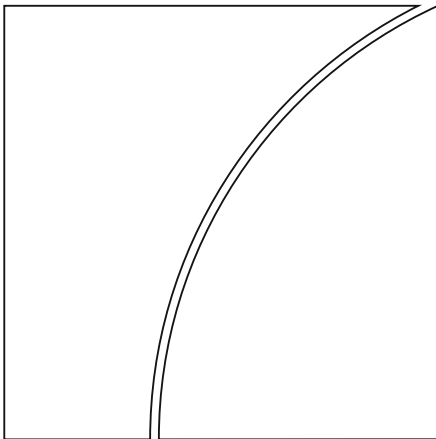




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## Gaining momentum – Results of the 2021 BIS survey on central bank digital currencies

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# Gaining momentum – Results of the 2021 BIS survey on central bank digital currencies<sup>1</sup>

*Nine out of 10 central banks are exploring central bank digital currencies (CBDCs), and more than half are now developing them or running concrete experiments. In particular, work on retail CBDCs has moved to more advanced stages. Both Covid-19 and the emergence of stablecoins and other cryptocurrencies have accelerated the work on CBDCs – especially in advanced economies, where central banks say that financial stability has increased in importance as a motivation for their CBDC involvement. Globally, more than two thirds of central banks consider that they are likely to or might possibly issue a retail CBDC in either the short or medium term. Work on wholesale CBDCs is increasingly driven by reasons related to cross-border payments efficiency. Central banks consider CBDCs as capable of alleviating key pain points such as the limited operating hours of current payment systems and the length of current transaction chains.*

## Introduction

This report presents the results of a survey of 81 central banks about their engagement in central bank digital currency (CBDC) work, as well as their motivations and their intentions regarding CBDC issuance. Conducted in autumn 2021, the survey also asked for central banks' assessment of the use of stablecoins and other cryptocurrencies (or cryptoassets) in their jurisdictions.

Over the course of 2021, work on CBDCs gained further momentum. After The Bahamas launched a live retail CBDC (the Sand Dollar) in 2020,<sup>2</sup> Nigeria followed in 2021 with the issuance of eNaira,<sup>3</sup> and the Eastern Caribbean and China released pilot versions of their respective DCash<sup>4</sup> and e-CNY.<sup>5</sup> And there is likely more to come: a record share of central banks in the survey – 90% – is engaged in some form of CBDC work.

At the same time, the year 2021 was characterised by the strong growth of the cryptoassets and stablecoin market (FSB (2022)). On average, almost six out of 10 respondent central banks said that this growth has accelerated their work on CBDCs. This has also spurred collaboration between central banks to monitor the implications of cryptoassets and stablecoins and to coordinate regulatory approaches to contain their risks to the financial system. In October 2021, the Bank for International

<sup>1</sup> We thank Raphael Auer, Jon Frost, Marc Glowka, Raul Morales, Thomas Lammer, Tara Rice and Takeshi Shirakami for their valuable comments. The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

<sup>2</sup> For more details on Project Sand Dollar, see CBB (2019).

<sup>3</sup> For more details on eNaira, see <https://enaira.gov.ng/>.

<sup>4</sup> For more details on DCash, see [www.eccb-centralbank.org/p/about-the-project](http://www.eccb-centralbank.org/p/about-the-project).

<sup>5</sup> For more details on e-CNY, see [www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf](http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf).

Settlements' Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) published a consultation report to seek feedback on their proposed guidance for how the existing principles for financial market infrastructures (PFMIs) should be applied to stablecoins that are widely used for payments (CPMI-IOSCO (2021)).

## What are central bank digital currencies?

A CBDC is central bank-issued digital money denominated in the national unit of account, and it represents a liability of the central bank. If the CBDC is intended for use by the general public it is referred to as a "general purpose" or "retail" CBDC.<sup>6</sup> As such, it offers a new option to the general public for storing value and making payments. A CBDC is different from existing forms of cashless payment instruments for consumers and businesses, such as credit transfers, direct debits, card payments and e-money, as it represents a direct claim on a central bank rather than the liability of a private financial institution.

In contrast to retail CBDCs, a "wholesale" CBDC targets a different group of end users – financial institutions. A wholesale CBDC is similar to today's central bank reserves and settlement accounts in that it is intended for the settlement of large interbank payments or to provide central bank money to settle transactions of digital tokenised financial assets in new infrastructures (Bech et al (2020)).

## What are cryptocurrencies and stablecoins?

Cryptocurrencies or cryptoassets<sup>7</sup> were defined in the survey as private digital assets with their own "currency" unit of account, such as Bitcoin and Ethereum.<sup>8</sup> Cryptocurrencies do not represent a claim on a central bank, which makes them different from CBDCs.

Stablecoins such as Tether and USD Coin are a category of cryptocurrencies that aim to maintain a stable value by tying their value to one or more assets, such as a fiat currency, a commodity or another cryptocurrency (FSB (2020)). At the end of 2021, stablecoins constituted a relatively small proportion of cryptocurrencies – with a market capitalisation of \$175 billion, or just over 6% of the value of all cryptocurrencies (FSB (2022)). Yet they have a much higher share in trading volumes. Moreover, given that they are designed to maintain a stable value, stablecoins may have a higher potential than other, unbacked, cryptoassets to be used for payments or to store value. As such, they have attracted considerable attention from central banks, regulators and standard setters.

<sup>6</sup> Throughout the paper, the terms "general purpose" and "retail" are used interchangeably.

<sup>7</sup> Throughout the paper, the terms "cryptoassets" and "cryptocurrencies" are used interchangeably.

<sup>8</sup> Definition of cryptocurrencies (or cryptoassets) as used in previous year's survey (see Boar and Wehrli (2021)).

## Extending the established survey with a few deep dives

### Questions in the 2021 edition

The CBDC and digital tokens survey was carried out in the autumn of 2021<sup>9</sup> – for the fifth consecutive year.<sup>10</sup> Most of the previous years' questions remained unchanged to ensure consistency: the survey asked central banks whether they were working on CBDCs and, if they were, about the type of CBDC and how advanced the work was. These questions covered both retail and wholesale CBDCs. Motivations and current expectations for potentially issuing these two types of CBDC were also queried again, as well as whether central banks have the legal authority to issue a CBDC. A few new questions were added to learn more about central banks' views on the interoperability of CBDCs with existing payment infrastructures and the role of the private sector in a CBDC ecosystem.

As in previous editions, the 2021 survey also included questions about cryptocurrencies and stablecoins and their use for payments. However, this time, central banks were asked not only about the current adoption of cryptocurrencies and stablecoins in their jurisdictions, but also about their potential to become widely used and accepted as a means of payment in the future. The survey also gave respondents the opportunity to add clarifying comments. All questions are listed in Annex 2.

### Sample and geographical coverage

In 2021, a record 81 central banks replied to the survey (Annex 1).<sup>11</sup> Some 56 of these respondents had taken part in the 2020 survey and 41 had replied for the fourth time. This lets us assess how their views and the status of their CBDC involvement have changed over time. The jurisdictions of the responding central banks represent close to 76% of the world's population and 94% of global economic output. Twenty-five respondents are in advanced economies (AEs) and 56 are in emerging market and developing economies (EMDEs).

## Central banks' work on CBDCs continues to advance

Over the past year, the share of central banks actively engaged in some form of CBDC work grew to 90% (Graph 1, first panel). The survey data show that central banks are particularly interested in retail CBDCs: all central banks conducting work on CBDCs

<sup>9</sup> The survey was distributed in October 2021 and all responses were received by the end of December 2021.

<sup>10</sup> The first survey informed a CPMI and Markets Committee report on CBDCs published in March 2018, and the second, third and fourth surveys were published as BIS papers in 2019, 2020 and 2021 respectively (see CPMI-MC (2018), Barontini and Holden (2019), Boar et al (2020), Boar and Wehrli (2021)).

<sup>11</sup> The number of central banks replying to the survey in previous years was 65 (2020), 66 (2019), 63 (2018) and 52 (2017).

either look at both wholesale and retail, or focus solely on a retail CBDC. No central bank has narrowed their CBDC focus down to wholesale only (second panel).

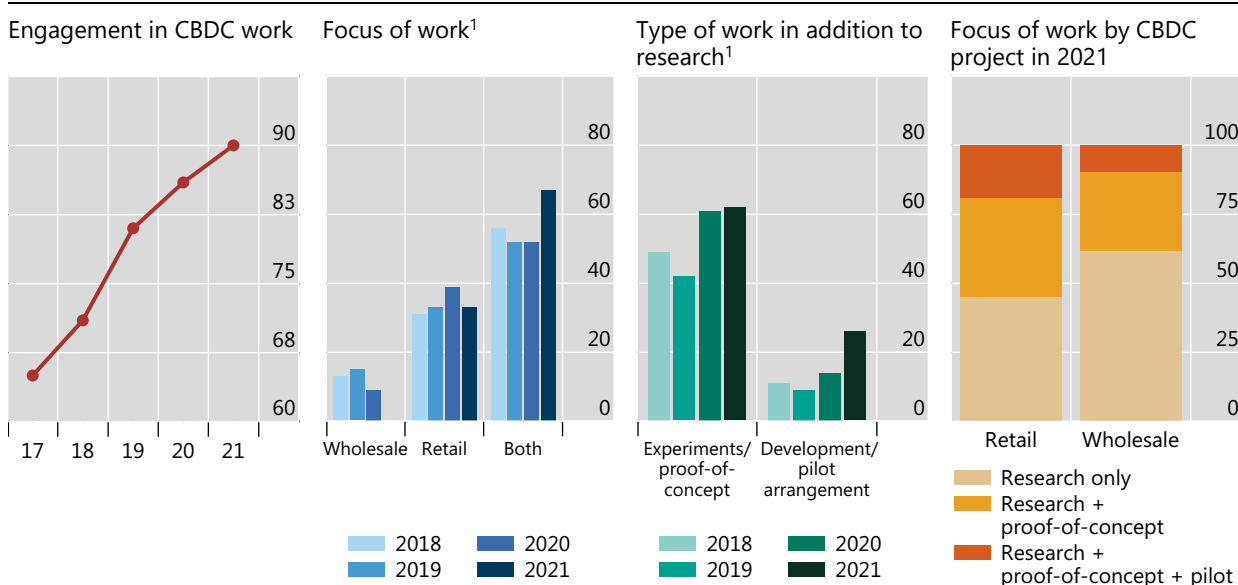
An increasing number of central banks are in the advanced stages of exploring a CBDC. Compared with last year, the share of central banks currently developing a CBDC or running a pilot almost doubled from 14% to 26%. Also, 62% are conducting experiments or proofs-of-concept (third panel).

The 2021 survey contained a new question to shed light on the advancement of central banks' CBDC work by the type of CBDC. The results show that the work on retail CBDCs is at a more advanced stage than the work on wholesale CBDCs. Almost one fifth of central banks are developing or testing a retail CBDC, which is twice the share of central banks building or piloting a wholesale CBDC (fourth panel).

### Central bank involvement in CBDC work rises further

Share of respondents

Graph 1



### Many central banks are exploring a CBDC ecosystem that involves private sector collaboration and interoperability

Most central banks are considering a retail CBDC architecture that involves the private sector. As discussed in Auer and Boehme (2020), there are generally two ways in which central banks can distribute a CBDC to the public – either directly (a one-tiered model) or indirectly, via private sector intermediaries (a two-tiered model). In the one-tiered model, the central bank would not only operate the interbank CBDC system but also provide the CBDC account and wallet services directly to the public. In the two-tiered model, the central bank and trusted private sector intermediaries would work together.

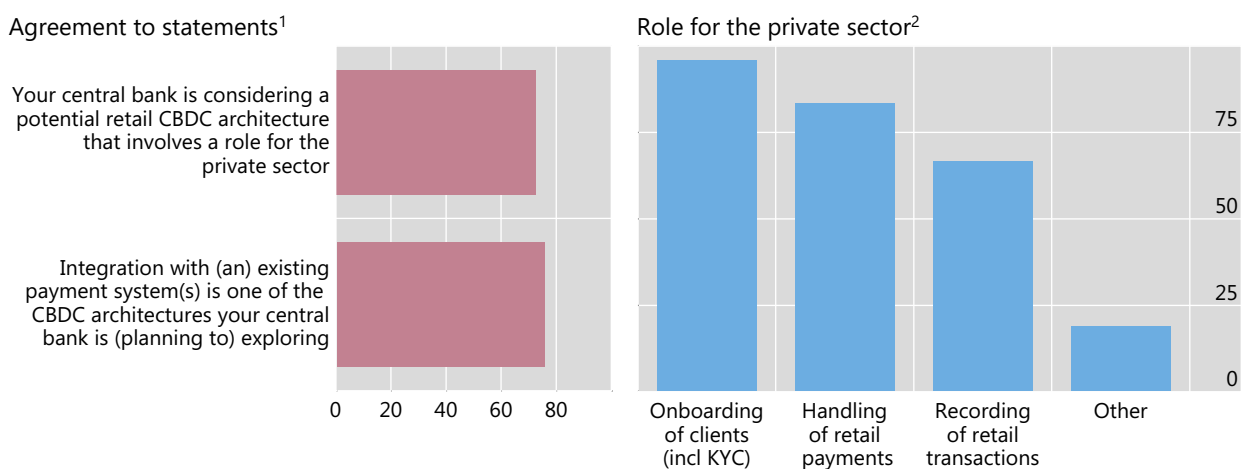
A newly added survey question showed that more than 70% of central banks engaged in some form of CBDC work are considering a two-tiered model (Graph 2, left-hand panel). Activities where many central banks see a potential role for the private sector include, in particular, the onboarding of clients (including the performance of know-your-customer (KYC) processes and anti-money laundering/combating the financing of terrorism (AML/CFT) procedures), as well as the handling of retail payments. The recording of retail transactions could also be left to the private sector according to many central banks, although a third would rather keep this inhouse (Graph 2, right-hand panel).

Another new survey question showed that most central banks (76%) working on a retail CBDC are exploring interoperability with existing payment system(s). Interoperability can encourage the adoption of CBDCs and enable the coexistence of central bank and commercial bank money (eg Group of central banks (2020)). Payment system interoperability enables banks and other payment service providers (PSPs) to make payments across systems without participating in multiple systems. This would allow end users to seamlessly move their money in and out of their CBDC accounts, for example from and to their commercial bank accounts using a credit card or electronic money transfer.<sup>12</sup>

## CBDC architecture

Share of respondents

Graph 2



<sup>1</sup> The panel shows the share of respondents who agreed to the two statements after removing those for whom the statements were not applicable. Both statements were added to the survey for the first time. <sup>2</sup> The question could be answered only by central banks that are considering a potential retail CBDC architecture which involves a role for the private sector.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

<sup>12</sup> See Boar et al (2021) for a discussion of the benefits and trade-offs of interoperability between payment systems.

## Financial stability and enhancing cross-border payments are growing reasons for retail CBDCs

As in previous years, the central banks of AEs and EMDEs have different motivations for considering issuing a retail CBDC (Graph 3). Overall, the retail CBDC work in AEs is driven mainly by domestic payments efficiency, payments safety and financial stability considerations. In fact, the weight central banks in AEs attached to financial stability increased in 2021, after a drop in 2020, returning to pre-2020 levels.<sup>13</sup> This may be driven, in part, by the concerns of regulatory and supervisory authorities of the potential systemic risks of cryptocurrencies (FSB (2022)). As discussed below, AE central banks in particular indicated that the emergence of stablecoins and other cryptocurrencies has accelerated their work on CBDCs.

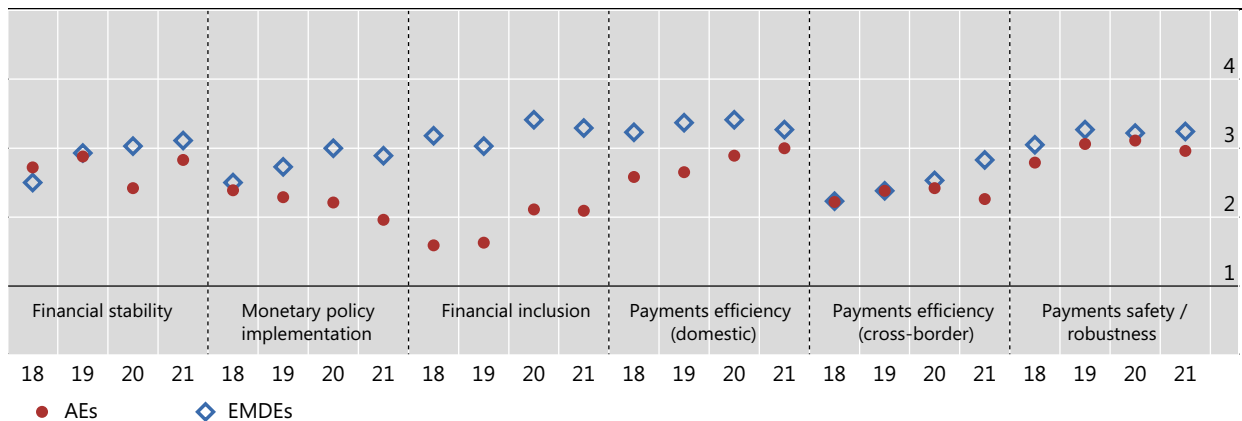
Domestic payments efficiency, payments safety and financial stability are also important drivers for the retail CBDC work in EMDEs. However, their CBDC engagement is, above all, driven by financial inclusion-related motivations.<sup>14</sup> Also, compared with AEs, EMDEs assign a higher weight to monetary policy implementation as a reason to explore or develop a CBDC.

Another difference between AEs and EMDEs is that, over the past two years, cross-border payments efficiency has become a more important motivation for retail CBDC work in EMDEs, whereas it declined in AEs.<sup>15</sup>

### Motivations for issuing a retail CBDC

Average importance

Graph 3



(1) = not so important; (2) = somewhat important; (3) = important; (4) = very important.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

<sup>13</sup> This trend is also visible when only looking at the subsample of respondents that participated in all previous years.

<sup>14</sup> See Auer et al (2022) for a discussion of how CBDCs can play a role in financial inclusion.

<sup>15</sup> This trend is also visible when only looking at the subsample of respondents that participated in previous years.



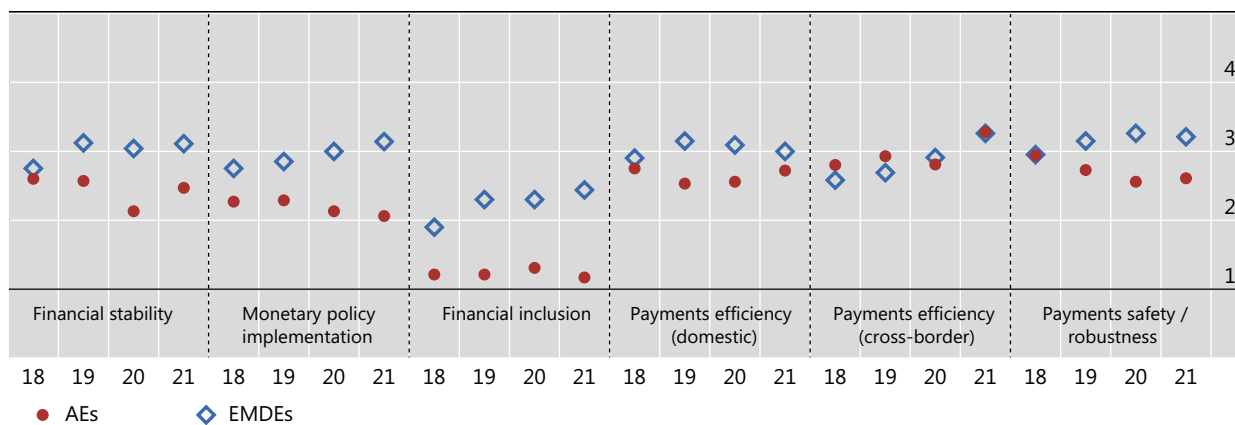
## Cross-border payments efficiency among key drivers of wholesale CBDC work

Similar to previous years, motivations for wholesale and retail CBDCs differ (Graph 4). First, financial inclusion is a less important driver for wholesale than for retail CBDCs, in both AEs and EMDEs. Second, cross-border payments efficiency remains a key motivation for wholesale CBDCs, both in AEs and in EMDEs. In fact, it has become a greater motivation over the past year, surpassing all other motivations.<sup>16</sup> Indeed, various wholesale CBDC projects specifically focus on cross-border payments. A recent example is Project Dunbar, exploring the use of CBDCs for international settlements, which was conducted by the central banks of Australia, Malaysia, Singapore and South Africa together with the BIS Innovation Hub (BISIH).<sup>17</sup>

### Motivations for issuing a wholesale CBDC

Average importance

Graph 4



(1) = not so important; (2) = somewhat important; (3) = important; (4) = very important.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## Long transaction chains and limited operating hours are key frictions that CBDCs could address

Central banks see multiple ways in which CBDCs could enhance cross-border payments. In 2021, central banks and international organisations continued to explore the opportunities and implications of CBDCs for cross-border payments. In a joint report published in July 2021, the CPMI, BISIH, International Monetary Fund (IMF) and World Bank concluded that CBDCs have the potential to enhance the efficiency of cross-border payments, if countries work together to ensure interoperability between CBDCs and mitigate undesired macro-financial consequences (CPMI et al (2021)). The survey asked respondents for whom cross-

<sup>16</sup> These conclusions on the motivations of wholesale CBDCs also hold when looking only at the subsample of respondents that participated in all previous years.

<sup>17</sup> For more details on Project Dunbar and other cross-border CBDC projects, see [www.bis.org/about/bisih/projects.htm?m=1\\_441\\_720](https://www.bis.org/about/bisih/projects.htm?m=1_441_720). See also Auer et al (2021).

border payments efficiency is an important motivation which specific cross-border frictions a CBDC would address.<sup>18</sup> The range of frictions included fragmented data formats, complexity of compliance checks, limited operating hours and unclear foreign exchange rates, as well as legacy technologies, long transaction chains, funding costs and weak competition.

Generally, AEs were more likely than EMDEs to select most of these frictions (Graph 5). Graph 5 also shows that central banks perceive wholesale CBDCs to be more capable than retail CBDCs of addressing cross-border frictions. This is in line with the earlier conclusion that enhancing cross-border payments is a more important motivation for wholesale CBDCs than for retail CBDCs.

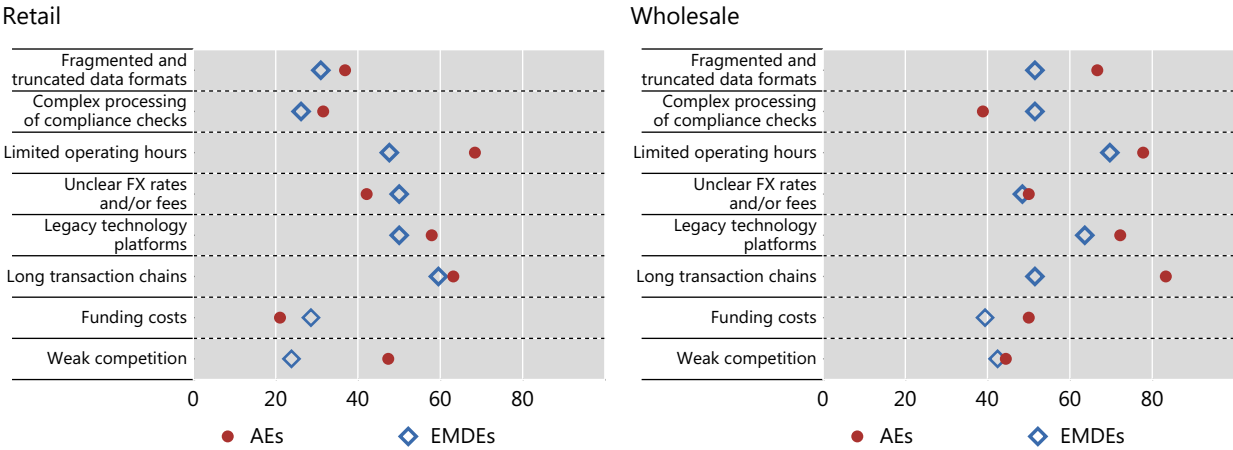
Central banks consider the limited operating hours of current payment systems and the length of existing transaction chains as the most important pain points that could be alleviated with CBDCs. Interestingly, AE central banks generally deem retail CBDCs able to address limited operating hours, whereas EMDEs think this friction could be reduced with wholesale CBDCs. By contrast, AEs mention long transaction chains as the key friction that could be alleviated with wholesale CBDCs, while for EMDEs, this potential is most often mentioned for retail CBDCs. These distinct views might reflect jurisdictional differences in payment infrastructures and the types of cross-border payment service currently available.

Views on how weak competition in the cross-border payments market could be addressed by a retail CBDC also differ across countries. Nearly half (47%) of AEs indicated weak competition as one of the frictions that could be addressed with retail CBDCs. Yet, fewer than a quarter of EMDE respondents cited this friction.

Cross-border frictions that a CBDC could address<sup>1</sup>

Share of respondents

Graph 5



<sup>1</sup> The sample includes jurisdictions that consider efficiency in cross-border payments as a somewhat important, important, and very important driver of their CBDC engagement.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

<sup>18</sup> This question was put to respondents for whom cross-border payments efficiency is a somewhat to a very important motivation.

## More than half of central banks consider it a possibility that they will issue a CBDC in the foreseeable future

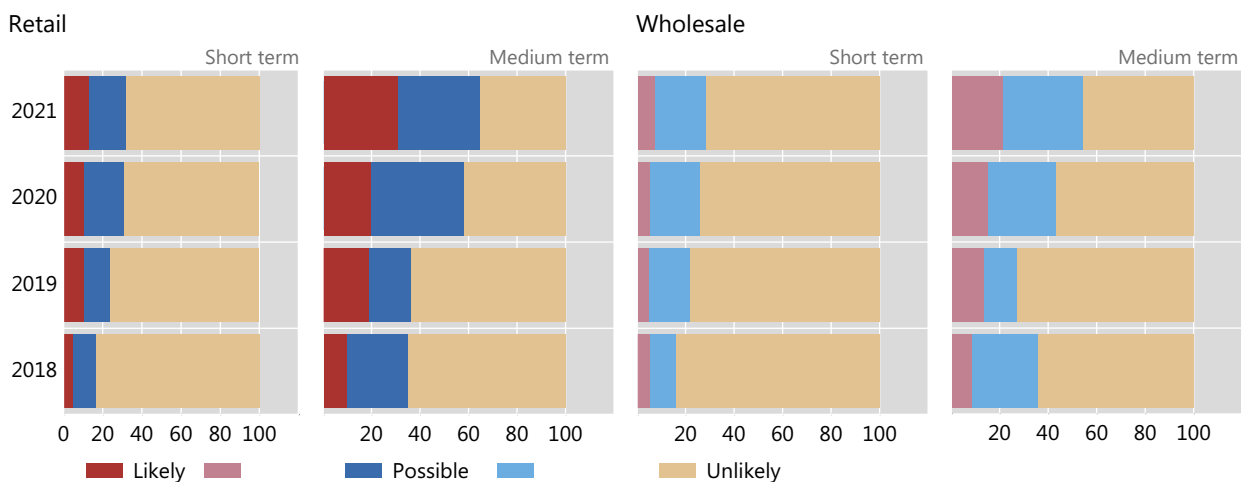
Central banks in The Bahamas, China, the Eastern Caribbean Currency Union and Nigeria have issued or are piloting a live retail CBDC, and it is likely that other jurisdictions will follow in the foreseeable future: about 68% of central banks consider that they are likely to or might possibly issue a retail CBDC in the short or medium term. As in previous years, this likelihood is generally higher for EMDE central banks than for AE central banks. The share of central banks considering issuance of a retail CBDC is considerably larger than last year. In particular, the share of central banks planning on doing so in the medium term grew from 58% last year to 65% (Graph 6, first and second panel).

The self-reported likelihood of issuing a wholesale CBDC is also generally larger in EMDEs than in AEs. Overall, issuance of wholesale CBDCs in the short or medium term is considered a little less likely than issuance of a retail CBDC. This corresponds to the earlier stage of wholesale CBDC work. However, the possibility of issuing a wholesale CBDC increased compared with last year – 54% of central banks consider it likely or possible that they will have a wholesale CBDC in the medium term (up from 43% last year) (Graph 6, third and fourth panels).

### Likelihood of issuing a CBDC in the foreseeable future

Share of respondents

Graph 6



Short term: 1–3 years; Medium term: 1–6 years. “Likely” combines “very likely” and “somewhat likely”. “Unlikely” combines “very unlikely” and “somewhat unlikely”.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

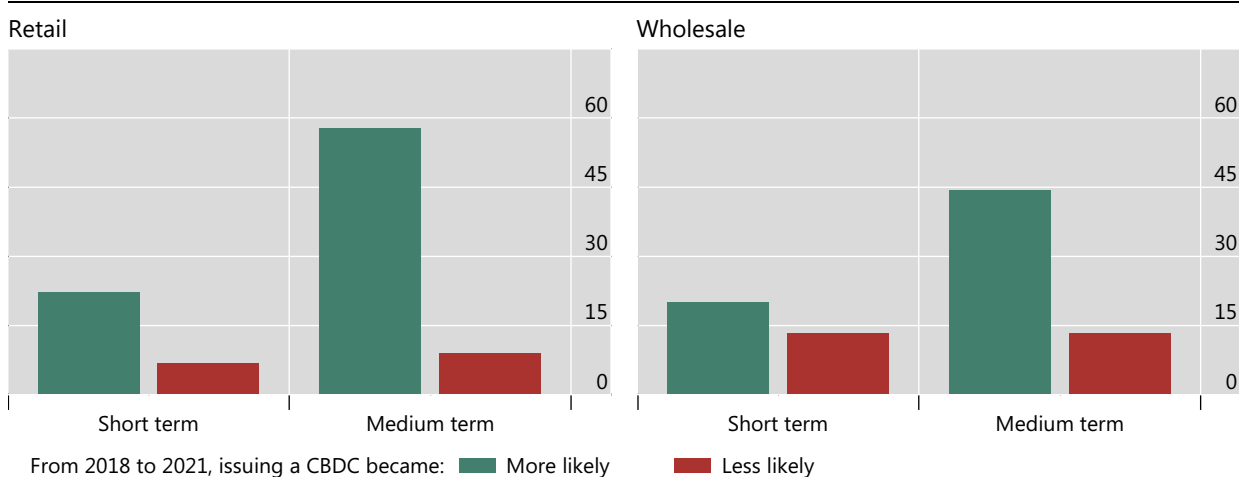
The strong overall increase in the likelihood of issuing a CBDC cannot be attributed to changes in the sample. A total of 45 central banks participated in the survey both in 2018 and 2021. A comparison of their answers shows that many of them have changed their expectations since 2018. In fact, about 60% (for retail) and 45% (for wholesale) have become more likely to issue a CBDC in the medium term. In addition, roughly 20% of the subsample of central banks that changed their expectations indicated that they would be more likely than stated in 2018 to issue in the short term (Graph 7).

The subset of central banks that has become more likely to issue a CBDC since 2018 includes both AE and EMDE central banks. This development may be driven partly by the Covid-19 pandemic, which accelerated the digitalisation of payments (see eg Kosse and Szemere (2021)). About 30% (up from 24% last year) of all participating central banks indicated that the Covid-19 pandemic has changed their priority and preferences for issuing a CBDC. Also, more than 60% noted a decline in their jurisdiction in the use of cash for payments.<sup>19</sup> As noted earlier, another factor that has led central banks, in particular in AEs, to speed up their CBDC work is the growing use of cryptocurrencies. On average, 79% of AE central banks said that the emergence of stablecoins and other cryptocurrencies has accelerated their work on CBDCs, as compared with 48% of EMDE central banks.

### Changes in the likelihood of issuing a CBDC<sup>1</sup>

Share of respondents that participated in both 2018 and 2021

Graph 7



Short term: 1–3 years; Medium term: 1–6 years. More (less) likely means that the respondent had a more positive (negative) view in 2021 than in 2018 with respect to the issuance of a CBDC.

<sup>1</sup> The sample includes 45 jurisdictions.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## A rising number of central banks have the legal authority to issue a CBDC

The issuance of a CBDC requires a legal framework that provides central banks with the authority to do so. Compared with last year, the share of central banks with such a legal authority increased from 18% to 26% (Graph 8).<sup>20</sup> In addition, about 10% of jurisdictions are currently changing their laws. Thus, more than a third of central banks will soon have legal authority to launch a CBDC. This is in line with the share of central

<sup>19</sup> For statistics on the use of cash and cashless payment methods in the CPMI member jurisdictions, see the CPMI Red Book statistics at: <https://stats.bis.org/statx/toc/CPMI.html>.

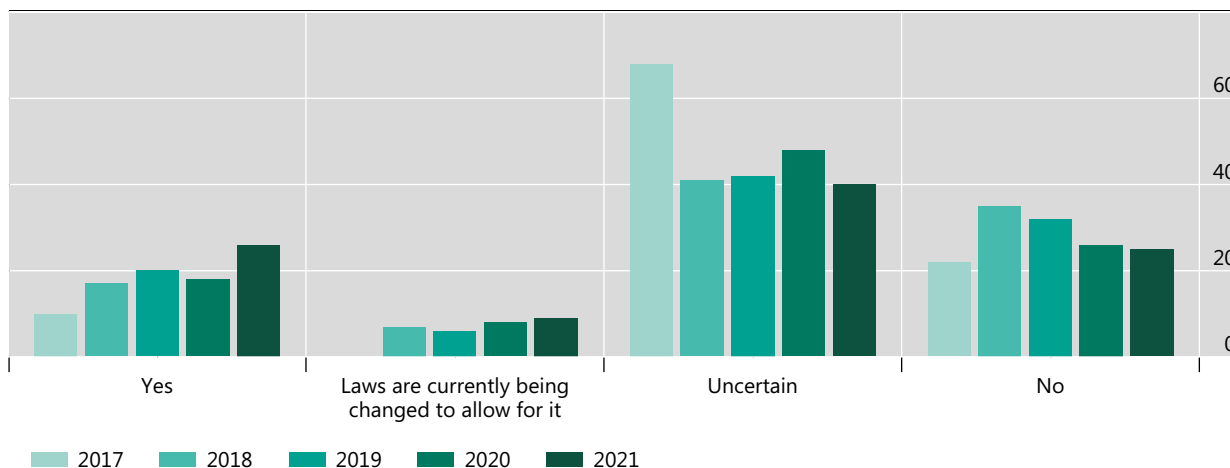
<sup>20</sup> This trend is also visible when only looking at the subsample of respondents that participated in all previous years.

banks that said they would be likely to issue a CBDC in the short term. Still, 25% of central banks lack the required legal foundation and about 40% are unsure.

## Legal authority of central banks to issue a CBDC<sup>1</sup>

Share of respondents

Graph 8



<sup>1</sup> There was no option for “laws are currently being changed to allow for it” in the 2017 survey.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## Central banks: cryptocurrencies are mainly used by niche groups and for cross-border payments

The market capitalisation of cryptocurrencies grew by 3.5 times in 2021 to \$2.6 trillion.<sup>21</sup> This rapid evolution, combined with the structural vulnerabilities of these markets, has raised financial stability concerns among central banks and regulators. If widely used for payments, cryptocurrencies including stablecoins may constitute a threat to financial stability when risks are not well managed (Arner et al (2020), FSB (2022)).

Most central banks in the survey still perceive the use of cryptocurrencies for payments to be trivial or limited to niche groups (Graph 9, left-hand and centre panels). For the first time, the survey also asked central banks to share their perception separately for stablecoins and other cryptocurrencies. For both types, the use is perceived to be trivial or limited to specific niche groups (right-hand panel). However, the use of stablecoins is perceived to be lower than the use of other cryptocurrencies, and especially for cross-border payments.

Central banks’ views differ depending on whether they conduct research in this area. About a quarter of respondents indicated that they have studied the use of cryptocurrencies and/or stablecoins among consumers and businesses in their jurisdiction (Graph 9, right-hand panel). These same central banks reported on

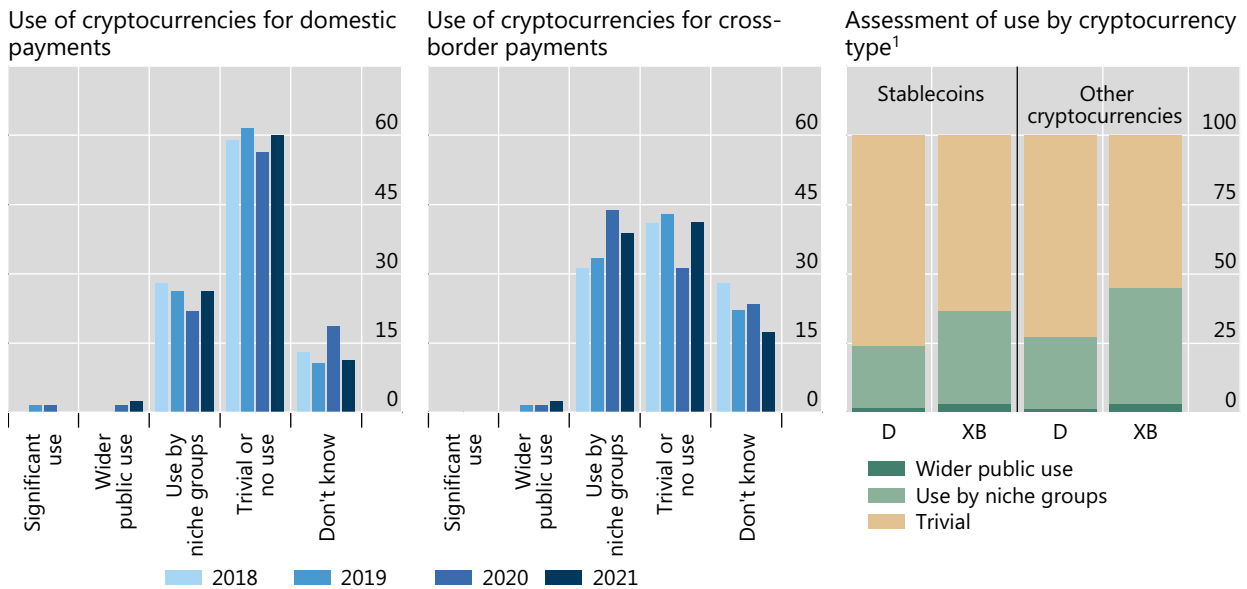
<sup>21</sup> See FSB (2022).

average a higher perceived use of both stablecoins and other cryptocurrencies, both for domestic and cross-border payments.

## Current significance of consumer use for payments

Share of respondents

Graph 9



D = domestic payments; XB = cross-border payments.

<sup>1</sup> This question was asked for the first time in 2021. The panel shows the shares of respondents after removing those replying "Don't know".

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## Single-currency stablecoins are perceived to have the highest potential to become an alternative method of payment

Central banks differ in their expectations that stablecoins will scale up and become widely used and accepted as a means of payment, depending on the type of stablecoin. In the 2021 survey, central banks were asked about their perception of the future potential of different types of stablecoin. These included (A) stablecoins pegged to and backed by one single fiat currency (single-currency stablecoins), (B) stablecoins pegged to and backed by multiple fiat currencies (multi-currency stablecoins), (C) stablecoins pegged to and backed by commodities, (D) stablecoins backed by other cryptocurrencies, and (E) stablecoins not directly backed by anything and of which the value is algorithmically adjusted.<sup>22</sup> To allow for a comparison, the same question was also asked for (F) cryptocurrencies other than stablecoins.

<sup>22</sup> Examples of the various coins include (A) Single currency stablecoins: Tether and USD Coin; (B) Multicurrency stablecoins: Facebook's Libra as initially foreseen, (C) Stablecoins pegged to and backed by commodities: Tether Gold and PAX Gold, (D) Stablecoins backed by other cryptocurrencies: DAI and Alchemix USD, and (E) Unbacked stablecoins, of which the value is algorithmically adjusted: Terra USD and Frax.

In general, of all stablecoin types, (A) single-currency stablecoins are perceived as having the highest potential to become a widely accepted and used method of payment, both by AE and EMDE central banks (Graph 10). By contrast, (C) stablecoins backed by commodities, (D) stablecoins backed by other cryptocurrencies and (E) algorithmic stablecoins are perceived as least promising for this purpose. This reflects the past price volatility of these coins (types C, D and E). In particular, the latter two types experienced larger price variations than single-currency stablecoins and were, in some cases, subject to a “run” (ECB (2019), IMF (2021)).

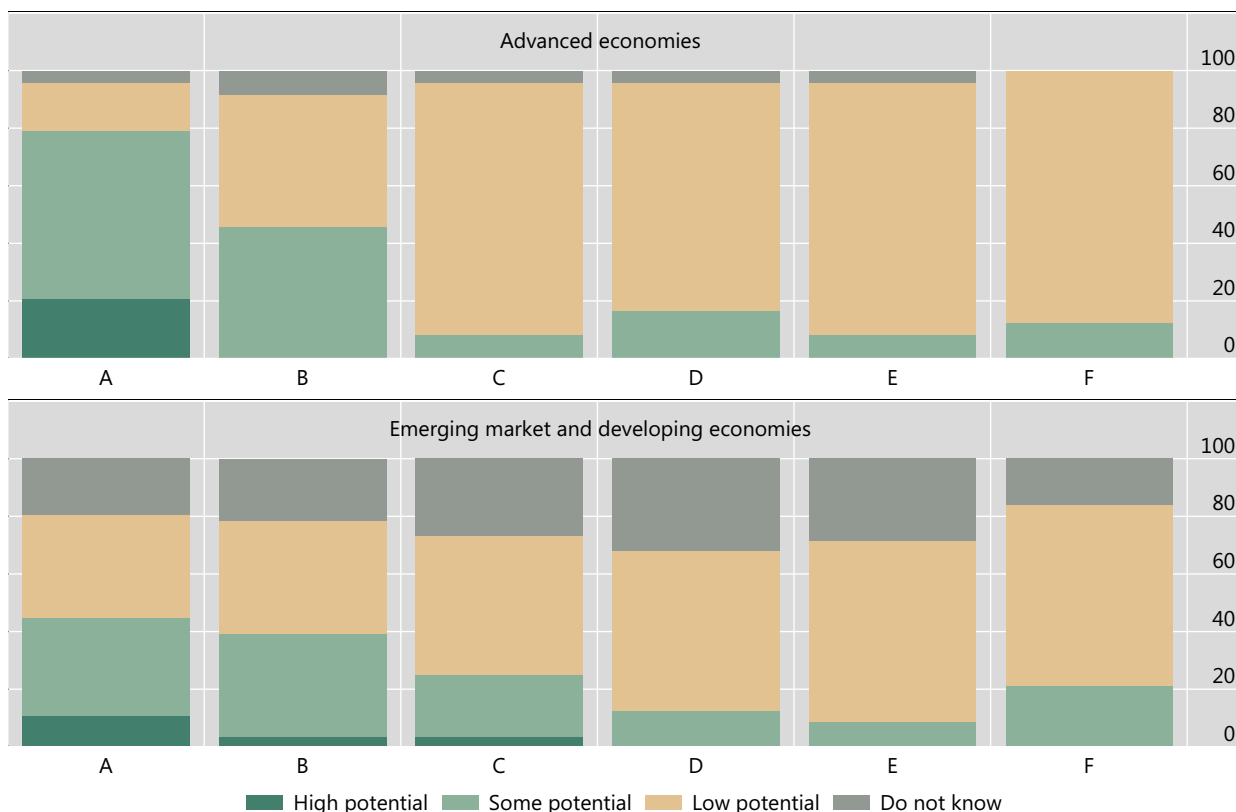
Interestingly, the difference in the perceived potential between (A) single-currency stablecoins and (C) commodity-backed stablecoins is much more pronounced in AEs than in EMDEs. The reason could be that most stablecoins are (currently) denominated in non-EMDE currencies, such as the US dollar and the euro or gold. This might also explain why EMDE central banks are relatively more often uncertain about the role that stablecoins could play in their economies (as reflected by the grey areas in Graph 9). It could also explain why (F) cryptocurrencies other than stablecoins are perceived to have substantially more potential than (D) crypto-backed stablecoins and (E) algorithmic stablecoins in EMDE jurisdictions.

An analysis of the clarifying comments from the respondents shows that the perceived potential of stablecoins and other cryptocurrencies for payments depends on more than just their price volatility and backing mechanism. Also highlighted as additional factors determining their potential are the issuer’s reputation, the vulnerabilities of the cryptocurrency’s protocols, the regulatory and supervisory environment and the coexistence of other reliable payment solutions.

## Potential to scale up and be widely used and accepted as a means of payment

Share of respondents

Graph 10



A = stablecoins pegged to and backed by one single fiat currency (ie single currency stablecoins); B = stablecoins pegged to and backed by a basket of fiat currencies (ie multicurrency stablecoins); C = stablecoins pegged to and backed by commodities, such as gold; D = stablecoins pegged to fiat currency, but backed by and/or tied to other cryptocurrencies; E = unbacked stablecoins, pegged to fiat currency, of which the value is adjusted by automatic adjustments of its price or supply; F = cryptocurrencies other than stablecoins.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## Nearly a quarter of central banks are studying the use of cryptocurrency

About 70% of central banks are looking into the potential impact of stablecoins on monetary and financial stability. Notably, this share has dropped slightly among those who also participated in the survey in 2019 and 2020 (Graph 11, left-hand panel). This possibly reflects that they have already gained a solid understanding of the possible implications, either through their own past research or through the analyses published by other authorities (eg ECB (2020), FSB (2020), IMF (2021)).

Efforts have been made to better understand the use of stablecoins and other cryptocurrencies – 26% of respondents indicated that their central bank or other institutions in their jurisdiction had recently surveyed consumers and/or businesses on this topic (Graph 11, right-hand panel). The unregulated, borderless and pseudonymous nature of crypto markets has resulted in a lack of transparent, consistent, and trusted data on the actual use of cryptocurrencies, eg for payments (FSB (2022)). Information collected from consumers and businesses might therefore

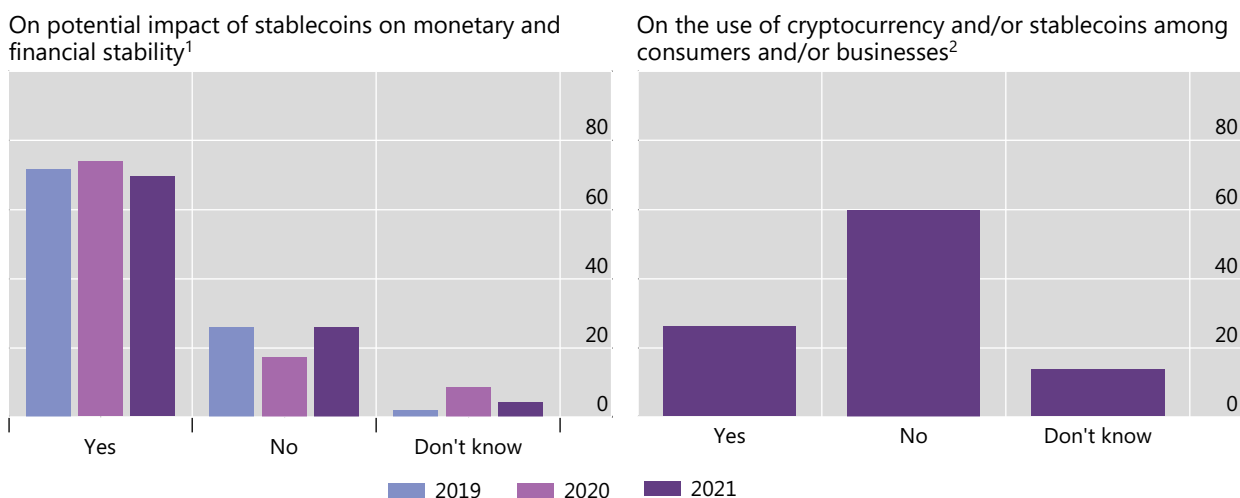


be a valuable tool for central banks and other authorities to better identify and quantify the welfare and financial stability implications of cryptocurrencies.

## Ongoing or recent analysis by central banks or other institutions

Share of respondents

Graph 11



<sup>1</sup> The sample only includes jurisdictions that also replied to the survey in 2019 and 2020. <sup>2</sup> The question was asked for the first time this year.

Source: 2021 BIS central bank survey on CBDCs and digital tokens.

## Conclusion

Most respondent central banks are exploring CBDCs, and more than half are developing them or running concrete experiments. Work on retail CBDCs, in particular, has moved into more advanced stages. With two thirds of central banks considering issuance of a retail CBDC in the foreseeable future, The Bahamas, China, the Eastern Caribbean and Nigeria may soon be joined by other jurisdictions issuing or piloting a live retail CBDC.

As work on CBDCs moves globally from research towards practical implementation, the shape of future retail CBDC ecosystems may soon be coming into sharper focus. Many central banks are exploring interoperability with existing payment systems and consider a role for the private sector, particularly for customer-facing activities. Public and private sector collaboration, together with interoperability, would contribute to an ecosystem in which CBDCs coexist with other means of payment. This, in turn, might promote adoption and greater competition (Group of central banks (2020)).

At present, central banks generally perceive the use of stablecoins to be limited to niche groups or specific use cases. Yet a considerable share believes that stablecoins have the potential to become a widely used method of payment. The 2021 survey shows how the emergence of these and other cryptocurrencies has accelerated global work on CBDCs. At the same time, a large share of central banks remains uncertain about the current and potential future use of cryptocurrencies for

payments. The FSB has identified considerable data gaps that make it difficult to monitor the size of cryptocurrency markets and to understand their implications (FSB (2022)). Consumer and business surveys, such as the ones recently undertaken by a quarter of the respondents, might be a useful start to filling these gaps.

Cross-border payments efficiency is another driver that has grown in importance over the past year, especially for central bank work on wholesale CBDCs. An ambitious, multi-year G20 programme is under way to make cross-border payments faster and cheaper, as well as more transparent and accessible. CBDCs could play an important role here – according to the respondents especially in terms of shortening current transaction chains and providing longer operating hours. Indeed, building block 19 of the G20 programme is tasked with exploring how to factor an international dimension into CBDC design.<sup>23</sup> The CPMI, in collaboration with the BISIH, IMF and World Bank, will deliver a report to the G20 in July 2022 in which they identify and analyse options for accessing and interlinking CBDCs with a view to improving cross-border payments.

<sup>23</sup> See CPMI (2020a, 2020b) for an overview of all 19 building blocks of the G20 cross-border payments programme.

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## Annex 1: Central banks participating in the survey

Eighty-one central banks participated in the 2021 survey from the following jurisdictions:

- |                      |                   |                         |
|----------------------|-------------------|-------------------------|
| - Angola*            | - Honduras        | - Peru                  |
| - Argentina          | - Hong Kong SAR   | - The Philippines       |
| - Australia          | - Hungary         | - Poland*               |
| - Belgium            | - India           | - Russia                |
| - Bolivia            | - Indonesia       | - Saudi Arabia          |
| - Brazil             | - Iraq            | - Serbia                |
| - Brunei             | - Israel          | - The Seychelles*       |
| - Cabo Verde         | - Italy           | - Singapore             |
| - Canada             | - Jamaica         | - Slovenia              |
| - Chile              | - Japan           | - South Africa          |
| - China              | - Kosovo          | - South Korea           |
| - Chinese Taipei*    | - Kuwait          | - Spain                 |
| - Colombia           | - Lesotho*        | - Sri Lanka             |
| - Congo*             | - Lithuania*      | - Swaziland             |
| - Costa Rica*        | - Madagascar      | - Sweden                |
| - Czech Republic*    | - Malawi*         | - Switzerland           |
| - Denmark*           | - Malaysia        | - Tanzania              |
| - Dominican Republic | - Maldives*       | - Trinidad and Tobago   |
| - Ecuador            | - Mauritius*      | - Turkey                |
| - Egypt              | - Mexico          | - Ukraine*              |
| - Estonia*           | - Mongolia        | - United Arab Emirates* |
| - Euro area (ECB)    | - Morocco         | - United Kingdom        |
| - Fiji*              | - Mozambique      | - United States         |
| - France             | - Namibia*        | - Yemen*                |
| - Georgia            | - The Netherlands | - Zambia                |
| - Germany            | - New Zealand     | - Zimbabwe              |
| - Haiti              | - Norway          |                         |
|                      | - Paraguay        |                         |

\*First-time participant in the survey.

The survey was distributed in October 2021 and all responses were received by the end of December 2021

## Annex 2: Survey questions

1. Has your central bank engaged, or will it engage, in any kind of research, experiments or development work related to the development and use of CBDC?  
[Yes / No]

2. Is your work related to:

- *General-purpose CBDC*
- *Wholesale CBDC*
- *Both*

3. What type of work is being, or will be, conducted? Please check all that apply.

- *General-purpose CBDC*
- *Wholesale CBDC*

The following types of work were proposed:

- o Research / study
- o Experiments / proofs of concept
- o Development / pilot arrangement

4. How important are the following aspects to your motivations in issuing a:

- *General-purpose CBDC*
- *Wholesale CBDC*

The following aspects were proposed:

- o Financial stability
- o Monetary policy implementation
- o Financial inclusion
- o Payments efficiency (domestic)
- o Payments efficiency (cross-border)
- o Payments safety / robustness
- o Others (please specify below)

For each: *Very important / Important / Somewhat important / Not so important*

Please provide any comments on your motivations for any aspects you considered as very important or important.

If you consider efficiency in cross-border payments as (very / somewhat) important, which frictions would the issuance of a CBDC address? Please select all that apply:

- *General purpose CBDC*
- *Wholesale CBDC*

The following frictions were proposed:

- o Fragmented and truncated data formats
- o Complex processing of compliance checks
- o Limited operating hours
- o Unclear FX rates and/or fees
- o Legacy technology platforms
- o Long transaction chains
- o Funding costs

- Weak competition
- Others (please specify below)

5. How likely is it that your central bank will issue a:

- *General-purpose CBDC*
- *Wholesale CBDC*

For both, two time horizons were proposed:

- Short term (within the next three years)
- Medium term (four to six years)

For each: *Very likely / Somewhat likely / Possible / Somewhat unlikely / Very unlikely*

6. Does your central bank have the legal authority to issue a CBDC? [*Yes / No / Uncertain / Laws are currently being changed to allow for it*]

7. Please provide any other details about CBDC and the thoughts and work in your jurisdiction, including your key motivations.

8. For your jurisdiction, please tick "True" or "False" for the following statements: [*True / False / Not applicable / Do not know*]

- The amount of central bank-issued cash in circulation is declining.
- The use of central bank-issued cash for payments is declining.
- The public's ability to access central bank-issued cash could decline in the medium term (within six years), assuming no action is taken by the central bank or public authorities.
- Your central bank has carried out a recent study of public cash use (eg a payments diary).
  - If your central bank has carried out a recent study of public cash use (eg a payments diary), please provide a link.
- The Covid-19 crisis has changed your central bank's priority/preference for issuing a CBDC.
- The emergence of cryptocurrencies, incl. stablecoins, has accelerated CBDC developments.
- Your central bank is considering a potential retail CBDC architecture that involves a role for the private sector.
  - If your central bank is considering a potential CBDC architecture that involves a role for the private sector, which tasks do you believe the private sector could potentially take on? Please select all that apply.
    - Onboarding of clients (incl. KYC)
    - Handling of retail payments
    - Recording of retail transactions
    - Other (please specify)
- Integration with (an) existing payment system(s) is one of the CBDC architectures your central bank is (planning to) exploring.

Please provide any comments or clarifications.

9. Currently, in your jurisdiction, how significant do you think consumer use of cryptocurrencies and stablecoins for payments is?

- *Stablecoins*: For domestic payments / For cross-border payments
- *Other cryptocurrencies*: For domestic payments / For cross-border payments

For each: *Significant use / Wider public use / Use by niche groups / Trivial or no use / Do not know*

Please provide any comments or clarifications.

10. Based on your expert judgment, how much potential do the following types of stablecoin have to scale up and be widely used and accepted as a means of payment in your jurisdiction.

- Stablecoins pegged to and backed by one single fiat currency (ie single currency stablecoins)
- Stablecoins pegged to and backed by a basket of fiat currencies (ie multicurrency stablecoins)
- Stablecoins pegged to and backed by commodities, such as gold
- Stablecoins pegged to fiat currency, but backed by and/or tied to other cryptocurrencies
- Stablecoins pegged to fiat currency, but not backed by anything, and of which the value is adjusted by automatic adjustments of its price or supply
- Others (please specify below)

For each: *High potential / Some potential / Low or no potential / Do not know*

Please provide any comments or clarifications.

11. Based on your expert judgment, how much potential do cryptocurrencies other than stablecoins have to scale up and be widely used and accepted as a means of payment in your jurisdiction? [*High potential / Some potential / Low or no potential / Do not know*]

Please provide any comments or clarifications.

12. In your jurisdiction, are you analysing the potential impact of stablecoins on monetary and financial stability? [*Yes / No / Do not know*]

If yes, please provide any details (eg links).

13. Has your central bank or (an)other institution(s) in your jurisdiction carried out a recent study on the usage of cryptocurrency and/or stablecoins among consumers and/or businesses? [*Yes / No / Do not know*]

If yes, please provide any details (eg links).



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