SSB	Regulatory approach to stablecoins
	then be regulated under the MAS's Payment Services Act. It should be noted that the requirements have not yet been codified in law, and are detailed in a 'frequently asked questions' supplement to the Payment Services Act.
BIS	The BIS argues that in regulating any stablecoin, the starting point should be an appropriate registration or licensing regime, which allows for adequate information gathering and monitoring. The motivation is that absent data and monitoring, potential financial stability risks may develop unobserved (Arner, Auer and Frost, 2020).
Committee on Payments and Market Infrastructures (CPMI) of the International Organization of Securities Commissions (IOSCO)	According to the CPMI-IOSCO (2021), stablecoins' transfer function is comparable to the transfer function performed by other types of financial market infrastructure (FMI). As a result, should a stablecoin perform this transfer function, it is considered an FMI for the purposes of applying the Principles for Financial Market Infrastructures (PFMI) and, if determined by relevant authorities to be systemically important, the stablecoin would be expected to observe all relevant principles in the PFMI.
FSB	Among other things, the FSB (2020) High-Level Recommendations for Stablecoins require authorities to ensure that stablecoins meet all applicable regulatory, supervisory and oversight requirements of a particular jurisdiction before commencing any operations in that jurisdiction, and adapt to new regulatory requirements as necessary. Also, stablecoins should have appropriate recovery and resolution plans.

Although various approaches have been taken, there are essentially two fundamental aspects underpinning the design of a regulatory framework, namely, to subject crypto assets to the existing regulatory framework (with or without amendment) or to create a new framework specifically for the crypto asset class. Japan is the only country from the sample above to have passed legislation specifically regulating stablecoins, although the implementation date is only expected to be in 2023.

3 Vulnerabilities associated with stablecoins

3.1 Overview of vulnerabilities

In considering the potential financial stability impact of broader stablecoin adoption and usage, the following four types of vulnerabilities are considered:

- Existing domestic vulnerabilities (i.e. vulnerabilities that exist in the domestic or regional financial system).
- Existing global vulnerabilities (i.e. vulnerabilities in the global financial system which either exist in several jurisdictions or which may potentially spill over from one jurisdiction to another).

- Emerging domestic vulnerabilities (i.e. vulnerabilities that do not currently pose a material risk to domestic financial stability, but which may do so within the next 5 years and therefore require monitoring).
- Emerging global vulnerabilities (i.e. vulnerabilities that do not currently pose a material risk to global financial stability, but which may do so within the next 5 years and therefore require monitoring).

As discussed in the precursor to this paper[5], one of the main concerns internationally is around the redeemability – at par – of stablecoins for fiat currency, with the largest determinants in this regard being the quality and quantity of the reserves backing the stablecoins in issue. Ultimately, stablecoin instability comes in two forms, namely investor redemption risk from the issuer, and secondary market price dislocations (US Federal Reserve, 2021). To this end, the BoE (2021) intends to ensure that the public has the same level of trust in privately issued monetary instruments (such as stablecoins) as they do in existing forms of money (i.e. central and commercial bank money). To ensure this level of trust, stablecoin users must be assured of the right to redeem stablecoins at par and exchange them for other forms of money at any time (especially in distress). A regulatory framework for stablecoins therefore needs to provide general confidence that stablecoins are credible, and consistently fully interchangeable with existing forms of money (BoE, 2021). Because of the cross-border nature of stablecoins, any domestic regulatory framework would need to be underpinned by internationally agreed principles. Other public policy objectives would be to ensure the ability of users to switch, with limited or no friction, between different forms of money as well as ensuring integrity (i.e. reducing the risk of using stablecoins for illicit purposes). The fundamental principle to regulating a stablecoin would be similar risks as existing activities would attract the same level of regulation as those activities. However, as observed from Table 1, to date only Japan has passed firm legislation for regulating stablecoins. As a result, from a regulatory perspective, the lack of clear, stablecoin-specific regulation represents an existing vulnerability - both internationally and domestically. This vulnerability is exacerbated when considering how best to harmonise individual jurisdictional approaches to stablecoin regulation given the borderless nature of stablecoins.

[5] Titled “A primer on stablecoins” by Steyn, Campbell, Van Deventer and Chibi, forthcoming.

From a domestic perspective, the characteristics of stablecoins make them very similar to e-money (without being designated as such)[6] and hence their impact on the financial system and broader economy could be similar to commercial bank money. The current domestic vulnerabilities are (i) the lack of clarity on which entities may issue stablecoins; and (ii) the lack of explicit regulatory requirements for stablecoin issuers (whether the issuer is a bank or non-bank), including but not limited to governance arrangements, the quality and quantity of reserve assets, and the treasury function as it relates to stablecoin issuance and redemption. As a result, currently non-banks can issue e-money-like instruments in the form of stablecoins (ZARP being a case in point) without there being clear legal precedent around the permissibility of such issuance.

A further existing global and domestic vulnerability is the lack of consistent, high-quality, comparable data across jurisdictions. The lack of verifiable data on South Africans' use and holdings of crypto assets, including stablecoins, prevents a quantitative systemic risk assessment from being conducted in the domestic context at the current conjuncture. This is not unique to South Africa, with the FSB (2022) and Bank for International Settlements (Auer *et al.* 2022) noting that various jurisdictions are struggling to consistently obtain high-quality data on holdings of crypto assets and stablecoins. To this end, the BIS (2020) argues that in regulating any stablecoin, the starting point should be an appropriate registration or licensing regime, which allows for adequate information gathering and monitoring. The motivation is that in the absence of data and monitoring, financial stability risks may develop unobserved.

Turning to emerging vulnerabilities, there is growing evidence of increasing interconnectedness between crypto asset and equity markets or, phrased differently, interconnections between crypto asset and equity markets are already at non-negligible levels (Iyer, 2022). Without an explicit backstop for stablecoins in the form of deposit insurance, appropriate recovery and resolution planning or similar safety net, coupled with an appropriate regulatory framework, a material failure in the crypto asset ecosystem could have material spillovers to the traditional financial system as demonstrated by the recent market fall-out from the collapse of Terra Luna[7].

[6] In South Africa, only registered banks are allowed to issue e-money (SARB, 2009), which means stablecoins issued by a non-bank would automatically be excluded from the domestic e-money definition.

[7] The demand for Luna was driven by a product that Terra developed, namely Anchor – a savings protocol on the Terra blockchain that pays depositors a stable interest rate by 'staking' their owners, thereby providing liquidity. In the days leading up to Terra's crash, UST issuance surged, causing UST's 1-1 peg to the US dollar to break.

The lack of clarity from a financial safety net perspective thus constitutes an emerging vulnerability both from a domestic and international perspective.

A further emerging vulnerability is the applicability (or lack thereof) of existing financial safety nets in the event of a crisis, including but not limited to deposit insurance, and recovery and resolution planning. A common concern among foreign regulators is how reserves held at insured depository institutions would be treated by their deposit insurance schemes. The FSB recommendation that "authorities should ensure that [stablecoin] arrangements have appropriate recovery and resolution plans" in place poses a further challenge for South Africa. The way stablecoin reserves are held at CoDI members would influence whether they would qualify for deposit insurance under the proposed framework.

Another emerging vulnerability is the threat of digital dollarisation, particularly for emerging markets and developing economies (IMF, 2021). Although South Africa's remaining capital controls maintain the closed rand system, stablecoins present an opportunity for domestic users to gain exposure to stable foreign currencies without the need to externalise rand. Foreign currency- pegged stablecoins may therefore serve as an easily accessible hedge against rand weakness, with the resultant impact being a decrease in retail deposits placed with commercial banks. The closed rand system has been recognised as a mitigating factor for capital outflows from South Africa, by both the IMF and in the PA's microprudential framework[8].

3.2 Using hypothetical scenarios to understand vulnerabilities

A perpetual challenge around the potential implications of stablecoins for financial stability is the lack of data to inform policy, which often leads to vague statements about what might happen in future. To address this issue, the BoE and the US Federal Reserve (US Fed), among others, have devised hypothetical scenarios with underlying assumptions to gain deeper insight into what would happen should certain events materialise. The scenarios and assumptions employed by the BoE and US Fed as well

Initially the peg broke only to just below US$0.99, but it prompted more than US$2-billion worth of withdrawals from the Anchor savings protocol (Lin, 2022). This led to a further loss of confidence in the ability of UST to maintain its 1-1 peg to the USD. As a result, more unbacked Luna tokens were minted, causing an ongoing spiral of decline in the value of Luna (or 'death spiral'), ultimately leading to the complete collapse of the UST peg.

8 See https://www.imf.org/-/media/Files/Publications/CR/2022/English/1ZAFEA2022006.ashx and https://www.resbank.co.za/content/dam/sarb/publications/prudential-authority/pa-deposit-takers/banks-directives/2016/7435/D4-of-2016.pdf.

as the resulting implications are discussed next to contextualise the four domestic scenarios.

In the absence of existing data and information, the BoE (2021) assumed that potential demand for new forms of digital money would be driven by a range of non-financial factors, in particular the convenience of making payments. Around 21% of household and corporate sector deposits are assumed to migrate away from the banking sector and redirected to stablecoins (i.e. outside of the existing financial system). These deposits flowing to stablecoins would be invested in short-term, domestic and/or foreign financial instruments, thereby potentially increasing capital flows. Commercial banks are assumed to broadly maintain their current lending levels and liquidity positions in responding to this loss in deposits. As a result, commercial bank deposits would decline, causing the banks to reduce credit extension in the economy. A large move into stablecoins would also mean that productive capital available to the economy would reduce as commercial banks would continue to be required to invest in short-term, high-quality liquid assets (HQLA). To continue lending, banks would then issue long-term wholesale debt, effectively increasing their funding costs and lending rates, thus causing borrowers to seek cheaper forms of credit from the non-bank financial sector (BoE, 2021).

Similar to the BoE scenario, the US Fed (2021) also explored the potential impact of stablecoin adoption on bank reserves, credit intermediation and central bank balance sheets. It is assumed that major inflows into stablecoins would come from physical currency, deposits and money market funds. A portion of banknotes in circulation (a liability of the central bank) are replaced by stablecoins, which could potentially increase bank-led credit provision. Stablecoin issuers then hold reserves – either as deposits at commercial banks or in cash-equivalent securities like government and high-rated corporate debt (which would include commercial bank paper). In turn, commercial banks use these deposits to lend as well as hold a portion of reserves at the central bank.

Both the BoE (2021) and US Fed (2021) highlight the critical importance of the functioning and management of the reserves backing stablecoins, collectively highlighting several possible regulatory models for these reserves, namely:

- The bank model (i.e. regulate stablecoin issuers under the current bank regulatory framework). Reserves would then broadly be backed by non-liquid assets (e.g. loans), liquid assets (e.g. government bonds) or reserves held at the central bank.
- The narrow bank model, where stablecoin deposits are placed in segregated accounts with full reserves at the central bank. The would be no effect on cash subsidisation as effectively physical cash is simply tokenised, but the outflow of deposits from commercial banks would reduce credit intermediation. The stability of the peg is guaranteed in this model, but the central bank's balance sheet could expand to cater for demand from stablecoin issuers.
- Restrict stablecoin reserves to liquid assets, which would mean lost deposits would return to the banking sector in the form of wholesale deposits.
- Hold stablecoin reserves at the central bank. This is the safest option for depositors and is similar to CBDC, although should there be a shortfall in backing assets depositors would have no recourse to the central bank.
- Deposit-backed model, where reserves are backed by commercial bank deposits and has the effect of replacing physical cash with stablecoins. This could lead to the tiering of deposits, with commercial banks being required to hold these deposits in trust or ringfence them. Unlike the other models, the stablecoin issuer would have no direct relationship with the central bank.
- Money-market fund model, which is broadly reflective of the current practice where stablecoin issuers use inflows to purchase securities, government debt and hold in cash (i.e. within the banking system). Commercial bank balance sheets may contract due to some lost deposits.

The key insights from the BoE (2021) and US Fed's (2021) scenarios are that:

- Stablecoins offer an alternative route to increase the proportion of bank deposits that can be withdrawn, thus increasing the severity of runs.
- The banking sector's liquidity safeguards (i.e. the liquidity coverage ratio (LCR), net stable funding ratio (NSFR) and access to the central bank liquidity facilities) need to be able to withstand sudden and massive deposit outflows. Given the lack of precedent, however, it is uncertain how such deposit outflows would materialise during an actual crisis.

- Increased reliance on long-term debt would make banks less vulnerable to retail deposit runs, but could also lead to greater volatility in international capital markets. As a result, countries with less credible monetary frameworks are particularly at risk of digital dollarisation and/or 'cryptoisation' (i.e. crypto assets replacing a country's sovereign currency as preferred medium of exchange).
- Stablecoin instability essentially manifests in two forms, namely investor redemption risk (resulting from the issuer) and secondary market price dislocations. Investor redemption risk relates specifically to stablecoin holders' confidence in the soundness of the reserves backing a stablecoin or, in other words, the risk of a run that could disrupt markets. Unlike the risk of secondary marketplace dislocations resulting from demand and supply imbalances, redemption risk can be mitigated through institutional and regulatory guardrails.

Drawing on the BoE and US Fed's approaches, scenarios and assumptions, as well as the existing and emerging global and domestic vulnerabilities as discussed, the next section details four possible scenarios through which stablecoins could negatively impact financial stability in South Africa.

4 Description of scenarios and assumptions

4.1 Standard assumptions across all four scenarios

1. Limited to 'real' stablecoins (i.e. fiat-pegged stablecoins backed at least 1-1 with high-quality liquid assets held with and audit by regulated institutions)[9].
2. The scenarios span at least a five-year time horizon.
3. Stablecoins and crypto assets more generally capture public trust and confidence, leading to broad adoption across all use cases (e.g. payments, cross-border remittances, investments, trading etc.).
4. The regulatory status quo remains (i.e. no explicit regulatory framework for stablecoins).
5. CBDC status quo remains (i.e. no policy decision on whether or not to issue).

[9] Please refer to the first paper in this two-part series, titled *A primer on stablecoins*, for an in-depth discussion of the design factors and choices impacting on a stablecoin's riskiness and stability.

6. Continued integration of the crypto asset ecosystem with the existing financial system.
7. The SARB's reserve framework remains unchanged (i.e. only registered banks are required to keep reserves with the SARB).
8. There is sustained growth of internet penetration (both fibre and mobile) into urban, semi-urban and rural areas.

4.2 Description of scenarios

The four scenarios are as follows:

- Scenario 1: Widespread adoption and use of a foreign-issued, foreign currency denominated stablecoin.
- Scenario 2: Widespread adoption and use of a foreign currency denominated stablecoin issued by an international bigtech firm.
- Scenario 3: Rapid growth in the adoption and use of a domestic rand stablecoin issued by a consortium of domestic banks.
- Scenario 4: Rapid growth in the issuance of a fully backed domestic rand stablecoin by a non-bank entity.

The four scenarios and idiosyncratic assumptions are described in more detail in Annexure A, and are summarised in Table 2.

Table 2: Summary of scenarios

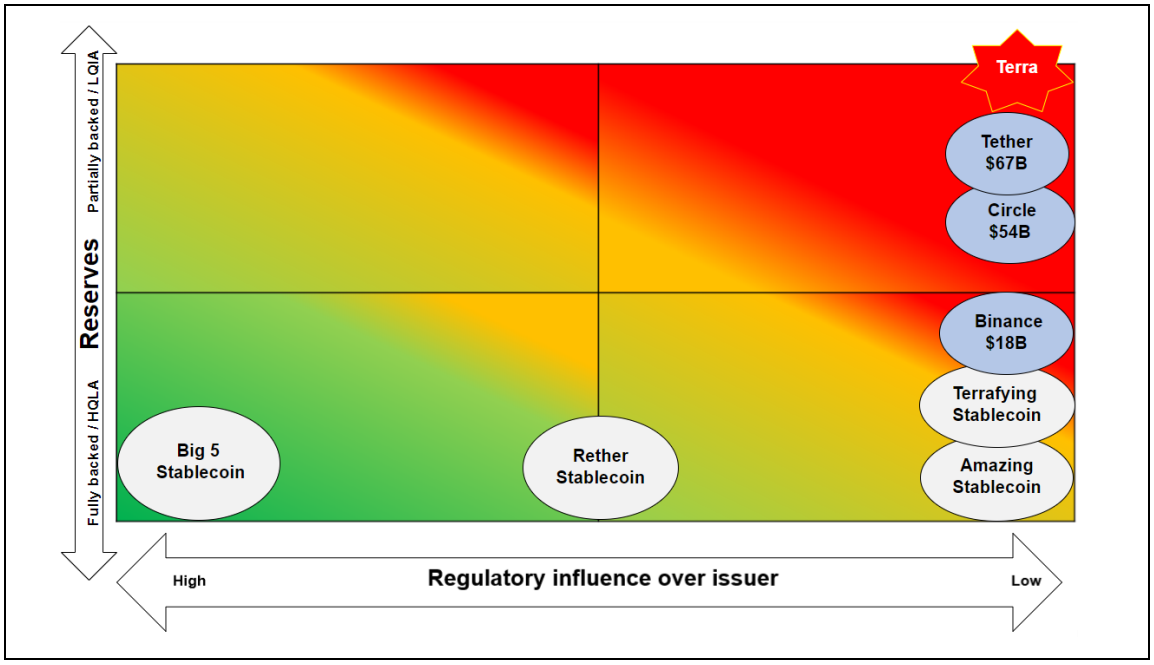
Scenario	Description	Peg	Issuer
Terrafying	An existing foreign-issued stablecoin's utility broadens from trading to payments and remittances. This scenario is based on dollarisation theory (i.e. continual depreciation of the rand leads to popularity of USD-pegged stablecoin safe-haven status).	USD	Foreign non-bank
Amazing	A well-known foreign-domiciled bigtech firm (e.g. a large online retailer) incentivizes retail merchants – from micro-enterprises to the large retailers – to register on its platform by offering lower fees and discounts from suppliers. All transactions facilitated on the platform are through a stablecoin issued by the bigtech firm.	USD	Foreign non-bank
Rether	The utility of the four known domestically operated stablecoins broadens to more than trading, causing issuance to increase exponentially. The banks serving the stablecoin issuers are not required to ringfence funds held for stablecoins in issue, and they use deposits for credit intermediation. Over time, this leads to run on the stablecoin issuer, with spillover effects to the financial system.	ZAR	Local non-bank

Scenario	Description	Peg	Issuer
Big 5	The five largest banks collaborate to collectively issue an industry stablecoin. The stablecoin is interoperable between the customers of the different banks, both in South Africa and in their African subsidiaries.	ZAR	Local bank

4.3 Plotting the riskiness of different scenarios

As shown in Figure 1, the four scenarios are plotted on a 'stablecoin continuum' across four quadrants and the two axes of the (i) quality, quantity and liquidity of the reserves; and (ii) regulatory influence over the issuer. With regard to the 'reserves' axis, stablecoins fully backed by high-quality liquid assets are contrasted with stablecoins partially backed by low-quality, illiquid assets, while for regulatory influence over the issuer 'high' and 'low' influence was plotted on the continuum. In terms of riskiness and stability, the bottom left quadrant denotes the safest and lowest-risk design, with the risk and potential volatility increasing diagonally across the quadrants to the top right corner. The three current largest stablecoins by market capitalisation are also plotted on the risk continuum for illustrative purposes[10].

Figure 1: Stablecoin risk continuum



[10] It should be noted that the placement of the existing stablecoins on the stablecoin continuum does not necessarily reflect their actual riskiness and/or stability, and is merely reflective of their relative placement based on the authors' assumptions and criteria. Also, the placement on the 'regulatory influence over the issuer' is from a South African perspective, and would therefore likely differ in other jurisdictions. Terra is included to demonstrate where an algorithmic stablecoin would potentially be plotted on the stablecoin continuum in view of its collapse in May 2022 and the wide publicity this garnered.

In terms of the four scenarios and accompanying assumptions, the lowest-risk stablecoin would be a bank-issued stablecoin, although this would also not be completely risk free. A stablecoin issued by a non-bank but fully backed by high-quality liquid assets would be less risky than a foreign-issued one, with dollar-pegged, foreign-issued stablecoins being the riskiest of our scenarios given the potentially limited regulatory influence over the issuer.

4.4 Unpacking the domestic vulnerabilities revealed by the scenarios

As demonstrated through the collapse of TerraUSD, a key risk is the actual materialisation of a run on a stablecoin issuer (whether it is a bank or non-bank) which, given the interconnectedness between the traditional financial and stablecoin systems, could destabilise the existing financial system. In particular, the domestic financial system is vulnerable to this risk due to a lack of regulatory clarity on stablecoins – whether issued by a local or foreign-domiciled actor – and the explicit ability to impose requirements on issuers, most notably from a prudential perspective.

Unlike jurisdictions such as Singapore and the United Kingdom – which have specific licensing regimes for e-money issuers – only registered banks are currently allowed to issue e-money in South Africa. However, currently non-banks such as ZARP can issue e-money-like instruments in the form of stablecoins without clear legal precedent as to which regulatory approvals – if any – would be required prior to launch. Similarly, foreign-domiciled stablecoin issuers do not currently require authorisation to enable them to offer their products to South African residents (e.g. Tether, USDC and numerous other foreign-issued stablecoins are freely available domestically). It is reiterated that even ‘real’ (i.e. the most stable and least risky) stablecoins may pose a risk to the traditional financial system due to their inherent design characteristics. However, instruments that fall outside of this hypothetical definition not only exist, but comprise significant portion of the stablecoin market (both globally and domestically).

The scenarios also demonstrate that as per the stablecoin continuum, stablecoins issued by a bank would be less risky given the regulatory influence over the issuer, although they would not be risk free. In the absence of an appropriate regulatory framework requiring banks to, for example, ringfence or segregate deposits held for stablecoins in issue, imbalances could build up and only be exposed should there be a run on a stablecoin. Without a regulatory framework, there is also scope for non-bank

stablecoin issuers to invest reserves in questionable assets in order to maximise returns generated on reserves. It is further not yet clear how the recently promulgated Financial Sector Laws Amendment Act 23 of 2021, which provides for financial safety nets such as deposit insurance and resolution planning, would potentially apply to stablecoin issuers. The existing regulatory framework does therefore not ensure level playing fields in accordance with the principle of 'same activity, same risk, same rules'.

5 Conclusion

Stablecoins' fundamental design characteristics mean that they present risks to the existing financial system. From a South African perspective, this risk is exacerbated if domestic authorities have limited regulatory influence over the issuer, either due to the lack of an explicit domestic regulatory framework for stablecoins, or if the issuer is domiciled in a foreign jurisdiction. The limited regulatory influence over the issuer may result in spillovers from the crypto asset ecosystem to the traditional financial system, particularly if authorities are unable to impose prudential requirements on stablecoin issuers to guarantee redeemability at par during a run on the stablecoin.

Based on the current uptake and usage of stablecoins in South Africa, coupled with the insights gained from the four scenarios, stablecoins do not currently pose a systemic risk to South Africa. However, the ever-present challenge around obtaining regular, relevant, high-quality data means that the South African regulatory authorities will continue to struggle to retain line of sight of developments until such time that a regulatory framework is implemented. The lack of a clear domestic regulatory framework for crypto assets complicates the near-term monitoring of these instruments, meaning that imbalances may build up unobserved. To this end, the starting point for a regulatory framework for stablecoins would be to obtain definitional clarity, or deciding whether to employ a broad or narrow definition of stablecoins[11]. A broad definition would likely mean all stablecoins – regardless of their actual riskiness and stability – would be captured by the definition, while a narrow definition would include 'real' stablecoins, or the least risky, most stable form of stablecoins, with

[11] The definition of crypto assets articulated in the South African Intergovernmental Fintech Working Group (IFWG) Crypto Assets Regulatory Working Group (CAR WG) Position Paper (2021) extends to stablecoins, but the recommendations do not cover prudential requirements for either crypto assets or stablecoins. The 2021 CAR WG Position Paper is available at https://www.ifwg.co.za/Pages/Reports.aspx.

instruments not meeting the stringent criteria simply regarded as unbacked crypto assets.

In closing, as steady progress continues to be made in bringing crypto assets within the South African regulatory remit, specific clarity is required on the regulatory treatment of stablecoins from a prudential perspective. The main areas in need of clarification relate to (i) licensing and registration (who may issue stablecoins, with which authority(ies) should issuers register and which legal framework should be applied to stablecoins?); (ii) should the existing domestic microprudential regulatory framework be amended to cater for stablecoins, or should a bespoke one be considered specifically for stablecoins?; (iii) what are the indicators of systemic risk in relation to stablecoins?; (iv) reserves management (i.e. which requirements will ensure redeemability at par, even under periods of extreme stress?); and (v) regulation and supervision (i.e. what is the most appropriate regulatory and supervisory framework, and which authoritiy(ies) are responsible for ensuring compliance with it?).

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Annexure A: Description of scenarios

Scenario 1: Widespread adoption and use of a foreign-issued, foreign currency denominated stablecoin

Description of scenario

Under this scenario, an existing or newly issued USD-pegged, foreign-issued stablecoin that is freely available in South Africa sees rapid, widespread uptake and use. This scenario aims to gauge South Africa's potential susceptibility to digital dollarisation (i.e. through a USD-pegged stablecoin easily available to South African residents). Similar to the Bank of England's scenario, the above scenario assumes that a certain amount of deposits that usually flow to commercial banks would be redirected to stablecoins, which in this case would essentially mean that the funds are flowing out of South Africa to the foreign-domiciled stablecoin issuer, thereby potentially increasing capital flows and associated volatility. Commercial bank retail deposits would decline, causing the banks to reduce credit extension in the economy. A large move into stablecoins would also mean that productive capital available to the economy would reduce as commercial banks would continue to be required to invest in short-term, high-quality liquid assets (HQLA). The most likely result would see banks issuing long-term wholesale debt, which would effectively increase funding costs and cause borrowers to seek cheaper forms of credit from the non-bank financial sector.

Assumptions

a. Main use case: store of value (i.e. the USD-pegged stablecoin becomes preferable to the rand given its safe-haven status).
b. The stablecoin is freely obtainable from South African crypto asset exchanges.
c. Retail demand for stablecoins is driven by a gradual loss in confidence in the purchasing power of the rand (i.e. there is sustained currency depreciation against major international currencies).
d. Stablecoins become the preferred hedge instrument against a weakening rand and primary channel through which exposure to foreign-currency denominated assets is obtained.

e. During episodes of uncertainty and market stress, rand flows into the stablecoin. The stablecoin functions like a foreign currency and contributes to exchange rate volatility during periods of market stress.
f. Although not regarded as a foreign currency (FX), USD-pegged stablecoins essentially allow individuals to acquire an FX-like instrument, with such individuals' trading activity contributing to compounding periods of volatility.
g. Over time, 50% of total retail bank deposits – currently totalling R11 billion (Prudential Authority, 2022) – migrate to the stablecoin, causing total bank deposits to decline from R11 billion to R5.5 billion.
h. Banks issue wholesale debt to make up the R5.5 billion shortfall. The cost of wholesale debt is 1% more expensive than retail deposits, causing banks to issue 10% fewer loans and pass on the 1% increase in funding cost to customers. These factors contribute to a growing reliance on non-bank financial intermediaries for the provision of credit, and lower bank profitability.

Considerations for domestic financial stability

a. Stablecoins currently present an opportunity to partially circumvent the remaining South African capital controls.
b. Lower bank profitability could lead to increased competition between incumbent banks, possibly resulting in smaller banks being absorbed by the larger banks, thereby further increasing concentration in the domestic banking sector.
c. The existing regulatory framework does not ensure level playing fields in accordance with the principle of 'same activity, same risk, same rules'.
d. An inconsistent regulatory framework creates regulatory arbitrage opportunities, particularly for new entrants who may gain a comparative advantage by capitalising on the lack of regulatory clarity.

Scenario 2: Widespread adoption and use of a non-rand stablecoin issued by an international bigtech firm

Description of scenario

Under this scenario, a large, well-known foreign-domiciled bigtech firm (e.g. a large online retailer) incentivises retail merchants – from micro-enterprises to the large retailers – to register on its platform by offering lower fees and discounts from suppliers.

Through its existing relationships with foreign suppliers, the bigtech firm offers third-party products to South Africans through its platform. All transactions facilitated on the platform are through a stablecoin issued by the bigtech firm and which is pegged to a major sovereign currency. Over time, the bigtech firm expands its product offering to include cross-border remittances in countries where it has a presence. Successful adoption of the stablecoin in this scenario is contingent on widespread acceptance by local merchants, similar to the model leading to the success of Alipay. The effect on the financial system would be partial disintermediation of the financial system, as retail deposits and the associated transactions currently facilitated by banks effectively move from the domestic banking sector to the foreign domicile of the bigtech firm.

The continued large-scale network effects of global platform businesses will potentially reduce savings in South Africa. As easier, more efficient and cheaper global channels develop and become available to residents, resident's savings could be accumulated in lower volatility, more liquid foreign currencies. This would reduce the stock of deposits available within the domestic monetary system, with negative implications for credit extension and potentially reducing the effectiveness of the existing monetary policy mechanism. However, cheaper remittance channels could boost remittance flows to the country. Similar to other central banks, the basis for achieving the SARB's financial stability and monetary policy objectives is to promote public confidence in money circulating in South Africa, denominated in rand. The monetary and financial system will remain resilient and relevant provided that the SARB continues to promote trust in the rand (see Carstens, 2022).

This vulnerability may be exacerbated if an international bigtech firm issues a stablecoin that is available to South African residents, especially if the bigtech firm offers online retail shopping and ancillary payment and money transfer services. Rand may therefore flow into the bigtech-issued stablecoin – essentially a closed-loop system – but never come out, essentially causing a migration of deposits from banks to stablecoin issuers. This closed-loop system could materially reduce retail bank deposits and the volume of payments facilitated by incumbent payment providers. In turn, a material displacement of commercial bank money could lead to a higher proportion of commercial bank deposits being "backed by high-quality liquid assets rather than by loans to the real economy" (Bank of England, 2021), resulting in greater reliance on non-banks for credit provision.

Assumptions

a. Main use case: payment instrument (i.e. medium of exchange).
b. The stablecoin is predominantly used as a (i) domestic payment instrument between South African-domiciled counterparties; (ii) domestic payment instrument for online purchases from non-South African domiciled online retailers; and (iii) cross-border remittance instrument.
c. All transactions happen in a closed-loop system (i.e. on the bigtech firm's electronic platform where transactions are effected using the bigtech firm's stablecoin).
d. Transaction speeds are almost instantaneous (i.e. customers can use the platform to catch taxis and purchase items from the local dealers/spaza shops with little to no cost).
e. Over time, consumers use the bigtech platform as a bank account, converting their salaries into the bigtech firm's stablecoin once received and leaving any balances on the platform.
f. Adoption occurs grows in rural and township economies, and the informal economy over time starts accepting payment in the bigtech's stablecoin via a smartphone app.
g. Over time, the bigtech firm uses local banks to receive social grants which are then used to purchase the platform stablecoin and credited to the customer's wallet.
h. Smartphones are widely available and used extensively by underserved market segments.

Considerations for domestic financial stability

a. Without designating the bigtech firm as a payment system operator under the current National Payment System Act, much of the existing payments regulatory framework would not be applicable to the bigtech firm as it would essentially be facilitating barter trade.
b. Potential disintermediation of the domestic payment system and banking industry.
c. Decreased monitoring capability of domestic payments landscape.

<u>Scenario 3</u>: Rapid growth in the adoption and use of a domestic rand stablecoin issued by a consortium of domestic banks

Description of scenario

Under this scenario, the big five banks collaborate to collectively issue a stablecoin. The stablecoin would be interoperable between the customers of the different banks, both in South Africa and in their African subsidiaries. The scenario is similar to the USDF Consortium in the United States, who falls under the oversight of the Federal Deposit Insurance Corporation (FDIC) and who completed initial transacting on their stablecoin arrangement during January 2022 (Braun, 2022). The developments raised questions such as whether the stablecoin is by default backed by the FDIC and how to ensure interoperability with other commercial bank stablecoins such as JPM Coin. In addition, the FSB's high-level recommendation on stablecoins that requires stablecoins to have appropriate recovery and resolution plans in place is also relevant. As part of Project Khokha 2[12], the South African Reserve Bank (SARB), together with the Intergovernmental Fintech Working Group (IFWG) and industry, also explored how an industry-issued stablecoin may interact with central bank assets issued on distributed ledger technology (SARB, 2022).

Assumptions

a. There is no CBDC (whether wholesale or retail) with which to back the bank consortium's stablecoin.
b. Each participating bank has the authority and ability to issue consortium-backed stablecoins. As an individual bank liability, the issuing bank keeps 2.5% of the value of all stablecoins it has issued with the SARB in line with the cash reserve requirement.
c. The banks guarantee 1-1 convertibility to commercial bank money (which may be withdrawn as central bank money in the form of banknotes and coins), but do not ringfence the funds held for stablecoin redemption.
d. All transactions happen in a closed-loop system (i.e. on the consortium of banks' shared electronic platform where transactions are effected using the consortium's stablecoin).

[12] The Project Khokha 2 report is available at https://www.resbank.co.za/content/dam/sarb/publications/media-releases/2022/project-khokha-2/Project%20Khokha%202%20Full%20Report%206%20April%202022.pdf.

e. Transaction speeds are almost instantaneous (i.e. customers can use the platform to catch taxis and purchase items from the local dealers/spaza shops with little to no cost).
f. Stablecoins issued by different banks in the consortium are fully fungible with each other on a 1-1 basis.
g. Given the stablecoin's fungibility, they are used by participating banks' subsidiaries, both domestically and across the African continent.
h. A cyber incident at one bank compromises the integrity of the consortium's stablecoin, which leads to widespread redemption of the stablecoin. Because the banks did not ringfence the funds held for stablecoin redemption, they need to draw on their capital reserves.
i. While no bank breached the prudential regulatory limits, the banks suffer widespread reputational damage, both domestically and internationally, causing broad distrust in banks.

Considerations for domestic financial stability

a. Even bank-issued stablecoins require an appropriate regulatory framework to clarify requirements in terms of the segregation of funds, ensuring redeemability at par with commercial bank money, governance requirements etc.
b. Distressed banks would be subject to the SARB's resolution framework.
c. Design considerations could make one bank's offering more attractive than the others, causing increased concentration of the banking sector.

Scenario 4: Rapid growth in the issuance of a fully backed domestic rand stablecoin by a non-bank entity

Description of scenario

Under this scenario, the four known domestically operated, rand-denominated stablecoins operating in South Africa[13], totalling approximately R122 million worth of stablecoins in issue, experience exponential growth over the next 5 years – roughly comparable to dollar-pegged stablecoin growth over the last 5 years. Globally, the value of stablecoins in issue grew

[13] It is acknowledged that there are likely more projects than reflected here. The SARB and the Intergovernmental Fintech Working continue to explore with the South African crypto asset industry the appropriateness and desirability of the issuance of a stablecoin by a consortium of banks in Project Khokha 2. Should commercial banks eventually issue stablecoins in production it may shift the view on volumes and values and their potential impact on financial stability.

exponentially as per Table A.1, and this growth is broadly assumed to be replicated in the domestic context.

Table 2: Annual growth rate in global stablecoin issuance since 2017

Year	Value of stablecoins in issue on 1 January	Value of stablecoins in issue on 31 December	Year-on-year growth (%)
2017	$10 million	$1.5 billion	14,900%
2018	$1.5 billion	$3.3 billion	120%
2019	$3.3 billion	$5.9 billion	79%
2020	$5.9 billion	$30 billion	408%
2021	$30 billion	$163 billion	443%
Average annual percentage growth			**3,190%**

Assumptions

a. The current status quo remains, where there is no explicit or specific legislation or regulations that apply to domestic stablecoins.
b. The stablecoin issuers consistently act prudently, placing all reserves held against stablecoins in issue with a South African bank.
c. The banks serving the stablecoin issuers are not required to ringfence funds held for stablecoins in issue, and they use deposits for credit intermediation.
d. An international stablecoin de-pegs and fails, leading to a large-scale (i.e. 25% of the market, or R401 billion) redemption of domestic rand-pegged stablecoins.
e. The banks struggle to meet the liquidity demand from the stablecoin issuers, causing a delay in finalising stablecoin redemptions.
f. The liquidity shock spreads to retail depositors, causing a bank run. Sustained pressure to redeem stablecoins for commercial bank money increases the proportion of deposits that are withdrawn during the bank run.
g. The SARB is required to initiate its crisis management framework.

Considerations for domestic financial stability

a. Should domestic stablecoin issuance continue to grow exponentially over the next few years, stablecoin issuers may have to be required to have appropriate recovery plans in place, while the SARB would need to develop resolution plans for stablecoin issuers.

b. Stablecoin issuers would potentially need to be included in the South African deposit insurance framework.

c. The regulatory framework would need to make pronouncements on prudential regulation of funds held by banks for stablecoins in issue.