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## Case Notes

# *AN EXPLORATORY ANALYSIS OF CENTRAL BANK DIGITAL CURRENCIES — SOME CONSIDERATIONS*

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## I INTRODUCTION

The history of central banking began with payment services. Ever since then, payment-related innovation has always been an integral part of central banking (BIS Committee on Payments and Market Infrastructures and Markets Committee Report, 'Central Bank Digital Currencies' (2018) iii). Payments have evolved extensively over the years with the emergence of various technologies, from the development of real-time gross settlement ('RTGS') systems, to electronic money and mobile money, to name a few. The arrival of financial technologies or 'fintech' has led to cryptocurrencies and now central bank digital currency ('CBDC') (on cryptocurrencies, see Reddy & Lawack, 'An overview of the regulatory developments in South Africa regarding the use of cryptocurrencies' (2019) 31 *SA Merc LJ* 1–28; see also Deloitte, 'Are Central Bank Digital Currencies (CBDCs) the money of tomorrow?', available at https://www2.deloitte.com/ie/en/pages/financial-services/articles/central-bank-digital-currencies-money-tomorrow.html, accessed on 3 May 2021). A CBDC represents another potential innovation in the area of an evolving branch of the law called 'fintech law'.

This exploratory analysis provides an overview of the meaning of CBDC and the legal nature of money and CBDC. In addition, it provides a broad overview of some legal implications, policy considerations and regulatory issues. Challenges and risks are also highlighted.

## II THE MEANING OF CENTRAL BANK DIGITAL CURRENCIES (CBDC)

There is currently no universal definition of CBDC, and the concept is not well-defined. However, this is envisioned as a new form of central



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bank money (also called 'fiat currency'). A CBDC can also be defined as a digital payment mechanism based on a cryptocurrency denominated in fiat currency (ie central bank money). It is backed by a central bank (such as the South African Reserve Bank ('the SARB')) to the same extent as physical cash in the context of legal tender. 'Central bank money' refers to a central bank liability, denominated in an existing unit of account, which serves both as a medium of exchange and a store of value (see Kumhof & Noone, 'Central Bank Digital Currencies — Design principles' *Bank of England Working Paper No 725* (2018); Bank of England, 'Central Bank Digital Currency: Opportunities, challenges and design', available at https://www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper, accessed on 1 May 2021; and Yao, 'A systematic framework to understand Central Bank Digital Currency', *Science China Information Sciences* (2018) 61, section 1).

The International Monetary Fund ('IMF') Working Paper ('IMF Working Paper') on CBDC provides the following definition that will be used for the purpose of this analysis:

> 'In essence, CBDC is thus a digital form of central bank money that is different from balances in traditional reserves or settlement accounts of monetary policy counterparties (cash account balances) ... CBDC is central bank digital currency excluding digital central bank money "already available to monetary policy counterparties (mostly banks/financial institutions and in some jurisdictions, some non-monetary counterparties.' (IMF Working Paper 20/254, 'Legal aspects of Central Bank Digital Currency: Central Bank and monetary law considerations' (2020) 1)

Private digital tokens for general purposes include crypto assets and cryptocurrencies. Cryptocurrency is a digital or virtual currency that relies on secure cryptographic algorithms and technology for its creation and transactional operations. Examples are Bitcoin, Litecoin and Ethereum, to mention a few. Private digital tokens are not dealt with in this analysis, as this analysis focuses on CBDC.

Central banks have studied CBDC in order to offer a formal/legal substitute for the consumer that is trusted and protected (ie guaranteed) by the central bank. The Central Bank of China was the first central bank to issue CBDC. Some of the driving factors as to why central banks are considering the feasibility of CBDC and the approaches taken by central banks include that CBDC could be an alternative for declining cash, to enhance financial stability, as a cross-border payment mechanism, for security, etc. The adoption or otherwise of CBDCs depends on many

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factors, such as the level of digital innovation in the relevant economy, geographic dispersion, the extent of sophistication of the financial sector and the decline in the use of cash (Alonso et al, 'Reasons for fostering or discouraging the implementation of Central Bank-backed Digital Currency: A Review' (2020) 8(41) *Economies* at 1).

In an interesting 'money flower', coined by Bech and Garratt (and used by the Bank of International Settlements ('BIS')), there is a combination of four key properties that need to be considered, namely:

- issuer (central bank or not);
- form (digital or physical);
- accessibility (widely or restricted); and
- technology (tokens/store-value based or accounts-based (Beck & Garratt, 'Central Bank Cryptocurrencies' (2017) *BIS Quarterly Review* at 55–70).

There are two broad approaches to implementing CBDCs: a direct access approach through accounts at the central bank or a token approach through an independent wallet network. In some instances, these approaches could be adopted separately or combined in a hybrid approach.

In the direct account approach, the central bank will need to give every citizen a CBDC account. One implication is that the central bank would need to provide every citizen with sort codes, account numbers and payment cards in order to ensure that the consumer is able to use the money in the card accounts. Another implication is that consumers would need a way to check their balance and transactions, which means internet or mobile banking would be a minimum requirement; even telephone banking for some consumers. With this approach, central banks could directly manage accounts on behalf of consumers or could, alternatively, delegate responsibility for account management to third parties.

In the indirect access approach, CBDC units are issued by the central bank via a dedicated CBDC payments platform, including physical currency, central bank settlement balances and interest-earning government bonds/securities. Transactions and cash storage are conducted via CBDC wallets or applications (ie 'apps'), which are hosted and managed by licensed financial intermediaries, but remain the property of the wallet or application owner. All consumer-service activities are handled by the intermediaries.

In the case of CBDC systems based on account money, such systems are dependent on the ability to identify the *identity* of the account holder

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(whether held by the central bank or an intermediary) (own emphasis). With cash, the main concern is counterfeiting, while in the digital form, the concern is whether or not the token or coin is genuine (also known as 'electronic counterfeiting'). In the case of a token-based payment system, such a system relies critically on the ability of the payee to *verify the validity* of the payment instrument/object (own emphasis). A key concern in this case is identity theft, which allows perpetrators to illegally transfer or withdraw money from accounts. Identification is, therefore, needed to correctly link payers and payees and to ascertain their respective accounts (see BIS, *CPMI Central Bank Digital Currency* (2018) 4–5).

Three forms of CBDCs can be identified: two of them are token-based and the third is account-based. The two token-based versions differ with regard to how widely accessible the CBDC is, which depends on the potential use of the CBDC. One token-based form is a widely available payment system that is primarily targeted at retail transactions but is also available for general use. The other token-based form is a restricted-access digital settlement token for wholesale payment and settlement transactions. These two token-based versions are, for purposes of this analysis, called 'retail CBDC' and 'wholesale CBDC' (see Deloitte, 'Are Central Bank Digital Currencies (CBDCs) the money of tomorrow?', available at https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu-are-central-bank-digital-currencies.pdf accessed on 15 September 2022). Retail payment systems typically refer to low-value transactions such as credit transfers, debit transfers, card payments, etc. Wholesale payment systems normally refer to large-value and high-priority transactions, such as interbank transfers (see BIS Committee on Payment and Settlement Systems, 'A glossary of terms used in the payments and settlement systems', available at https://www.bis.org/cpmi/glossary_030301.pdf, accessed on 1 May 2021).

In addition to the four core properties listed in the 'money flower' above (issuer, form, accessibility and technology), other design features of CBDC will determine how a CBDC may function as a means of payment and store of value. These choices have implications for payments, monetary policy and financial stability, to name a few. This analysis deals with the concept of CBDCs, the four key properties and other design choices, as well as the legal nature of account and token-based CBDCs.

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The other design features or choices are as follows:

- availability;
- anonymity;
- transfer mechanisms;
- interest-bearing; and
- limits or caps.

Each of these is now discussed separately.

### *(a) Availability*

The CBDC could be available 24 hours a day and seven days a week or only during certain or specified times (such as the operating hours of large-value payment systems). They could be available permanently or for a limited duration (eg could be created, issued or redeemed on an intraday basis).

### *(b) Anonymity*

Token-based CBDCs can, in principle, be designed to promote different degrees of anonymity in a way that is similar to private digital tokens, for example, in Bitcoin it is pseudo-anonymous, as one would have the payer and payees' public addresses like e-mail addresses, but not necessarily the true identity of users. A key decision for society is the degree of anonymity vis-à-vis the central bank, balancing amongst other things concerns relating to money laundering, terrorist financing and privacy.

### *(c) Transfer mechanism*

The transfer of cash is conducted on a Peer-to-Peer or Person-to-Person ('P2P') basis, while central bank deposits are transferred through the central bank. A CBDC may be transferred on either a P2P basis or through an intermediary, which could be the central bank or a commercial bank or an agent.

### *(d) Interest-bearing*

As with other forms of digital central bank liabilities, it is technically possible to pay interest (positive or negative) on both token- and account-based CBDCs. The interest rate on CBDC can be set equal to existing monetary policy rates or be at a different level to encourage or discourage demand for CBDC. Both non-interest-bearing and interest-bearing accounts can be used for retail or wholesale payment trans-

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actions. The payment of positive interest would likely enhance the attractiveness and demand of a payment system that also serves as a store of value.

### *(e) Limits or caps*

Different forms of quantitative limits or caps on the use or holdings of CBDCs are often mentioned as a way of controlling/limiting potentially undesirable implications or to steer usage in a certain direction. For example, limits or caps could make a CBDC less useful for wholesale, rather than retail payments. At present, such limits or caps on holding/use are mostly envisioned in non-anonymous account-based systems.

As a result of the different combinations of the five design choices mentioned above, there are many potential CBDC variants or hybrid forms (for more on design choices, see BIS, 'The rise of Central Bank Digital Currencies: Drivers, approaches and technologies' *Working Paper No 880* (2020) 21–28; Bank of Canada, European Central Bank, Bank of Japan, Sveriges Riksbank, Swiss National Bank, Bank of England, Board of Governors Federal Reserve System & Bank for International Settlements, 'Central Bank Digital Currencies: Foundational principles and core features' *BIS Report No 1* (2020); Bank of England, 'Central Bank Digital Currency: Opportunities, challenges and design' (2020) 8; Allen et al, 'Global Economy & Development' *Working Paper No 140* (2020); Bordo & Levin, 'Central Bank Digital Currency and the Future of Monetary Policy National Bureau of Economic Research' *Working Paper 23711* (2017); Bank of England, 'Central Bank Digital Currency' (2020) 9–10).

To provide clarity in this analysis, the focus is on token-based or account-based CBDC, whether retail or wholesale.

## III THE LEGAL NATURE OF MONEY, CURRENCY, PAYMENT INSTRUMENTS AND CBDC

A distinction must be made between money, currency and payment instruments in order to analyse the legal nature of CBDC.

Whilst there is no universal definition of 'money', it is widely accepted that the legal concept of money is broader than the economic definition of universal medium of exchange, unit of account, etc. It is also broader than currency (banknotes and coins) in many jurisdictions and includes certain types of assets or instruments that are readily convertible or redeemable into currency (for more detail, see Lawack-Davids, *Aspects of Internet Payment Instruments* (unpublished LLD thesis, Unisa, 2001) 27–40).

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Here one needs to distinguish between 'central bank money' and 'commercial book money'. Book money which constitutes credit balances on accounts can be converted into currency subject to contractual provisions or transferred through payment systems/instruments. Book money is not currency and, in South Africa, as in many other jurisdictions, book money does not enjoy the status of legal tender.

Some jurisdictions have given some form of recognition to book money, for instance, as an authorised way of paying taxes or other legal obligations. In some jurisdictions, electronic money is also classified as a type of money, and some assets, such as Bitcoins, may be considered under one body of law (eg taxes), but not under another (eg banking and financial law).

However, in South Africa, neither electronic money nor cryptocurrencies are afforded the status of legal tender. Payment instruments are a third means of payment. They are neither currency, nor money, but are legally used to effect payment in commercial book money or currency. Payment instruments are thus alternative forms of payment but not legal tender, for example, debit transfers, credit transfers, electronic-funds-transfers-at-point-of-sale, electronic money, mobile money etc. Legal tender in South Africa is provided for in section 17 of the South African Reserve Bank Act 90 of 1989 ('the SARB Act') as limited to a tender of physical banknotes and coins (for a detailed examination of the legal nature of money and payment, see Lawack-Davids, (unpublished LLD thesis, Unisa, 2001) 27–40; Mann, *The Legal Aspect of Money* 4 ed (Oxford University Press 1982); Van Jaarsveld, *Aspects of Money Laundering in South African Law* (unpublished LLD thesis, Unisa, 2011) 43–46; Deloitte, 'Are Central Bank Digital Currencies (CBDC) the money of tomorrow?', Burner & Meltzer, 'The uses of money: Money in the terms of an exchange economy' (1971) 61(5) *American Economic Review* and Carney, 'The future of money', speech given to the inaugural Scottish Economic Conference (2018)).

## IV LEGAL IMPLICATIONS OF DESIGN CHOICES

Depending on the design choice made by a central bank, there are different legal implications. In this section, four design choices are analysed: account-based v token-based CBDC, wholesale v retail CBDC, direct v indirect CBDC and centralised v decentralised CBDC.

### *(a) Account-based v token-based CBDC*

The implications are fundamental with regard to the distinction between whether CBDC is digitised balances in cash current accounts in

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the books of the central bank or CBDC in the form of a digital token not connected between the central bank and the account holder.

Having accounts in the books of the central bank is outdated and there is trite law governing such a relationship where book money is transferred between account holders by debits and credits of the respective accounts. Digital tokens, on the other hand, do not have this history and their legal status is unclear.

The IMF Working Paper, referred to in paragraph II above, clearly states three important issues to note. First, token-based CBDC amounts to a (*sui generis*) claim on the central bank in an immaterial token and will circulate in the economy by transfer of the token. Compared to banknotes and coins, they are similar in that the transfer of the token equals the transfer of the claim. This is what distinguishes banknotes, coins and token-based CBDC from book money and bills (debt securities) which are transferred by debits and credits between cash current accounts and securities accounts, respectively (IMF Working Paper 20/254).

Secondly, in the case of both physical banknotes, coins and digital token forms of currencies, the holder seeking to make a payment must either be in possession of the banknotes, coins or know the password of the token allowing it to be disposed. If the holder loses the banknotes, coins or the password, the holder cannot use the currency anymore. Unlike with the former, in the case of book money, even if the holder loses the password, such holder will still be able to dispose of the funds as long as the holder can prove his/her identity to the entity maintaining the account.

Thirdly, token-based CBDC is neither book money nor a bill (debt security). Where retail CBDC is issued to the public, it would have this feature in common with banknotes and coins which are circulated widely. Any central bank which adopts digital token-based CBDC would have to conduct a gap analysis of the current law and provide clarity through legislative and/or regulatory instruments. The power of issuance is dealt with later in paragraph V(a) below.

At this stage it is important to introduce the concept 'distributed ledger technology' or 'DLT'. DLT refers to a combination of technologies and capabilities that provide strong auditability and traceability guarantees to enable multiple system participants to share in a trustless environment, and have access to the same data over multiple logical and geographical locations. Blockchain, a type of DLT introduced by Santoshi Nakamoto in 2008 popularised the term DLT following the release of the Bitcoin core in 2009 (see Opare & Kim, 'Compendium of

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practices for Central Bank Digital Currencies for Multinational Financial Infrastructures' (2020) *IEEEA Access* 15–16).

So how does the choice of issuance of token-based CBDC on DLT influence the above? It can be argued that token-based and account-based CBDCs are different forms of money and that whether they are on DLT does not change their position. What is necessary to distinguish though is that the booking of a token-based CBDC in a ledger operated by the central bank is legally not the same as the booking of a credit balance in a cash current account (ie book money).

The reason for this will be explained briefly. In cash current accounts, there is a contractual relationship between the bank and the account holder, and the rights and obligations are governed by the contractual terms and conditions between the parties. Even though funds credited to the account are called 'deposits', the bank is not required to safe keep the money, but is authorised to use the money by lending it to other parties (eg inter-bank loans). Credit balances in cash current accounts are called book money and are transferred by credits and debits between such accounts, as explained earlier. In the case of DLT, these ledger accounts are accounting techniques and not contractual obligations. The ledger accounts represent a financial situation of a reporting entity based on sub-accounts established by the entity's chart of accounts. Ledger accounts can represent an asset, a liability, an income or an expense. It is submitted that ledger accounts do not establish a legal relationship *per se* between the reporting entity and a third party. In addition, ledger accounts do not create rights and obligations between the reporting entity and other parties, unless they wish to enter into a contractual relationship.

The most important legal consequence of this distinction is that while token-based CBDC can be represented in centrally managed ledger accounts by the central bank, it is not a credit balance in a cash current account, except for the *sui generis* claim incorporated in the token as a liability on the central bank, similar to the legal status of banknotes. However, depending on the jurisdiction, some express legal status may need to be afforded to token-based CBDC if a central bank wants to afford it the same legal status as physical banknotes and coins (for more on central banks and money, see Payments Canada, 'Central Bank Digital Currency (CBDC): The fundamentals' (2020) 5–6; and Borio, 'On money, debt, trust and central banking' *BIS Working Papers No 763* (2019) at 2–3).

### *(b) Wholesale v retail CBDC*

Some central banks contemplate issuing CBDC only to their existing account holders, mainly banks, who participate in their RTGS settle-

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ment systems. Other central banks cast the net much wider and are looking to offer CBDC to the general public, that is, retail CBDC, which would be for general purpose and be available to both retail and wholesale counterparties (for more detail on retail CBDC, see Kiff et al, 'A survey of research on retail Central Bank Digital Currency' *IMF Working Paper 20/104* (2020) at 7–9).

From a legal point of view, where the CBDC is a wholesale CBDC and designed as account balances of settlement system participants, central bank laws may limit the categories of entities or persons that can open such accounts. In the case of South Africa, these would be settlement system participants or designated settlement participants. A 'settlement system participant' is defined in the National Payment System Act 78 of 1998 ('the NPS Act') as a 'Reserve Bank settlement system participant' or a 'designated settlement system participant'. A 'designated system participant' means a settlement system participant designated in terms of section 4A of the NPS Act.

### *(c) Direct v indirect CBDC*

Some central banks contemplate issuing CBDC directly where the central bank would issue the CBDC and administer its circulation itself. Other central banks contemplate an indirect CBDC whereby the liability is issued by a commercial bank but is fully backed or guaranteed with central bank liabilities. A hybrid form would consist of direct claims on the central bank, but with intermediary payments.

In this regard, two very important legal issues arise. First, in order to qualify as a real CBDC, the 'currency' needs to be a direct liability of the central bank, as this is what makes it risk-free. Liabilities of commercial banks, even if backed by a 100 per cent cash deposit in the books of the central bank, would not be a central bank liability (see, for example, s 10 of the SARB Act and the Currency and Exchanges Act 9 of 1933 in respect of banknotes and coins).

Secondly, in the case of token-based CBDC, the question arises as to whether and under what conditions the legal framework allows the 'deposit' of CBDC in the books of commercial banks. This aspect will need to be carefully considered by a central bank when conducting a feasibility study on CBDC.

### *(d) Centralised v decentralised CBDC*

Some central banks are contemplating whether CBDC transfers will be settled in a centralised way, as in the RTGS, or in a decentralised way, by

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way of DLT. With DLT, it is important to consider whether it would operate on a 'permission' or 'without permission' basis. Given the potential impact that a 'permission-less' DLT may have on the central bank's ability to manage the money supply in the economy, it is highly unlikely that central banks would opt for such a DLT. The legal implications of permissioned DLT will still have to be grappled with. As mentioned above, the most important design feature is the distinction between token- and account-based CBDC.

## V POLICY CONSIDERATIONS FOR BANKS

At least nine policy considerations can be identified from the literature. In this analysis, the first four policy considerations are briefly examined and the other five are mentioned briefly under paragraph V(*e*) below as 'other considerations', because they warrant separate in-depth research.

### *(a) Issuance*

As stated before, a major policy consideration is the issuance of CBDC and it receiving similar ownership restrictions and legal tender protections as physical currency. A central bank is usually the sole authorised party to issue physical cash liabilities and a decision would need to be made as to who will issue CBDC, what type of model will be used, and how to give it the same protection.

### *(b) Status and convertibility of CBDC to physical currency*

In order to be considered a CBDC, it needs to be afforded the status of legal tender, as is the case with physical currency if the central bank wants to prevent CBDC from being regarded as 'book money'.

### *(c) Monetary policy implications*

There will be various monetary policy implications. First, the introduction of CBDC may open the possibility of a new universal public instrument by consolidating different categories of publicly issued obligations (from central bank reserves to physical cash to treasury or agency securities) into variations of a new, safe, generally interoperable CBDC instrument.

Secondly, it may revise the current central bank treasury coordination in the conduct of monetary policy and market operations. Thirdly, it may expand the central bank balance sheet access. There is a possibility of expanding settlement participants to the national payment system,

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including mobile operators. If this is done, it will affect the daily provisioning of market liquidity as part of monetary policy, providing greater flexibility and operational tools than before. This may increase the need for the central bank to supply liquidity during turbulent times. One would have to assess this against the central bank's role as 'lender-of-last-resort' and balance this with financial stability.

In the fourth place, the introduction of CBDC may lead to new financial institutions. This may generate new markets and commercial opportunities that justify the creation of new categories of financial institutions, licences or designated participants which, in turn, need to be incorporated into existing monetary policy implementation frameworks and the possible expansion to non-bank financial institutions/businesses and therefore greater inclusion into the national payment system.

In the fifth instance, CBDC could influence depositor outflow, depending on the model of CBDC introduced. There is a possibility of increased person-to-person loans. This could threaten the traditional commercial banking system as banks' role as agents or intermediaries of the central bank may become less strategically important. It is also necessary to carefully consider how greater outflow would impact on the financial markets and liquidity, as well as how this impact may be countered.

In the sixth place, the introduction of CBDC may create new policy levers. Usually, a central bank would adjust the interest rate or vary the quantity of different forms of government and central bank liabilities. Different tools are used, for example, the buying and selling of different kinds of securities, changing the interest rate paid on different classes of assets and changing the amount of settlement reserves that banks are required to hold against their assets (called 'capital reserves'). With CBDC, new possibilities exist, including levying positive and negative nominal interest rates directly onto retail depositor accounts, establishing a universal, publicly guaranteed payment system for both retail and wholesale depositors, and considering various forms of government-guaranteed liabilities (bonds) into sub-variants of a common CBDC instrument. A central bank would need to carefully examine the potential and limits of these levers from an economic perspective and how they interact within the existing monetary policy framework. A non-interest-bearing CBDC could be considered closer in spirit to central bank notes.

In the seventh place, the introduction of CBDC may create new opportunities or challenges for financial stability. There would be a need

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to assess how financial stability risks are posed by fraud, under-regulation and lack of supervision, in order to ensure that monetary policy does not exacerbate or obscure potentially destabilising private sector dynamics.

In the eighth place, the international dynamics of global CBDC will require technical standards for harmonisation, as well as the establishment of new clearing and settlement platforms or the customisation of existing cross-border platforms, such as the SADC-RTGS (formerly known as 'SIRESS'). A central bank needs to be very careful to issue a CBDC with cross-border transaction functions before the domestic CBDC is well entrenched. There are different cross-border payments that will likely be affected by a CBDC, namely:

- cross-border payments between consumers or firms, including correspondent banking arrangements;
- intra-firm transfer of funds, eg multi-nationals with multiple CBDC registered accounts in different jurisdictions; and
- removing funds from the issuing jurisdiction, eg transferring the funds to another wallet in another jurisdiction or establishing foreign claims over balances held domestically or convertible and/or local currency-denominated foreign instruments.

The above may have a balance of payments impact on current Exchange Control Regulations, as issued by the SARB.

As is evident from the above, the monetary policy implications are immense. A detailed discussion of these implications warrants a separate discussion and falls outside of the ambit of this analysis (for more details on monetary policy considerations, see Yanagawa & Yamaoka, 'Digital innovation, data revolution and Central Bank Digital Currency' *Bank of Japan Working Paper Series* (2019) 15–16; Alonso et al, (2020) 8(41) *Economies* at 12–12; Bordo & Levin, *Working Paper 23711* (2017); Dyson et al, 'Broadening narrow money monetary policy with a Central Bank Digital Currency' *Bank of England Staff Working Paper No 724* (2018); Bossu et al, 'Legal aspects of Central Bank Digital Currency: Central Bank and monetary law considerations' *IMF Working Paper No 20/254* (2020); Kumhof & Noone, 'Central Bank Digital Currencies and balance sheet implications' *Bank of England Staff Working Paper No 725* (2018)).

### *(d) Policy choice on type of model*

As explained above, the legal implications are different depending on the policy choice made on the design of the CBDC. Also, an account-based system is similar to domestic interbank settlements, whilst a token-based

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system contains tokens in individual wallets. A central bank has a choice to use these separately or in a hybrid form.

Registered CBDC intermediary systems are easier to regulate, as the relevant jurisdiction can enforce South African law. In open systems, negotiation must take place via international protocols, combined with domestic law enforcement.

A decision must also be made between an RTGS system versus a deferred (delayed) batch-based settlement system. In South Africa, the SARB implemented an RTGS system called the 'South African Multiple Option System' (also known as 'SAMOS') and therefore there is already expertise and a legal framework in relation to the settlement system used (see s 5 of the NPS Act providing for finality and irrevocability of settlement within the settlement system (for more details on the NPS Act, see Lawack, 'The legal and regulatory framework of the National Payment System (NPS) — Peeling the layers of the onion' (2008) 29(3) *Obiter* at 453–471)).

### *(e) Other considerations*

The following considerations are mentioned briefly, but warrant further in-depth discussion which falls outside the ambit of this analysis.

#### *(i) Privacy and data protection*

Securing the privacy and protection of financial data and identity-related data would have to be considered carefully. There may need to be digital privacy standards and regulatory requirements specifically for this purpose. The discussion of domestic and international privacy and data protection laws warrants an in-depth examination, falling outside the ambit of this analysis (see ITU-T, 'Regulatory challenges and risks for Central Bank Digital Currency' *Technical Report* (2019) at 13).

#### *(ii) Consumer protection*

Four key themes can be highlighted with reference to consumer protection, namely:

- provision of information and transparency;
- dispute resolution;
- fraud prevention; and
- data privacy and protection (see ITU-T, *Technical Report* (2019) at 14).

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The above will have an important impact on regulatory requirements and the interaction between the SARB, the Financial Services Conduct Authority and telecommunications regulators.

### *(iii) Hacking and cybersecurity*

Cybersecurity is crucial to preserving financial privacy and integrity in a CBDC system. The possible use of artificial intelligence (AI) to enable data privacy and data protection could be explored. In addition, guidelines would need to be drafted to ensure that the system is secure (see ITU-T, *Technical Report* (2019) at 15).

### *(iv) Implications for government payments*

The possibility of CBDC being used for government payments could lead to greater financial inclusion, especially if combined with mobile money or through a retail payment network. This could be very useful in the case of government payments such as social grants (see ITU-T, *Technical Report* (2019) at 16).

### *(v) Financial inclusion and anti-money laundering*

With CBDC, South Africa may overcome some of the unbanked issues in the country. However, financial inclusion needs to be carefully balanced with financial integrity by applying a risk-based approach to anti-money laundering ('AML') and the countering of financing of terrorism ('CFT'). The AML legislative framework is an integral part of digital currency applications.

This needs to be considered not only from a technology perspective, but also from a financial regulatory perspective. It is important to consider the regulation of business analytics to ensure that there is sufficient commitment to fraud detection and fraud resolution CBDC (on financial inclusion and CBDC, see Cooper et al, 'The use cases of Central Bank Digital Currency for financial inclusion: A case for mobile money', available at https://cenfri.org/wp-content/uploads/2019/06/CBDC-and-financial-inclusion_A-case-for-mobile-money.pdf, accessed on 15 June 2021).

### *(vi) Regulatory challenges and risks*

Some of the regulatory challenges and risks to be considered in assessing the feasibility of introducing a CBDC are price stability, the smooth operation of payment systems, the implementation of monetary policy,

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prudential supervision of financial institutions, service providers who are also credit institutions, the stability of the financial system and the exclusive right of the central bank to issue base money (see Nabilou, 'Central Bank Digital Currencies: Preliminary legal observations' (2019) *Journal of Banking Regulation*; see ITU-T, *Technical Report* (2019) at 10; and Yeoh, 'Regulatory issues in blockchain technology' (2017) 25(2) *Journal of Financial Regulation and Compliance* (2017)).

Three broad categories of regulatory challenges and risks are briefly examined. These include monetary policy and other systemic risk assessments, legal risk and operational risk.

As regards monetary policy and other systemic risk assessments, and as stated under the section dealing with policy considerations at paragraph V(c) above, various central banking-related risks need to be assessed, such as monetary policy and other systemic risk assessments. There may also be an impact on banks' funding structure and costs, which need to be considered.

As regards to 'legal risk', legal risk can be defined as 'the risk of the unexpected application of a law or regulation, usually resulting in a loss' (see BIS Committee on Payment and Settlement Systems, 'A glossary of terms used in payments and settlement systems' (2016) at 11). In order to mitigate against legal risk, the following can be done:

- develop a clear classification scheme for financial institutions and derivative contract-based products that will emerge from the CBDC system;
- ensure proper issuance and regulation of CBDC as legal tender. In this case, the central bank needs to consider CBDC in relation to the issuance of mobile payment accounts or m-money, means of identification and certification, passwords and other forms of security, relationship to money transfers, interoperability, confidentiality and integrity of information, securing the application and infrastructure, a security system assessment, licensing etc;
- ensure data privacy and protection. In this case, the central bank could develop a framework for coordination with law enforcement agencies to prevent, monitor and pursue digital financial fraud and with legal authorities in other jurisdictions; and
- develop an understanding of the new risks posed as this will be crucial if a risk-based approach to AML/CFT is to be followed.

Finally, 'operational risk' can be defined as 'the risk that deficiencies in information systems or internal processes, human errors, management failure or disruptions from external events will result in the reduction,

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deterioration or breakdown of services provided by an financial market infrastructure' (BIS Committee on Payment and Settlement Systems, 'A glossary of terms used in payments and settlement systems' (2016) at 13). Systems failure or risk of fraud could lead to systemic risk. Clear operational guidelines would be needed, for example, around inter-operability, standards, capacity, etc. Cooper et al describe potential risks and unintended consequences related to mobile money specifically, some of which may also be applicable to CBDC (Cooper et al, 'The use cases of Central Bank Digital Currency for financial inclusion: A case for mobile money', available at https://cenfri.org/wp-content/uploads/2019/06/CBDC-and-financial-inclusion_A-case-for-mobile-money.pdf, accessed on 15 June 2021). The details on these regulatory risks and how to overcome them fall outside the ambit of this analysis and will be dealt with in a follow-up analysis.

## VI CONCLUSION

This analysis highlights the meaning of CBDC, its legal nature and the broad legal and policy considerations that a central bank would need to bear in mind when deciding on the feasibility of issuing CBDC. The key legal, policy and regulatory issues, risks and challenges warrant further, more detailed research as this analysis is exploratory in nature and provides a broad overview of these considerations.

In a recent survey conducted by the BIS to examine the efforts of central banks on CBDC research, more than 70 per cent of central banks indicated that they were investigating the possibility of issuing a CBDC. The SARB also recently announced that it is conducting a feasibility study on the issuing of a retail CBDC, which is an exciting space to watch. The evidence from the BIS survey conducted in 2020 is that central banks are proceeding cautiously and that they are collaborating and sharing the results of their work. Caution and collaboration will reduce the likelihood of unintended consequences of issuing CBDC. This exploratory analysis merely scratches the surface of the many policy, legal and regulatory issues that need to be considered before a decision can be made on the feasibility of issuing a South African CBDC.

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