

Central bank digital currencies in emerging market economies: a view from Latin America¹

Central banks are increasingly considering the issuance of digital currencies, in response to fast and frequent payment market innovations. In this note, we weigh the benefits and costs of central bank digital currencies (CBDCs) and the main challenges posed by their possible implementation from the point of view of a Latin American country with a financial system which is underdeveloped as compared to more advanced regions, and basically bank-based. We argue that CBDCs and other technological innovations should be regarded as part of the central bank toolkit to improve means of payment – not as an end in themselves. Furthermore, we consider that the potential for lower conventional financial intermediation, currency substitution and capital flow volatility should be factored in, just as in the experience of previously issued CBDCs which did not become widely used.

New technologies and payments

The ongoing digital transformation is changing payment systems and may potentially change money as we know it. This is reflected, for instance, in growing holdings and use of cryptoassets as an alternative to traditional financial instruments and as a phenomenon that is rapidly expanding on a global scale, and that appears to have accelerated with the pandemic.

This process has a series of benefits, often related to the cost and speed of local and international financial transactions, and is based on distributed ledger technology (DLT), among other elements. But without adequate monitoring, regulation and supervision, these developments also pose potential risks for monetary policy, financial stability, consumer rights and the environment.

All these developments are better regarded as part of the evolution of the payment ecosystem. The Central Bank of Argentina (BCRA) has contributed to promoting the creation of new access points, facilitating the availability and opening of bank accounts, encouraging greater use of electronic means of payment and promoting the use of electronic channels for remote transactions.

Recent initiatives include the Transferencias 3.0 programme, which was launched in December 2020 and completed by the end of November 2021. This scheme seeks to expand the reach of instant transfers and is based on an open payment ecosystem that is interoperable (between bank and non-bank accounts), immediate (automatic crediting of funds for retailers), and flexible (supports debit and credit cards, QR codes, payment requests, etc), just to name a few features. In keeping with these initiatives, banks in Argentina are also developing digital solutions, most notably the MODO digital wallet, launched by a consortium of public and private banks at the

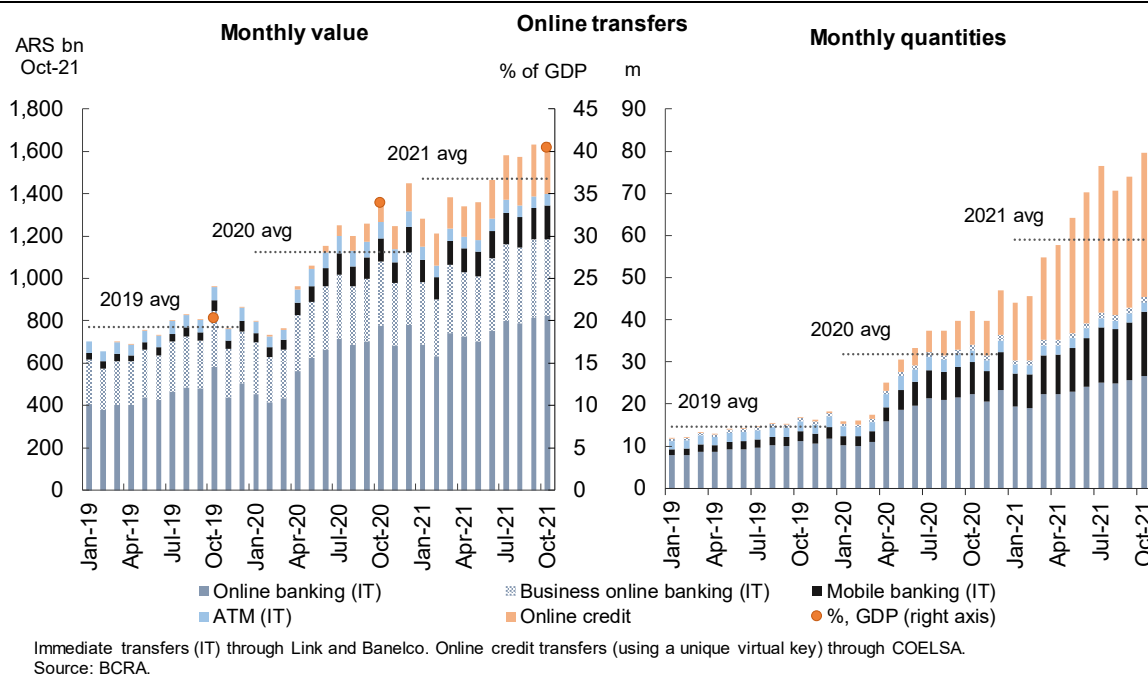
¹ Central Bank of Argentina. Prepared for the BIS Emerging Market Deputy Governors meeting, 9–10 February 2022.

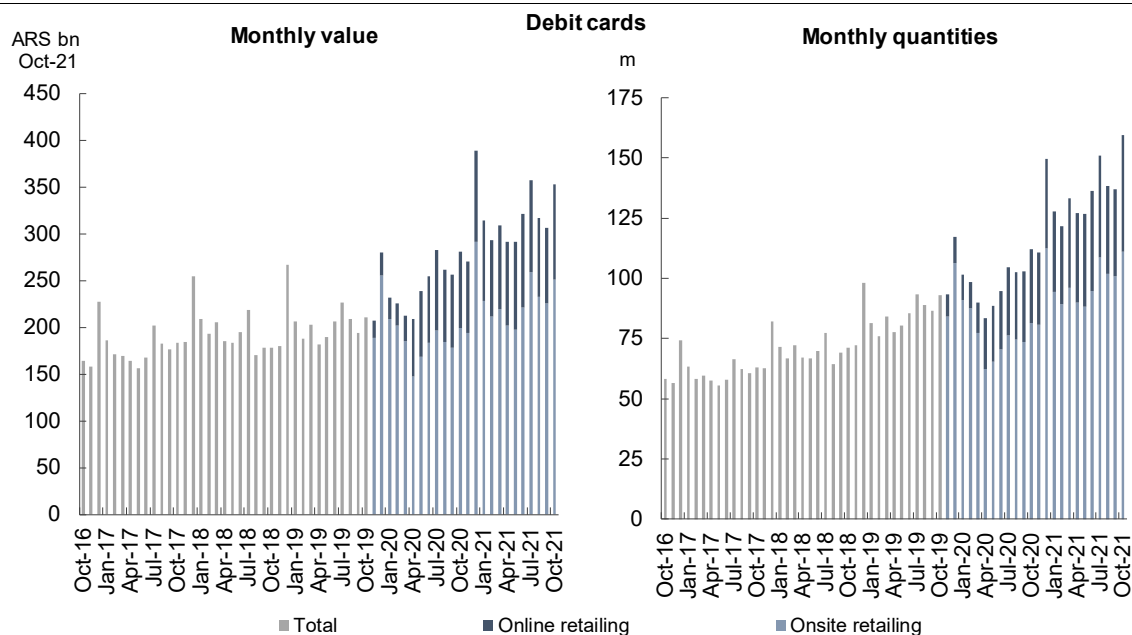
end of 2020 (in part as a response to strong competition from local fintech companies).

Digital means of payment in Argentina include online transfers through different means (online, mobile and home banking), the use of debit cards for payments and electronic cheques (ECHEQs). Online transfers have grown by almost 170% in real terms since early 2018, having doubled even before the pandemic broke out (see Figure 1). Debit card transactions have virtually doubled in the last three years, with a big push since the start of the pandemic; in this case, a significant contribution from online retailing can be detected (see Figure 2).

Argentina: online transfers (value and quantities)

Figure 1





Source: BCRA.

Compared to the digital means of payment just described, the information available reveals low levels of acceptance and use of cryptoassets among the general public in Argentina – although there are data gaps that limit the monitoring of the evolution of local cryptoasset markets. Furthermore, this activity is relatively concentrated on a few trading and custodial platforms, with limited connections to the financial system (mainly P2P transactions); and developments in “decentralised finance” (DeFi) are focused on certain niches.

Thus, financial stability risks from this source appear to be limited. However, high levels of volatility of certain types of cryptoassets, lack of safeguards, and operational issues, among other elements, could represent significant risks for consumers and investors. In this context, the BCRA and the Securities and Exchange Commission have issued a joint warning concerning the use of cryptocurrencies, covering the definition and characterisation of cryptoassets (pointing out the intrinsic risks associated with this type of digital asset), and highlighting that they: 1) are not legal tender; 2) involve high volatility; 3) can present operational disruptions and be subjected to cyberattacks; 4) lack safeguards; 5) are exposed to fraud, incomplete information and lack of transparency; 6) involve risks associated with money laundering and the financing of terrorism and potential non-compliance with exchange regulations; and 7) have potentially high costs in terms of defending the rights of users and investors. This situation might change rapidly depending on the speed of developments and the growing interest in cryptoassets, so it must be adequately monitored (Central Bank of Argentina and CNV (2021)).²

² As an example of the interest in these instruments, Google trend searches for October showed that Argentina is seventh in relative searches for Bitcoin in an international comparison.

Challenges in the implementation of CDBC

Despite their initial claims, many of the cryptoasset initiatives have been a long way from establishing themselves as a suitable substitute for money. Central banks (CBs) have not considered these initial developments as a relevant threat to the current system of monetary creation at two levels (CB and fractional reserve commercial banks). However, CBs and financial regulators have tended to adopt a more positive attitude following the emergence of second-generation cryptoassets (for example, the so-called stablecoins) and new participants, such as large digital platforms (social networks, search engines, e-commerce sites) that compete actively in the creation of means of payment and, more generally, in the provision of financial services. Many CBs have thus accelerated the analysis of a possible implementation of digital currencies, especially after the announcements related to global stablecoins by big tech companies (Auer et al (2020)).

The issuing of digital currencies by CBs has potential benefits and costs, including its impact on monetary policy, on the provision of bank credit and on domestic and international financial stability.

The benefits include the following:

- **Efficiency and resilience of the payment system:** along with the provision of a stable money as a public good, ensuring a resilient, reliable and diverse payment system is an essential task of CBs. As part of this objective, the provision of banknotes and coins is one of the main responsibilities of CBs. Most CBs conceive the CBDC as a complement that could offer new opportunities to the public in an era of digital payments and provide the possibility of enjoying the unique attributes of a monetary liability issued by a CB: liquidity, integrity and power to cancel obligations in local currency (BIS (2021a)).
- **Higher potential for financial inclusion:** the emergence of new means of payment can overcome barriers to financial inclusion.³ The pandemic – and the need to reach many households in the informal sector with state aid – highlighted the advantages of having public money with wide access and a digital nature. Finally, an area of special interest for the CBs of countries receiving international remittances is the possibility that a CBDC can be used as a vehicle for cross-border transactions, reducing their costs (BIS (2021b); FSB (2020)).
- **Improvement of the monetary policy transmission mechanism:** CDBC that earn interest could transmit the monetary policy stance more effectively, widening the room for manoeuvre of monetary policy. By putting competitive pressure on commercial banks, a CBDC that earns the policy interest rate would transmit monetary policy decisions more quickly to the remaining interest rates. At the same time, the existence of a remunerated CBDC would, in principle, open up the possibility of dealing with the zero lower bound, freeing monetary policy from the current restrictions it faces and allowing it to aggressively combat deflationary contexts (Rogoff (2016); Bordo and Levin (2017)). Despite this, the majority of CBs seem for now to consider this as a mere “theoretical” possibility, difficult to implement in practice (BIS (2020); BoE (2020)).

³ Although CDBC could represent a disadvantage for vulnerable populations that are heavily dependent on cash for their transactions.

But these benefits should be weighed against risks:

- **Financial disintermediation:** if depositors move away from bank deposits to CBDCs (in their retail variety), banks will have fewer resources to intermediate, ultimately weighing on credit supply (Bindseil (2020); BIS (2020); BoE (2020)). This would have a more negative impact in less developed and bank-based financial systems. This kind of “digital bank run” could occur not only in periods of financial stress but also be related to potential financial disintermediation of a more “structural” nature (Mancini Griffoli et al (2018)).

Subject to this competitive pressure, banks might have to raise deposit interest rates and replace part of their deposits with new funding sources in the capital market – generally more expensive and volatile. There are at least two possibilities here, depending on the degree of competition. First, in an uncompetitive environment, with low elasticity of demand for credit due to the absence of alternative financing sources, banks will likely respond to the rise in deposit rates by trying to rebuild their profit margins. The consequence would be an increase in the cost of bank credit, which would especially affect companies that are more dependent on this financing, such as SMEs. Second, and on the contrary, in an environment characterised by alternative funding sources, banks would be forced to compress intermediation spreads, promoting efficiency if there are monopoly rents in the banking industry. However, in some cases that could generate financial fragility (Andolfatto (2021)).

Thus, the majority of CBs seem to favour a CBDC design that does not compete with bank deposits and assimilates it to cash, although without replacing it. In this framework, quantitative limits on CBDC holdings may be set, or a differential remuneration system may be introduced that limits their wholesale holdings (Bindseil (2020)). It may also be possible to re-channel disintermediated funds through rediscounts, although at the cost of inducing a centralisation of funding and increasing the participation of CBs in the credit allocation process (Brunnermeier and Niepelt (2019)).

- **International spillovers and capital flow volatility:** CBDCs introduced by central banks that issue global reserve currencies may easily be perceived as a new international “risk-free” asset. This could result in intense competition against countries which do not issue reserve currencies, for instance. This trend towards possible “digital dollarisation” could complicate the implementation of autonomous monetary policy in the case of many emerging market economies (EMEs) that are vulnerable to global financial shocks. In other words: this would affect not only countries where currency substitution is a concern, but more generally those countries that are subject to sudden stops in capital flows as, for instance, the US dollar appreciates globally.

Thus, it is very important that the main CBs internalise possible spillovers to the global economy in their analysis and design of digital currencies, including their impact on developing economies via capital flows and currency substitution. International cooperation on regulatory approaches and the design of these currencies is key (BIS (2021b); IMF (2020)). Analysis and possible implementation of CBDCs should be conducted in synergy with closely related initiatives, such as the G20 Roadmap to enhance Cross-Border Payments and the review of the IMF’s Institutional View on Capital Flows.

CBDCs: design and implementation alternatives

In the context of this cost and benefit analysis, there are several design alternatives that are being actively explored by CBs. These alternatives will depend on the architecture, infrastructure and technology finally adopted (Auer and Böhme (2020)). A basic taxonomy can be defined depending on: a) whether access to CBDCs is widespread, without restrictions (like physical currency, this would be a retail CBDC) or restricted to certain actors (like banks, a wholesale CBDC); b) whether transactions are recorded in accounts or based on tokens (Bech and Garratt (2017)). Table 1 summarises the taxonomy along these two dimensions. CBDCs currently under discussion would be elements II, III and IV in the matrix (token-based retail and wholesale CBDCs, or retail account-based ones); while element I already exists as commercial banks' reserves held in accounts at the central bank for wholesale settlement purposes.

| CBDCs: a taxonomy | | Table 1 |
|---------------------|--------------------------------------|-----------------------------------|
| | Based on accounts | Based on tokens |
| Restricted access | Wholesale account-based CBDC (I) | Wholesale token-based CBDC (II) |
| Unrestricted access | General use account-based CBDC (III) | General use token-based CBDC (IV) |

CBs could operate the CBDC directly or in hybrid form: that is, through intermediaries, which could be commercial banks themselves or other private payment service providers. This would be the decision to take between both rows of the matrix in the table. In the hybrid model, although the monetary obligation would remain with the CB itself, authorised operators could take care of all the operational matters, of interaction with the public and of keeping an up-to-date record of all transactions.

Indeed, the infrastructure related to the recording of transactions is a second aspect for which there are several options. These are summarised by the left- and right-hand columns of table 1. CBs could use a conventional centralised transaction recording infrastructure or use distributed ledger technology (DLT). A centralised registry structure would require the CB itself or an intermediary to handle and operate the transactions and take care of the security requirements of the system, whereas a DLT scheme would validate operations in a decentralised way, potentially making P2P and "offline" transactions easier.

Put simply, a CBDC system can be based on accounts (and, in that case, the authentication of the payments would depend on the validation of the identity of the holder of monetary balances) or consist of digital tokens (in which case the authentication of the transactions would depend exclusively on the validation of the "object" to be transferred). In the former case, the implementation, the volume of accounts and the direct relationship with the public would be key challenges for the central bank, as well as the impact on financial intermediation. In the case of tokens, a disadvantage that is usually pointed out is the complexity of emulating the characteristics of physical cash in a digital environment (integrity, availability and anonymity) and the desirability of doing so. Likewise, it implies challenges for the operation of the banking system and financial intermediation as it is currently conceived, mainly due to the competition between a CBDC of these characteristics and deposits in financial institutions.

There are many other related relevant characteristics that should be contemplated in the design of a CBDC, like the following:

- Degree of anonymity – a key feature of any CBDC akin to cash: Depending on the objectives of the issuer, this can range from absolute anonymity to its absence.
- Availability: 24x7 versus limited hours (another crucial aspect for any cash-like CBDC): possibility of using the system 24 hours a day, seven days a week or establishing a specific time of use to operate.
- Possibility of accruing interest: depending on the issuer's objective, the CBDC may accrue interest (positive or even negative, in the latter case to increase the effectiveness of monetary policy).
- Holding limits: in accordance with the objectives of the issuer and/or administrator of the CBDC, limits to the holding of the CBDC can be established. These could be related to different aims, such as: consumer protection, anti-money laundering/combating the financing of terrorism, foreign exchange regulation.

A large majority of CBs seem to favour a hybrid type of scheme, recognising the comparative advantages that the private sector has in terms of innovation and in the commercial relationship with the public. There seems to be a general consensus to promote a not fully decentralised transaction recording infrastructure and an account-based design.

Several economies in Latin America and the Caribbean have launched CBDC schemes or pilot tests. The Bahamas was the first country to officially launch a CBDC (the sand dollar), in October 2020; together with Nigeria, they are the two cases of CBDCs fully open to the public (Central Bank of The Bahamas (2020)). These experiences should be closely monitored, as well as the results of the pilot tests implemented by several countries, including Uruguay (with a pilot completed in 2017–18) and the countries of the Eastern Caribbean Currency Union. Finally, looking at the experience of countries that issued CBDCs that did not become widely used, such as Ecuador (2014–18), can shed light on the challenges ahead.

Concluding remarks

New technologies have changed the payment ecosystem at the global level. CBDCs, among other initiatives, have to be considered one of the many tools that central banks may use in order to improve means of payment and monetary policy implementation. In EMEs, these innovations must be carefully weighed against their impact on financial development and on currency substitution. Since this is a systemic and global issue, international cooperation is of the essence.

In Argentina, recent regulatory initiatives, such as *Transferencias 3.0*, have enabled the development of an efficient and secure infrastructure that could be leveraged to further improve access to and use of payment services by the public. In this context, the issuance of a CBDC is not a priority, at least in the short term. Nevertheless, recognising the fast evolution of the digital environment, the BCRA will continue studying the implications of CBDCs and the most appropriate CBDC design for Argentina.

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