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Chapter 2: CBDC in the Broad Context of National Payments System Development

Payment and settlement systems and services (PSSSs) have become vital components of the economic life of contemporary societies. They consist of integrated networks of institutions involved in the execution and delivery of fund transfer services across economies. Their smooth functioning is essential to the overall efficiency and stability of market economies. To ensure such smooth functioning, national oversight authorities have been established worldwide, typically with a leading role of central banks, and oversight activities have been developed to take account of the growing interconnectedness and mutual interdependence of PSSSs and other financial market infrastructures, including across borders. PSSSs constitute what is often referred as the national payments system (NPS) of each country, NPSs are also mutually interconnected in what can be referred to as the global payments system (GPS).[1]

The retail payments landscape, in particular, has changed significantly in view of drastic technological developments in the financial sector and changing consumer preferences. As these unfold, back-end and front-end arrangements that provide consumers with the ability to pay, save and transfer value have undergone remarkable improvements including, among other, the emergence of so-called fast or instant payment systems, the launch of new means of payment based on emerging technologies such as blockchain (e.g. virtual currencies, stable-coins), and the spread of additional access channels and enabling environments that accommodate the use of digital payments such as Quick Response (QR) codes and Application Programming Interfaces (APIs).

However, despite the rise of digital payments, evidence suggests that cash remains the most widely used retail payment instrument around the world.[2] As

1 This chapter reflects discussions held in the context of the preparation of 'Central Bank Digital Currencies: the Payments Perspective', a World Bank paper to be published in January 2021. Hence, its ideas and insights also belong to Holti Banka, Biagio Bossone, Ahmed Faragallah, Maria Chiara Malaguti, Harish Natarajan and Gynedi Srinivas. Errors and omissions are the sole responsibility of the author.

2 Cash in the form of physical banknotes and coins issued by the central bank or the government is referred to as 'physical cash' throughout this chapter.

such, central banks, enabled also by new technologies, have been exploring the issuance of a digital instrument with cash-like features – central bank digital currency (CBDC). CBDC can be defined as a liability of (claim on) the central bank issued in digital form, which can be used as a medium of exchange and means of payment, store of value, settlement asset and unit of account. CBDC can be token-based or account-based and it can be wholesale or retail. A retail CBDC (RCBDC) is used like a digital extension of cash by all players in the economy, whereas a wholesale CBDC (W-CBDC) could be used only by permitted institutions as a settlement asset in the interbank market.

Although it can be argued that most central banks already issue wholesale CBDC and that a W-CBDC would just be an evolution of existing systems, in recent years several central banks have been testing and piloting the CBDC concept in the retail space as an innovative development. There is recognition of the complexity associated with such an initiative, given that it cuts across multiple areas: payment system development, monetary policy, financial stability, legal, and oversight, as well as the practical challenges of implementation. Nevertheless, central banks want to be well-positioned in the new era of payments and not be overshadowed by the private sector.

Depending on their circumstances and local context, central banks are guided by different drivers in their desire to explore the issuance of CBDC. The main drivers can be broadly summarized as follows.

- *Cost*: The high cost associated with the printing, handling, storage and transport of physical cash is pushing central banks to consider less costly versions of currency, such as CBDC.
- *Financial inclusion*: As many emerging markets are facing significant gaps in access to transaction accounts and usage of digital payment instruments, CBDC could potentially constitute a solution toward universal access.
- *Instant access*: Given that access to information is instant in today's era, there has been a growing demand from consumers and businesses for payment mechanisms that allow instant and continuous access to funds on the payee's side.
- *Risk*: In some countries (e.g. Sweden), most retail payments are digital (enabled by privately issued payment instruments), which implies high levels of dependence on the private sector. By implementing CBDC, central banks can shift some of that risk back to the central bank, as the CBDC will compete with privately issued digital payment instruments.

- *Competition*: Given that similar initiatives are being undertaken by the private sector (e.g. Libra), central banks do not want to be left behind or outcompeted by the private sector in the payments sector, where they also have a role to play.
- *Role of central banks*: Central banks have gone beyond their traditional role of issuing currency and are also serving as retail payment system operators in many cases, thus dealing directly with market participants and end users. This positions them to potentially undertake the CBDC project, which requires cooperation and interaction with many different stakeholders.
- *Seigniorage*: CBDC can boost seigniorage revenue for central banks, given the low production cost compared to physical cash.
- *Technology advancements*: New emerging technologies, including blockchain, have made the implementation of CBDC easier.
- *Cross-border transactions*: If designed for cross-border transfers/payments, CBDC can lower costs significantly for such transactions.
- *Tax collection*: Many jurisdictions believe that CBDC can increase transparency and significantly reduce tax evasion, because transactions can be tracked, even under an anonymous CBDC design.
- *Capital market development*: some forms of CBDC could match more modern techniques for clearing and settlement of securities and derivatives, and facilitate delivery versus payment in these new environments.

The implementation of CBDC comes with dilemmas, risks and challenges. Central banks need to make important decisions regarding the design of CBDC, such as interest bearing or non-interesting bearing; token-based or account-based; anonymous or non-anonymous; accounts held at central bank or at commercial institutions; and cost structure and fees charged to participants and end users. These are some key questions that need to be answered in advance. In addition, there are risks and challenges that pertain to, for example, how monetary policy will be affected by the issuance of CBDC and how the Anti money laundering and counter financing of terrorism (AML/CFT) mechanisms in payments through CBDC will be handled.

Overall, it is important for central banks to have a clear objective so they can decide first whether CBDC is the right instrument and whether other existing mechanisms can fulfil the objective. Even if the solution is indeed CBDC, the implementation and design features will have to be guided by the needs of the implementer. Finally, determining the right timing for the introduction of CBDC is of utmost importance, as this could influence the success of the project and adoption of the instrument.

2.1 CBDC in the broad context of national payments system development

From an NPS perspective, the decision on whether, when, how and by whom a CBDC should be introduced is complex and needs to be taken with close attention to some important considerations. As the NPS in almost every country is far from optimal efficiency, CBDC has the potential to reduce costs and improve user experiences by putting competitive pressure on existing payment instruments.

Some potential advantages of the introduction of W-CDBC, as an advanced version of existing real time gross settlement (RTGS) systems, are:

1. Longer operating hours: W-CBDC is likely to be available 24/7, 365 days a year, unlike RTGS systems.
2. Increased operational resilience: W-CBDC is expected to run on a permissioned network, relying on several cloud based nodes instead of the two to three data centres common to RTGS systems. However, one could argue that current systems are already resilient and do not need extra levels of resilience.
3. Tokenization of financial assets: the financial industry is making huge efforts to tokenise financial assets, such as securities (e.g. SDX or HQLAx). These platforms will require tokenised money like W-CBDC for settlement purposes.

Some potential advantages of the introduction of a (domestically used) RCBDC are:

1. Reduced cost for the production, handling and distribution of physical cash. Comparative cost studies will be instrumental to measuring this impact.
2. Increased competitive pressure on the efficiency of other payment instruments. As a RCBDC will be offered, in principle, at little or no cost to payers and payees, it could improve the overall efficiency of the retail segment of the NPS by putting pressure on other instruments that will have to 'market' their other characteristics and advantages. It remains to be seen how CBDC features will be designed.
3. A more stringent anti-money laundering/know your customer (AML/KYC) regime than physical cash. This will depend on the RCBDC model selected: (i) pure value-based CBDCs present similar concerns to cash; (ii) account-based CBDCs could mitigate AML/KYC concerns.
4. Easier way to measure the real circulation of cash.

5. Capacity to attract underserved or unserved segments of the population to increase financial inclusion.

Some potential advantages of the introduction of an (internationally used) RCBDC are:

1. Efficiency gains for cross-border payments, in particular at the regional level, as CBDC can serve as a cost-effective and faster payment means or an efficient settlement asset.
2. Positive impact on de-risking as global reserve currencies issued as CBDCs could replace some correspondent banking arrangements.
3. For smaller states, it could increase demand for the national currency.

The decision on CBDC should follow a structured and strategic approach, for which four main recommendations are provided below.
Recommendation A: Preliminary considerations for successful launch of a CBDC. Before embarking on a structured programme to launch a CBDC in any given country, the central bank, other government authorities and relevant stakeholders should engage in a careful analysis of the following ten (10) considerations:

1. *Be informed!* The decision on whether, when, how, and by whom a CDBC should be launched should be based on a full understanding of the NPS structure and needs, and on reliable and comprehensive data. In this regard, relevant data might be available through a cost study executed using the World Bank (WB) comprehensive methodology.[3] This set of data would be instrumental in guiding strategic decisions on this matter. Also, the WB guidance on retail payment system stocktaking[4] can provide some helpful insights (see Annex 1).
2. *Be strategic!* The introduction of any form of CBDC should be part of and coherent with a strategic plan of reform of the NPS. In principle, the introduction of a CBDC is in line with the broad objectives of NPS reforms.

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3 The World Bank has developed a methodology to run such analysis. See World Bank, *Retail Payments. A Practical Guide for Measuring Retail Payment Costs*, Washington, World Bank, November 2016, http://hdl.handle.net/10986/25861. For an application of this methodology, see World Bank and Bank of Albania, *The Retail Payment Costs and Savings in Albania*, Washington, World Bank, June 2018, http://hdl.handle.net/10986/30060.

4 World Bank, Banco Central do Brasil and European Central Bank, *A Practical Guide for Retail Payments Stocktaking*, Washington, World Bank, 2012, https://web.worldbank.org/archive/website01530/WEB/IMAGES/WB_2012_.PDF.

However, a careful attention of the potential trade-offs among the different strategic directions of the plan will need to be given (see also the following considerations).

3. *Be safe!* CBDC, both wholesale and retail, should adhere to the highest standards of safety and security. For example, W-CBDC should fully observe the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs)[5] (see Annex 2). Both wholesale and retail CBDCs should be subject to stringent cyber risk management. RCBDCs should be subject to strict measures to avoid counterfeiting and token manipulation, as well as having adequate consumer assistance and protection mechanisms.
4. *Inject efficiency!* CBDC, wholesale and retail, should contribute greatly to improving the overall efficiency of the NPS. As mentioned above, the analysis of relevant data, including through the use of the WB cost study, would shed light on where to intervene to enhance NPS efficiency in the country. Should, for example, the study reveal that there are significant costs in producing and handling cash in the economy, and should some doubts remain on the capacity of the financial sector to foster the adoption of digital payments, then the introduction of an RCBDC could be accelerated. On the wholesale side, a careful and urgent assessment of the current and prospective RTGS arrangements in relation to the efficiency principles of the CPMI-IOSCO PFMIs would inform any decision. Some additional guidance on this matter can be provided in the relevant standards/guidance[6] (CPSS NPS Guidance report, see Annex 3) and in the WB retail package.[7]

In the broad NPS development framework. CBDC can significantly improve disbursement and collections of government payments (see Annex 4 for the World Bank Guidelines for GPS)[8] and can facilitate handling emergency situations (see Annex 5).

5 Committee on Payment and Settlement Systems (CPSS) and International Organization of Securities Commissions (IOSCO), *Principles for Financial Market Infrastructures*, Basel, Bank for International Settlements, April 2012, https://www.bis.org/cpmi/publ/d101a.htm.

6 Committee on Payment and Settlement Systems (CPSS), 'General Guidance for Payment System Development', in *CPMI Papers*, No 70 (January 2006), https://www.bis.org/cpmi/publ/d70.htm.

7 Massimo Cirasino and Jose Antonio Garcia (eds), *Developing a Comprehensive National Retail Payments Strategy*, Washington, World Bank, 2012, http://documents.worldbank.org/curated/en/839121469729131991.

8 World Bank, *General Guidelines for the Development of Government Payment Programs*, Washington, World Bank, 2012, http://hdl.handle.net/10986/22127.

5. *Be fair!* CBDC, in particular retail, should integrate smoothly with other payment instruments/schemes and foster a competitive environment within the NPS. In this context, the WB guidance and the spirit of competing on services and cooperating on infrastructures should help policymakers make the right choices (see Annexes 6 and 7). In particular, in some cases, consideration should be given to the choice between a CBDC and the introduction of faster payments solutions that are being launched in several countries. In principle, RCBDC and faster payments provide a similar experience to end-users in that the availability of funds is immediate. However, there are some important considerations in terms of finality, anonymity, intermediation, and cost that would probably lead to the co-existence of both instruments, in the same way physical cash co-exists with other payment instruments. The fact that, in some countries, central banks would be behind both initiatives would call for a careful analysis of the implications and planning of the timing of their launch.
6. *Foster in*clusion! CBDC, in particular retail, should be consistent with financial inclusion objectives. The prospective CBDC should be consistent with the framework defined by the CPMI-World Bank Guiding Principles for the Payment Aspects of Financial Inclusion (PAFI), (see Figure 2.1) and the recently issued report on 'Payment aspects of financial inclusion in the fintech era'.[9]
7. *Be neutral!* CBDC, in particular retail, should maintain at least the same level of AML-CTF compliance that existed before its introduction. Relevant Financial Action Task Force (FATF) provisions should be studied and applied as needed to the prospective CBDC. In this context, a study of the AML-CTF perspective on the NPS in the country would be beneficial.
8. *Help the world!* CBDC, both wholesale and retail, where used for cross-border purposes and/or international remittances should enhance the efficiency and safety of the GPS. The CPSS-WB General Principles for International Remittance Services[10] (see Annex 8) and the recent CPMI

9 The full reports can be downloaded at the following links: Committee on Payments and Market Infrastructures (CPMI) and World Bank, 'Payment Aspects of Financial Inclusion', in *CPMI Papers*, No. 144 (April 2016), https://www.bis.org/cpmi/publ/d144.htm; CPMI and World Bank, 'Payment Aspects of Financial Inclusion in the Fintech Era', in *CPMI Papers*, No. 191 (April 2020), https://www.bis.org/cpmi/publ/d191.htm.

10 Committee on Payment and Settlement Systems (CPSS) and World Bank, 'General Principles for International Remittance Services', in *CPMI Papers*, No. 76 (January 2007), https://www.bis.org/cpmi/publ/d76.htm.

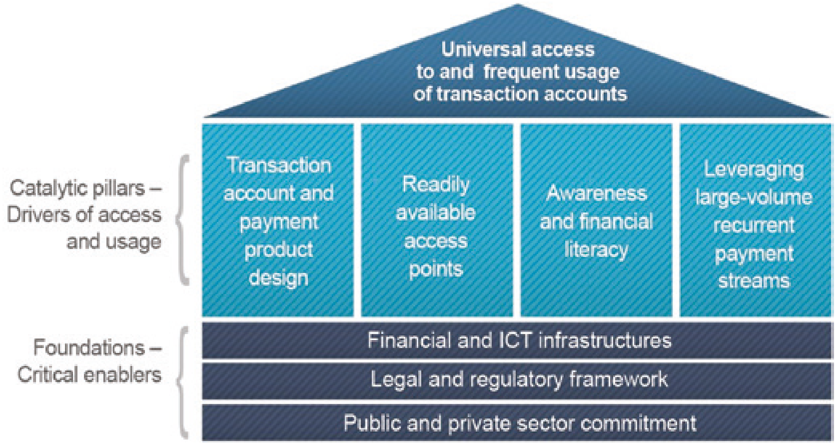

Figure 2.1: The PAFI framework.

Retail and Cross-border reports can provide important guidance on this matter. In some countries, these cross-border and remittance dimensions can probably become relevant at a subsequent stage, depending on the level of adoption of the CBDC.

A general perception is that cross-border payments lag behind domestic ones. A recent assessment by the Financial Stability Board (FSB) of existing payment arrangements has identified four types of important challenges: cost, speed, access and transparency.[11] These challenges affect a number of different stakeholders on the supply side (bank and non-bank payment system operators or PSPs and technical service providers) and the demand side (end users composed of individuals, businesses and government agencies), and affect each of them in different ways.

9. *Be collegial!* The decisions on whether, when, how and by whom a CBDC should be introduced, as well as those regarding its implementation (if it is approved) should be made through a structured process of consultation with all relevant stakeholders. Central banks, typically, engage with all relevant stakeholders in the production of the NPS strategy and some of its implementation. In this spirit, a cooperative approach should be followed,

11 See Financial Stability Board (FSB), *Enhancing Cross-border Payments. Stage 1 Report to the G20: Technical Background Report*, 9 April 2020, https://www.fsb.org/wp-content/uploads/P090420-2.pdf.

with the possible creation of a working group in the context of a plan to create a National Payments System Council or Forum, where this is not already in place.

10. *Implementation is key!* CBDC, both wholesale and retail, should be subject to rigorous pre-planning and project management techniques, and should protect central banks from reputational risk. This would not be different from other NPS reform projects, with the possible caveat of an even stronger reputational role for the CBM. The WB Guidelines for Integration of Regional Infrastructures[12] provide some important insights on how to structure decision-making and implementation processes in the payments field (see Annex 9 and Recommendation C).

Recommendation B: Legal and regulatory aspects. The issuance of CBDC requires a careful consideration of its legal and regulatory consequences.[13] *Therefore, the central bank, in cooperation with other relevant authorities, should carefully review the legal and regulatory framework prior to the launch of a CBDC.*

A few premises are required. In the first place, each legal order has its own institutional setting and substantive provisions. Consequently, any concrete analysis should rely on the actual legal context of the relevant jurisdiction. In the second place, constraints might exist in legal orders; however, this would not impede the establishment of CBDC, but possibly force some decisions or require amendments to legislation and/or new regulation. Finally, legal and economic concepts do not always exactly match and consequently an assessment is always required of the scope of legal definitions to correctly transpose the aims to be attained under policy into legal and regulatory terms.

CBDC against cash and fiduciary money: CBDC implies a reconsideration of legal tender. The central bank needs to have the authority to issue CBDC. In general, central banks do have the general power to issue currency. Unless relevant legislation expressly states otherwise, the central bank should thus be able to issue currency also in digital form. However, a more subtle issue may arise as for the legal value of CBDC to extinguish obligations.

Considering CBDC as legal tender could not automatically imply a duty by the creditor to accept a specific payment instrument. Legal tender should thus be recognized to take the form of reserves, cash and CBDC. However, a different

12 World Bank, *Guidelines for the Successful Regional Integration of Financial Infrastructures*, Washington, World Bank, 2014, http://hdl.handle.net/10986/22110.

13 This legal part draws significantly from inputs received from Maria Chiara Malaguti (World Bank).

matter concerns acceptance of payment instruments through which the means of payment is delivered. As a matter of principle, parties should be free to agree on the kind of instrument they are ready to accept according to cost, needed technology, or risk. As stated above in this paper, CBDC is issued and then embedded into a payment instrument, possibly regulated through a scheme and processed through a system. To that end, CBDC is embedded into a payment product which competes with other payment products in the market.

In the lack of clarification within each legal order of the above categories, the introduction of CBDC may create some inconsistencies, since CBDC, as liability of the central bank, would possibly be considered as legal tender, with the consequence that its acceptance would be compulsory under many legal systems, although the creditor might not be equipped from a factual point of view to be paid under its terms.

To the same extent, as a way of exception to the general principle that parties should freely choose payment instruments, there may be public policy justifications requiring the regulator to impose some restrictions in the use of a payment instrument against another. This is well-known to the generality of countries, where thresholds are often imposed in the use of cash, e-money or cheques. A different understanding of the above issues may reduce the autonomy of the central bank to manage its policies by imposing restraints on the use of a kind of payment instrument against another.

The issuance of CBDC must not be in conflict with the statutory functions of the central bank or possible constraints on its activities. Once it is ensured that a central bank can issue CBDC because this is a means of payment as reserves and cash are, and that this is legal tender, a second check might be needed in the light of the objectives and functions of the central bank as established by its statute.

If a central bank issues a CBDC to the general public, it is potentially exposed to the same legislation as other payment services providers or system operators. Functions of a central bank often include also the power to operate a system. Rarely such power would be statutorily limited to wholesale systems. However, it has been quite unusual until now for a central bank to directly provide payment services to the general public besides physical cash, as it could be the case under models where it is the central bank itself to distribute the product and to have direct relationships with the users. In all these operational roles, the central bank should in principle be subject to the same standards as any other provider in the market, as well as the product distributed should be subject to the same rules as competing products. This would make the central bank subject to general legislation on payments. In addition to anti-money laundering regulations, such as KYC regulations and overseeing transactions, this might involve data protection legislation, consumer protection legislation in the payment services field, responsibility for unauthorized transactions, tax legislation and the like. The regulatory framework to apply would depend on which option is chosen, but in principle the central bank should be subject to the same provisions as any other market participant issuing similar DC mechanisms (see below for oversight). It needs to be noted, however, that a counter-argument is that physical cash – the most used payment instrument in the world and issued by the central bank, is not necessarily following the same standards and provisions as other payment instruments and this can be in principle extended to CBDC, as well.

It should yet be clarified that CBDC is not e-money. E-money products are issued by regulated entities and are pre-paid products. The customer has a specific amount registered on a devise for payments against actual delivery of fiat money to the intermediary, who will manage it according to relevant legislation. This happens mainly by depositing funds received from customers at deposit-taking institutions under fiduciary accounts, which the intermediary manages as a trustee (or analogous institution) to the benefit of the customers. From a legal standpoint, this means that the trustee or other fiduciary holder has the power to administer the founds but it does so not to its own benefit, but to that of the customer, who is the beneficiary owner of such funds. These legal structures are often misinterpreted: the fact that the customer is the beneficial owner of the funds deposited at the deposit taking institution – with the consequence that in the event of default by the intermediary such funds are not included within the intermediary's property –, does not mean that the relationship between the intermediary and the customer changes: the customer keeps having a claim against the intermediary for the execution of its payment obligations. Even under the circumstance that such accounts are held at a central bank rather than at a commercial bank, such pre-paid instruments rely on the liability of the intermediary. E-money products and CBDC thus do not coincide, since the latter represents a liability of the central bank. However, e-money legislation, which currently exists in many countries, does not always define 'e-money' as such in the same way. In particular, under some legislation the definition does not specifically clarify that e-money must be issued against fiat money. This may generate uncertainties on whether such legislation would apply also to digital currency in general, and to CBDC in particular. In the light of the structural difference between the two instruments, it would be advisable that a clear distinction is made. However, it cannot be excluded that some of the provisions applying to e-money products could equally apply to the CBDC, such as on AML, authorization, verification, protection of data.

Legal issues for cross-border CBDC have additional implications. CBDC for cross-border payments is inherently exposed to a plurality of legal systems. Anything that crosses borders implies that it is potentially subject to (at least) two different legal systems. These systems do not necessarily have similar rules governing the same events or contingencies. And even when some similarities exist, such as, for instance, when international standards apply to both systems, the actual application of the same standards in each country might vary or even be in conflict. Conflicting standards and, even worse, conflict of laws engender the risk that the expected effects of a transaction may not materialise or that unexpected consequences might occur.

Any CBDC that is legally issued in a country should be fully recognised in other countries. If, in the issuing country, the central bank has the authority to issue a CBDC, any other country should accept this CBDC as the currency of the issuing country in the same way as it accepts foreign currencies of any other form. This means that the legal issues associated with CBDC transfers should be the same as those associated with any other cross-border transfers. A situation where a country accepts a foreign currency under a specific form, say cash, while it refuses another currency under another form (hypothetically, CBDC) would be inconceivable in legal terms, especially if the latter is understood to be a means of payment and not a commodity (as is the case with CBDC). However, in view of the fact that CBDC also permits non-residents, at least in principle, to freely purchase domestic currency, thus placing both currencies (as means of payment) in much greater competition with each other than is currently the case, the circumstance cannot be ruled out wherein the receiving country would impose limitations on CBDC use within its jurisdiction in order to safeguard its own currency.

Finally, standards and regulations need to be tailored to the CBDC model chosen. For W-CBDCs, the major concern is the sound operation of the supporting infrastructure. To that end, regulatory inconsistencies might emerge if, for instance, different criteria exist for the authorization of financial institutions as participants, or if different conditions apply for access of participants to central bank systems and facilities or to open accounts at central banks. These differences do not affect the legal soundness of the infrastructure, but they may rather weaken its efficiency and obstruct the achievement of its goals. However, in the case of general purpose CBDCs, the protection of end users become a relevant concern in addition to operational soundness. In this area, however, countries may have different legal provisions for (financial) consumer protection, financial integrity, data collection and protection, and transparency (in particular as for traceability and transparency of fees and costs).

Such differences among countries participating in a CBDC infrastructure for cross-border payments would not affect the legal soundness of the payments or the infrastructure as a whole, but they might affect the achievement of common regulatory standards for the use of the same CBDC across the jurisdictions involved, and ultimately alter the homogeneous quality of CBDC services to the public across the whole arrangement.

Recommendation C: Project management and resources. The central bank should prepare a realistic action plan, identifying relevant milestones for the implementation of the CBDC and should count on adequate human and financial resources.

The action plan should include a feasibility phase, pilot phase and the (potential) full-scale implementation phase. In the feasibility phase, the central bank should consider the various design options for a CBDC), analyse the relevant data, compare them with the needs and elaborate on a model for the CBDC in the country. The pilot phase should be regarded as critical, and entering it, the central bank should be open to any outcome, including the possibilities of having to significantly change the original design or drop the project altogether.

The central bank should carefully check what the resources will be needed for implementing a CBDC, keeping in view other NPS reform projects underway. The complexity and cost of implementing a CBDC should not be underestimated; it is neither easy nor resource-free. Therefore, all necessary resources, financial and human, internal and external to the central bank, should be available and ready to be deployed effectively.

Here one can draw extensive lessons from the WB regional guidelines for the successful implementation of regional financial infrastructures.

Recommendation D: NPS oversight implications.[14] *The launch of a CBDC might have implications on the role of the central bank as overseer of the NPS, which should be carefully evaluated and, eventually, addressed.*

Increasingly, since the late 1990s, central banks have redefined their role as oversight agencies for the NPS. Most central banks today have in place a policy framework for NPS oversight, which they periodically revisit based on the evolution of the NPS as influenced by ongoing institutional and technological developments.[15] Interest has arisen from financial regulators and the payments

14 This section draws extensively on contributions from Gynedi Srinivas (World Bank).

15 In two path-breaking papers, the Banca d'Italia (1997, 1999) outlined the main features of payment system oversight that were then taking shape and reported the results of a survey of the oversight functions then carried out by central banks in leading industrial countries. Another early example of the attempt to set out explicit objectives for oversight at a time when detailed statutory guidance was yet undeveloped is the Bank

industry on how to organise the oversight function in a way that is most conducive to a sound long-term balance among the various objectives.[16]

Oversight as it has evolved over the years and been practiced by central banks has been based on the premise of promoting safety and efficiency of payment and settlement systems by 'monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change'.[17] The definition encompasses the 'public policy objectives of oversight (safety and efficiency), its scope (payment and settlement systems) and its activities (monitoring, assessing and inducing change)'. Additional public policy objectives such as financial inclusion, consumer protection and standards for payment instruments also fall under the scope of oversight in the case of central banks.

The oversight powers of central banks have been broadly seen to cover and capture the above elements either in new payments system laws or through amendments to existing laws such as central banking laws. These powers of oversight by and large do not always capture the likely development, deployment and use of a CBDC either as a retail payment instrument or as a wholesale settlement asset, given that this is an idea that has gained traction only recently. Nonetheless it is interesting to analyse how the concept of oversight can be applied to CBDCs.

RCBDCs: The RCBDC would be a general purpose digital payment instrument that would be available to the general public either as a token-based variant or an account-based variant. A token-based variant would largely be a type

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of England's report on *Oversight of Payment Systems*, issued in November 2000. Finally, see World Bank-CEMLA work by Bossone and Cirasino, where a template for the oversight of PSSS was first designed for the central banks of emerging market economies, and which has since become the oversight policy 'manifesto' for many central banks worldwide. See Biagio Bossone and Massimo Cirasino, 'The Oversight of the Payments Systems: A Framework for the Development and Governance of Payment Systems in Emerging Economies', in *Western Hemisphere Payments and Securities Clearance and Settlement Systems Research Series*, No. 1 (July 2001), http://documents.worldbank.org/curated/en/646651468156578578.

16 For a review of oversight issues, see contributions reported in Bruce J. Summers (ed.), *Payment Systems: Design, Governance and Oversight*, London, Central Banking Publications, 2012. For a discussion of how public policy considerations and goals influence the design and operation of systems, see Bruce J. Summers, 'Payment System Design and Public Policy', in Bruce J. Summers (ed.), *Payment Systems: Design, Governance and Oversight*, London, Central Banking Publications, 2012, p. 3–16.

17 Committee on Payment and Settlement Systems (CPSS), 'Central Bank Oversight of Payment and Settlement Systems', in *CPMI Papers*, No. 68 (May 2005), p. 11, https://www.bis.org/cpmi/publ/d68.htm.

of 'digital cash' and could be distributed to the general public in various ways, compared to an account-based variant. Aimed primarily at retail transactions, it would be widely available.[18]

Token RCBDC: If one were to conceptualise a token RCBDC as a bearer instrument akin to cash/bank notes, widely available to the general public for daily payment needs, the issue that needs to be determined is whether the issuance, circulation/distribution, redemption, destruction, operational reliability, security and customer redressal issues would all fall under the purview of NPS oversight. Physical cash issued by the central bank is a bearer instrument and the central bank's oversight scope and powers do not extend over cash comprising bank notes, which are legal tender. Other departments within the central banks are tasked with the responsibility of bank-note design, their security features, distribution mechanisms, destruction of soiled bank notes and customer redressal (exchange of soiled or mutilated bank notes). Other authorities such as law enforcement work with central banks and their distribution entities (usually banks) to detect forged notes and prosecute those responsible.

A case could be made out that since other units of the central bank have been successfully managing the life-cycle of bank notes, with adequate re-skilling and training they would be able to do the same with token RCBDC as well. Seen from this perspective, NPS oversight does not appear to have any role in the oversight (monitoring, assessing and inducing change) of token RCBDC.

It could also be the case that the general public would not like to have on their person the full value of a bearer instrument (token RCBDC) and may like to store some balance in an account to be used as and when required. When token RCBDC can be stored in an account (either with the central bank or with other authorised entities), such arrangements could fall outside the traditional scope of NPS oversight. Other departments within central banks are responsible for managing the accounts of entities permitted to hold accounts with central banks and more often than not the internal audit unit of the central bank is tasked with ensuring that the department handling the accounts (within the central bank) is functioning in a safe and efficient manner. Where accounts are held with banks, the banking supervisors would prescribe guidelines for opening accounts for customers, along with customer redressal measures. One could surmise that perhaps NPS oversight could play a role in prescribing account opening criteria

18 Codruta Boar, Henry Holden and Amber Wadsworth, 'Impending Arrival - A Sequel to the Survey on Central Bank Digital Currency', in *BIS Papers*, No. 107 (January 2020), https://www.bis.org/publ/bppdf/bispap107.htm.

(including customer redressal measures) where RCBDC accounts are held with non-bank providers licensed by NPS oversight.

Seen from the above perspective, one could infer that the role of oversight over RCBDCs is rather circumscribed. But this need not always be the case. Where an RCBDC is the payment instrument used by the general public, it could be argued decisively that NPS oversight has a role in the safe and efficient functioning of the retail payment system (whether operated by the central bank or a private PSP) to fulfil its objectives in maintaining public confidence in money and in the systems used to transfer money.

As a ready reckoner (using the ECB framework for card payments), if one were to analyse the above retail payment system (which uses RCBDC) as a 'scheme', then it becomes very evident that NPS oversight has a role. The ECB defines a card payment scheme as

> the set of functions, procedures, arrangements, rules and devices that enable a holder of a *payment card* to effect a payment and/or cash withdrawal transaction with a third party other than the card issuer. The oversight framework covers the entire payment cycle, i.e. the *transaction phase* (including the manufacture of payment instruments and the processing of data) and the clearing and settlement phase. It accommodates concerns relating to both the retail payment system and the payment instrument used.[19]

The above framework can be applied ipso facto to an RCBDC payment arrangement by replacing payment cards with the RCBDC. Adopting a 'scheme' framework allows the overseer to conduct oversight over the entire payment cycle comprising the generation/manufacturing, data processing, and the associated clearing and settlement of transactions using the RCBDC.

While taking the view that the life-cycle management of an RCBDC as a payment instrument could be the responsibility of other departments within the central bank, it becomes necessary that under a 'scheme' framework (as outlined above), the NPS oversight department is fully co-opted in this process (security, design, distribution of RCBDC) by the central bank management. A case could also be made that as RCBDC is a new payment instrument, it should be the operations department which should be tasked with the life-cycle management of the RCBDC. Whichever arrangement is chosen, it should be recognised that this would be a central bank function in which various departments of the central bank would have to work together, including NPS oversight, given the

19 European Central Bank (ECB), *Oversight Framework for Card Payment Schemes – Standards*, January 2008, p. 6, https://www.ecb.europa.eu/pub/pdf/other/oversightfwcardpaymentsss200801en.pdf.

adoption of a 'scheme" framework. Based on the above, it becomes evident that oversight has a vital role to play in the life-cycle management of RCBDC as a retail payment instrument. Based on the motivations (financial inclusion, alternative to commercial bank money, etc.) of the central bank for issuance of the RCBDC, the oversight unit should contribute to the security and design features of the RCBDC to ensure that it is neutral in terms of form-factor (through a card, smartphone app, a feature phone, etc.) and technology, and is widely available for use. These inputs from the oversight unit would help realise the objectives of the central bank.

However, when it comes to the clearing and settlement phase, it should be recognised that it would be the exclusive domain of the oversight unit within the central bank, as they are tasked under the oversight function to ensure the safe and efficient functioning of payment and settlement systems. This is because payment clearing and settlement systems facilitate the exchange of money (in this case RCBDC) for goods and services (and possibly financial assets), and if they were inefficient or failed altogether, money (RCBDC) would not fulfil this purpose effectively, and that could impair public confidence in RCBDC and in the systems used to transfer it.[20]

As part of the oversight process, a subset of the PFMI could be adopted to ensure that the clearing and settlement arrangements are safe and efficient. The choice of principles in the subset would largely be dependent on parameters such as the volume and value of transactions being cleared and settled, limits to individual transaction values, and the choice of clearing and settlement mechanisms used. The subset would typically comprise principles to manage and mitigate financial risk (include governance and access criteria), and measures to mitigate operational risk (including cyber risks) and improve efficiency. It should also be recognised that it may not be the case that all key considerations associated with individual principles are attracted in this process.

W-CBDC: A payment system using W-CBDC would lend itself to be classified as a systemically important payment system (SIPS) as it is presumed that it would be used to process and settle time-critical, high-value payments in the economy, among others.[21] Based on this premise, a W-CBDC payment arrangement will

20 CPSS, 'Central Bank Oversight of Payment and Settlement Systems', cit.

21 'In general a payment system is systemically important if it has the potential to trigger or transmit systemic disruptions; this includes, among other things, systems that are the sole payment system in a country or the principal system in terms of the aggregate value of payments; systems that mainly handle time-critical, high-value payments; and

attract all the principles and their respective key considerations that are applicable to a SIPS,[22] to ensure that such an arrangement is functioning in a safe and efficient manner.

The oversight unit would be responsible for ensuring that the W-CBDC arrangement is functioning in a safe and efficient manner and would also cover critical service providers.[23] In addition, where such an arrangement is being operated by the central bank, key considerations in respect of some of the principles would not be applicable.[24] The oversight unit should also take into account additional guidance provided by CPMI-IOSCO.[25] The oversight unit/department would also be tasked with the five responsibilities as an overseer of systemically important payment systems (SIPS) listed in the CPMI-IOSCO PFMI report.[26] To this end it is critical that it cooperates with other regulatory entities both domestically and on a cross-border basis depending on the type of W-CBDC arrangement, for example in payment versus payment (PvP) and delivery versus payment (DvP) arrangements.

It is likely going forward that certain elements could gain criticality in the oversight mandate with regard to W-CBDCs. For instance, these could be greater emphasis on higher operational reliability; greater cyber resilience and cyber security (especially in a DLT platform where there could be no single point of failure but could have multiple vulnerable points for cyberattacks); and interdependencies and linkages with other FMIs.

In summary, the oversight departments of central banks will have to gear themselves to take on this new challenge while adhering in most respects to the time-tested principles of oversight. As in the case of any payment instrument and payment system, the degree of emphasis on various aspects would vary, but the

systems that settle payments used to effect settlement in other systemically important FMIs.' CPSS and IOSCO, *Principles for Financial Market Infrastructures*, cit., p. 12.

22 Ibid.

23 See Annex F in ibid., p. 170–171.

24 CPSS and IOSCO, 'Application of the Principles for Financial Market Infrastructures to Central Bank FMIs', in *CPMI Papers*, No. 130 (August 2015), https://www.bis.org/cpmi/publ/d130.htm.

25 Committee on Payments and Market Infrastructures (CPMI), 'Reducing the Risk of Wholesale Payments Fraud Related to Endpoint Security: A Toolkit', in *CPMI Papers*, No. 188 (October 2019), https://www.bis.org/cpmi/publ/d188.htm.

26 See Annex A in CPSS and IOSCO, *Principles for Financial Market Infrastructures*, cit., p. 138–139.

basic tenets of oversight to ensure safe and efficient operation of financial market infrastructures[27] would continue to apply and would need to be adhered to.

Some of the other issues that overseers could be confronted with would depend on the type of CBDC arrangement adopted. For instance, this would include the use cases – would a RCBDC arrangement be used only for person-to-person payments or for various other use cases such as P2B, B2P, B2B, P2G, G2P, B2G, and G2B. Depending on the use cases, the central bank may have to take a decision on the account holding structure it would adopt and the distribution model for the RCBDC. Another issue is the ease with which users can convert CBDC into commercial bank money and vice versa, and the interlinkages between the two, while at the same time addressing issues of interoperability. Fee structure (if any) would also have to be devised by central banks for CBDC arrangements.

Central banks would have to take into account the likely impact on private sector innovation and competition in the payments arena. Last but not least, central banks should not lose sight of the fact that reskilling their staff would be necessary to effectively carry out the oversight function. A high level of coordination between various central bank departments would also have to be ensured by the managements of the central banks to avoid turf wars.

Annex 1: World Bank practical guide for retail payments stocktaking[28]

Guideline 1. The overall scope and structure of the stocktaking exercise shall be driven by the high-level public policy goals set forth in the area of retail payments.

Guideline 2. Adequate attention needs to be devoted to the planning and organization of the stocktaking exercise.

Guideline 3. Industry players should be involved from the very early stages.

Guideline 4. Obtaining sufficient, high-quality data and other types of information is at the heart of the stocktaking exercise.

Guideline 5. Devote sufficient time to report preparation and to designing the strategy for the wide dissemination of results.

27 CPSS and IOSCO, *Principles for Financial Market Infrastructures*, cit.

28 Source: World Bank, Banco Central do Brasil and European Central Bank, *A Practical Guide for Retail Payments Stocktaking*, cit., p. 4.

Annex 2: CPMI-IOSCO principles for financial market infrastructures[29]

General organisation

Principle 1. Legal basis: Any financial market infrastructure (FMI) should have a well-founded, clear, transparent and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.
Principle 2. Governance: An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations and the objectives of relevant stakeholders.
Principle 3. Framework for the comprehensive management of risks: An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational and other risks.

Credit and liquidity risk management

Principle 4. Credit risk: An FMI should effectively measure, monitor and manage its credit exposures to participants and those arising from its payment, clearing and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a central counterparty (CCP) that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.
Principle 5. Collateral: An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity

29 Source: CPSS and IOSCO, *Principles for Financial Market Infrastructures*, cit., p. 1–4.

and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Principle 6. Margin: A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Principle 7. Liquidity risk: An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Settlement

Principle 8. Settlement finality: An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Principle 9. Money settlements: An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Principle 10. Physical deliveries: An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor and manage the risks associated with such physical deliveries.

Central securities depositories and exchange-of-value settlement systems

Principle 11. Central securities depositories: A central securities depository (CSD) should have appropriate rules and procedures to help ensure the integrity of securities issues and minimise and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry.

Principle 12. Exchange-of-value settlement systems: If an FMI settles transaction that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

Default management

Principle 13. Participant-default rules and procedures: An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Principle 14. Segregation and portability: A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

General business and operational risk management

Principle 15. General business risk: An FMI should identify, monitor and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Principle 16. Custody and investment risks: An FMI should safeguard its own and its participants' assets and minimise the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market and liquidity risks.

Principle 17. Operational risk: An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures and controls. Systems should be designed to ensure a high degree of security and operational reliability, and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Access

Principle 18. Access and participation requirements: An FMI should have objective, risk-based and publicly disclosed criteria for participation, which permit fair and open access.

Principle 19. Tiered participation arrangements: An FMI should identify, monitor and manage the material risks to the FMI arising from tiered participation arrangements.

Principle 20. FMI links: An FMI that establishes a link with one or more FMIs should identify, monitor and manage link-related risks.

Efficiency

Principle 21. Efficiency and effectiveness: An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

Principle 22. Communication procedures and standards: An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement and recording.

Transparency

Principle 23. Disclosure of rules, key procedures, and market data: An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Principle 24. Disclosure of market data by trade repositories: A trade repository should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

Responsibilities of central banks, market regulators, and other relevant authorities for financial market infrastructures

Responsibility A. Regulation, supervision, and oversight of FMIs: FMIs should be subject to appropriate and effective regulation, supervision and oversight by a central bank, market regulator or other relevant authority.

Responsibility B. Regulatory, supervisory, and oversight powers and resources: Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising and overseeing FMIs.

Responsibility C. Disclosure of objectives and policies with respect to FMIs: Central banks, market regulators and other relevant authorities should clearly define and disclose their regulatory, supervisory and oversight policies with respect to FMIs.

Responsibility D. Application of principles for FMIs: Central banks, market regulators and other relevant authorities should adopt, where relevant, internationally accepted principles for FMIs and apply them consistently.

Responsibility E. Cooperation with other authorities: Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.

Annex 3: General guidance for NPS development[30]

A. Banking system

Guideline 1. Keep the central bank at the centre: due to its overall responsibility for a sound currency, the central bank has a central role in the development of the use of money as an effective means of payment.

Guideline 2. Promote the role of a sound banking system: payment accounts, instruments and services available to end users are provided by banks and other similar financial institutions, which compete individually but often need to act cooperatively as a system.

B. Planning

Guideline 3. Recognise complexity: planning should be based on a comprehensive understanding of all the core elements of the national payment system and the principal factors influencing its development.

Guideline 4. Focus on needs: identify, and be guided by, the payment needs of all users in the national payment system and by the capabilities of the economy.

Guideline 5. Set clear priorities: plan and prioritise development of the national payment system strategically.

Guideline 6. Implementation is key: ensure effective implementation of the strategic plan.

C. Institutional framework

Guideline 7. Promote market development: the expansion and strengthening of market arrangements for payment services are key aspects of the evolution of the national payment system.

30 Source: CPSS, 'General Guidance for Payment System Development', cit., p. 56.

Guideline 8. Involve relevant stakeholders: encourage the development of effective consultation among relevant stakeholders in the national payment system.

Guideline 9. Collaborate for effective oversight: effective payment system oversight by the central bank often requires collaborative arrangements with other authorities.

Guideline 10. Promote legal certainty: develop a transparent, comprehensive and sound legal framework for the national payment system.

D. Infrastructure

Guideline 11. Expand availability of retail payment services: extend the availability and choice of efficient and secure non-cash payment instruments and services available to consumers, businesses and government by expanding and improving retail payment infrastructures.

Guideline 12. Let the business case guide the large-value payment system: develop a largevalue payment system based primarily on the needs of financial markets and the growth in time-critical interbank payments.

Guideline 13. Align development of payment and securities systems: coordinate the development of securities and large-value payment systems for safety and efficiency in the financial system.

Guideline 14. Coordinate settlement of retail, large-value and securities systems: the settlement processes for the core systems should be operationally coordinated to efficiently manage the interrelated liquidity needs and settlement risks among them.

Annex 4: World Bank guidelines for government payment programs (GPS)[31]

The General Guidelines aim at the following public policy goals for GPS: Payments and collections made as part of existing or new GPS should support the sound, efficient and transparent management of public financial resources. GPS should therefore be safe, reliable, and cost-effective. In addition, efforts to modernize GPS should be leveraged to accelerate the development of the national payments system more broadly, and to promote financial inclusion.

31 Source: World Bank, *General Guidelines for the Development of Government Payment Programs*, cit.

A. Governance, safety and efficiency

Guideline 1. Ensure proper program governance and risk management: governance arrangements should ensure accountability, transparency, and effectiveness in managing the risks associated with GPS.

Guideline 2. Review and streamline treasury processes, then work on their automation: the treasury should devote extensive efforts to identifying all relevant needs with regard to improved safety, efficiency and transparency.

Guideline 3. Take full advantage of electronic payment methods: the extensive use of electronic payments in GPS can reduce costs and improve transparency and traceability.

Guideline 4. Create appropriate organizational arrangements to foster the continuous development of GPS: the national treasury/ministry of finance should consider engaging in collaborative schemes with the central bank and other stakeholders to identify additional improvement opportunities for these programs and, eventually, facilitate their implementation.

B. Legal and regulatory

Guideline 5. An appropriate legal framework with specific applicability to GPS can further underpin their safe and efficient operation: laws and/or regulations that provide clarity and certainty to the various parties involved, and that promote effectiveness and transparency in the execution of programs should be enacted/approved.

Guideline 6: Laws and regulations on payment instruments and systems, competition and consumer protection can also have an important bearing on GPS: the legal basis should support sound and fair practices in the market place, and be flexible enough to accommodate innovations.

C. Payment systems infrastructure

Guideline 7. An appropriate payments infrastructure should be in place: the potential to obtain substantial benefits from migrating government expenditures and collections to electronic payments relies on there being the required payments infrastructures to process such payments safely, efficiently and at a reasonable cost.

Guideline 8. Maximize the potential of the available infrastructures through interoperability and widespread usage: payment service providers being able to channel their payment operations through any of the key mainstream infrastructures promotes efficiency, network expansion, and a level playing field for all players.

D. Cooperation and partnerships to leverage GPS

Guideline 9. Adopt a strategic approach to the development of GPS: the reforming of GPS has the potential to trigger the development of a robust payments infrastructure, which in turn will support the safe and efficient processing of government payments.

Guideline 10. Leverage on GPS to promote financial inclusion: the large volume of payments issued by governments, as well as the nature of some specific programs like social spending programs, represents an opportunity to promote or facilitate financial inclusion on a large scale.

Annex 5: CBDC and payment services during emergencies[32]

In cases of national emergencies, CBDC may play a special role. In emergencies, governments need to find ways of getting money to people on the margins of society and facilitate their payments activity. Yet, as experience worldwide is painfully showing at the time of writing this note, during the COVID-19 pandemic, public authorities may be encountering significant challenges in getting funds to those in need and enabling access to money. Often, the complexity of public funding programmes slows down the speed at which businesses and citizens receive the money to sustain themselves and raises uncertainty as to whether and when the money will actually be made available. In various countries, small and medium size enterprises have expressed concerns that delivery of measures is taking too long.[33] Failure to address these challenges aggravates the macroeconomic effects of the crisis and diminishes people's ability to weather them, increasing their frustration. Their persistence might breed exasperation and foment social upheaval. The pandemic will probably accelerate

32 Prepared by Biagio Bossone and Harish Natarajan (World Bank). In particular, this annex draws on Biagio Bossone and Harish Natarajan, 'Getting Funds to Those in Need and Enabling Access to Money during COVID-19, Part 3: Central Bank Digital Currencies and Other Instruments', in *VoxEU*, 15 July 2020, https://voxeu.org/node/65987.

33 See, for instance, Organisation for Economic Co-operation and Development (OECD), *Coronavirus (COVID-19): SME Policy Responses*, Paris, OECD, updated July 2020, https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101.

CBDC developments (the 'digital dollar' discussed below is an example), even by clearing the political way toward its introduction, and may amplify calls to defend the role of CBDCs.

In the context of crises such as the COVID-19 pandemic, CBDC could greatly assist in delivering funds to the greatest bulk of the population in need. Particularly during emergencies, a central bank could agree to act as government agent and execute CBDC fund transfers on the government's behalf to individuals and businesses that the government identifies as being in need of financial support. Through CBDC, governments could send direct payments much more rapidly than through checks or tax refunds and could provide geographically and temporally targeted relief. The CBDC supporting infrastructure would also enable fund receivers to make payments and transfers seamlessly to other CBDC holders and/or non-CBDC holders, anywhere and anytime across the economy. In addition, CBDC could reinforce the resilience of a country's retail payment services, especially in cases where private sector infrastructures are disrupted due to, say, technical problems, personnel unavailability or inability of service providers to operate. Finally, CBDC would serve as a substitute for cash and in-person payment methods when social distancing is required or when the use of cash plummets as people are increasingly wary of engaging with potentially germ-infested surfaces.

During crises, CBDC could be used as a payment conduit for delivering stimulus packages to households and businesses. This would be especially useful when businesses risk closing because they run out of money, and people lose their jobs or become ill and also run out of money. An example is the recent proposal for a US House of Representatives emergency COVID-19 stimulus bill, which referred to creating a: digital dollar" to get stimulus payments to unbanked Americans. In practice, the US Treasury would make payments through direct deposits to recipient accounts (FedAccounts) held at Federal Reserve Banks (FRBs) or FRB-member banks through pass-through FedAccounts. The proposal was ultimately pulled from the final legislation, but is now the subject of a dedicated Senate draft bill.

A relevant consideration to be made between using CBDC for aggregate demand stimulus or for giving emergency cash to distressed households and businesses. If the primary purpose of cash transfers is to raise aggregate demand, it is not critically important if some people don't get the money. What matters is that CBDC reaches a majority of people and businesses that spend the money and stimulate demand. On the other hand, however, if the primary purpose is to relieve hardship, then it matters if the money doesn't reach the right people and enterprises, since hardship would not be effectively relieved and the scheme would be seen as unfair. Failures in this area might put central banks at reputational and political risks. Thus, if CBDC were to be used for relief purposes, a perimeter of responsibilities should be set establishing with clarity that the central bank acts as the agent of government and only executes government instructions. The central bank should not get involved in discussions as to whom or which entities should be entitled to receive money (except in so far as restricting the distribution of money would affect its own mandate).

Annex 6: World Bank guidance on developing a comprehensive retail payments strategy[34]

Guideline 1: The market for retail payments should be transparent, have adequate protection of payers and payees interests, and be cost-effective.

Guideline 2: Retail payments require reliable underlying financial, communications and other types of infrastructure; these infrastructures should be put in place to increase the efficiency of retail payments. These infrastructures include an inter-bank electronic funds transfer system, an inter-bank card payment platform, credit reporting platforms, data sharing platforms, large value inter-bank gross settlement systems, availability of robust communications infrastructure and also a national identification infrastructure.

Guideline 3: Retail payments should be supported by a sound, predictable, non-discriminatory, and proportionate legal and regulatory framework.

Guideline 4: Competitive market conditions should be fostered in the retail payments industry, with an appropriate balance between co-operation and competition to foster, among other things, the proper level of interoperability in the retail payment infrastructure.

Guideline 5: Retail payments should be supported by appropriate governance and risk management practices.

Guideline 6: Public authorities should exercise effective oversight over the retail payments market and consider proactive interventions where appropriate.

34 Source: Massimo Cirasino and Jose Antonio Garcia (eds), *Developing a Comprehensive National Retail Payments Strategy*, cit., p. x.

Annex 7: World Bank guidelines on balancing cooperation and competition[35]

Guideline 1: Market complexities need to be recognized and analyzed in detail before any action is decided and implemented. Environmental, legal and legacy factors, and governance of the infrastructure has a significant impact on cooperation/competition. Gaining access to messaging, clearing and settlement services is of capital importance for new entrants in the market.

Guideline 2: Policy trade-offs are relevant in this domain. Therefore, policy priorities will have to be determined and the type of public intervention should depend on the main public objective(s) pursued. Public policy objectives in retail payments systems are multiple. The justification for intervention depends upon the main public policy objective(s) pursued and evidence of perceived market failure; ex-ante, transparent determination of policy objectives is desirable.

Guideline 3: Effective oversight of retail payment systems by the central bank is crucial to balance cooperation and competition issues. Effective oversight is the main tool to achieve an appropriate balance between cooperation and competition, central banks being the 'natural' PS overseers in cooperation with other authorities. PS oversight function scope should be broad/flexible enough to cover new instruments/players.

Guideline 4: Institutional mechanisms to promote cooperation and information sharing are essential. Fragmentation of relevant policymakers and scope of their mandates may be an issue; authorities' cooperation frameworks to be strengthened/broadened; payment councils, industry associations groups and similar bodies to be leveraged.

Annex 8: The CPSS-World Bank general principles for international remittance services[36]

General principle 1: Transparency and consumer protection: The market for remittance services should be transparent and have adequate consumer protection.

35 Based on: Massimo Cirasino and Jose Antonio Garcia (eds), *Developing a Comprehensive National Retail Payments Strategy*, cit., p. 55–56.

36 Source: CPSS and World Bank, 'General Principles for International Remittance Services', cit., p. 4.

General principle 2: Payment systems infrastructure: Improvements to payment system infrastructure that have the potential to increase the efficiency of remittance services should be encouraged.
General principle 3: Legal and regulatory framework: Remittance services should be supported by a sound, predictable, non-discriminatory, and proportionate legal and regulatory framework in relevant jurisdictions.
General principle 4: Market structure and competition: Competitive market conditions, including appropriate access to domestic payments infrastructures, should be fostered in the remittance industry.
General principle 5: Governance and risk management: Remittance services should be supported by appropriate governance and risk management practices.

Roles of remittance service providers and public authorities: (a) Remittance service providers should participate actively in the implementation of the general principles. (b) Public authorities should evaluate what actions to take to achieve the public policy objectives through the implementation of the general principles.

Annex 9: World Bank guidelines for successful integration of regional financial infrastructures[37]

The WB-led G25 Experts Group drafted guidelines to provide high-level guidance to principal policymakers and stakeholders in the development of regional or cross-regional integration of financial infrastructures. The 19 guidelines belong to the following categories:

Enabling and institutional guidelines: Outline the set of institutional arrangements that enable a regional financial infrastructure integration proposal to move forward from its preliminary vision to an actual operational arrangement in an effective fashion.
Planning guidelines: The basis for determining if regional financial infrastructure integration is necessary and justifiable for the stakeholders in the region at that particular time. This is the 'make or break' stage at which regional FI integration initiatives either move forward or are postponed.

37 Source: World Bank, *Guidelines for the Successful Regional Integration of Financial Infrastructures*, cit.

Design guidelines and implementation guidelines: Deal with the heart of the regional financial infrastructure integration programme. It is at these stages of the integration initiative that leadership, commitment, consultation and effective management become most crucial.

Sustainability guidelines: Help establish a strategic direction and sound business culture for the regional FI arrangement that, together with the continuous oversight from public sector authorities, will help ensure that it will continue to evolve and develop to meet future stakeholder needs, legal and regulatory requirements, and policy standards affecting its operations, and will do so in a transparent and credible fashion.

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