

May 20, 2022

The Honorable Jerome H. Powell
Chair
Board of Governors of the Federal Reserve System
Washington, D.C.



An abbreviated version of Annex 2 also submitted via:
<https://www.federalreserve.gov/apps/forms/cbdc>

Dear Chair Powell,

U.S. Federal Reserve Discussion Paper on central bank digital currency

The Institute of International Finance (IIF) welcomes the opportunity to respond to the Federal Reserve System Board of Governors (Fed) Discussion Paper on a potential U.S. central bank digital currency (CBDC), [Money and Payments: The U.S. Dollar in the Age of Digital Transformation \(Discussion Paper\)](#). We commend the Fed for taking this step forward in investigating this momentous issue.

The IIF and our members have developed a substantive response to the Discussion Paper in view of the significant implications that any design or issuance decision around a CBDC may have for the U.S. economy and financial system, and the resulting global and cross-border impacts of any USD-denominated CBDC (U.S. CBDC) given the role of the U.S. dollar (USD) in the global economy.

As a global membership-based organization representing a wide range of financial sectors, the IIF is particularly concerned to ensure that the cross-border dimensions of any CBDC choices are fully considered, alongside all appropriate domestic cost–benefit and political economy considerations.

We understand that the Discussion Paper and questions are focused primarily on a retail CBDC, and we have approached the task of crafting answers to the Fed’s questions in that light. We note at the outset that a possible wholesale CBDC may present a different range of costs/risks and benefits, and the balance between them may be more readily apparent and less disruptive than in the case of a retail CBDC. On the question of pursuing a CBDC, regardless of wholesale or retail, we are initially attracted to the potential for a sovereign digital settlement asset that may cross borders more efficiently and offer a chance to build an innovative, interoperable global payments system, though we are conscious of avoiding possible retail deposit substitution effects and systemic run risks. To that end, we support the Fed’s ongoing efforts; analysis should consider the use of distributed ledger technology (DLT) for wholesale payments through the Technology Lab’s study of how DLT could be used to support interbank settlement.

As for a retail U.S. CBDC, we see many challenging trade-offs and design choices ahead. In our view, these issues are of such fundamental importance to the future of the economy including the banking sector’s ability to support the real economy through mortgage and SME lending that, before determinations are made about key design choices, should a U.S. CBDC be found likely to be appropriate and in the national interest, there should be a **quantitative and qualitative impact assessment** by the Fed and/or other relevant agencies of: 1) a range of possible designs for a retail CBDC, 2) mitigants against identified risks (including stress testing), and 3) the effects of those designs and mitigants on the financial system’s ability to service the real economy including through mortgage and SME lending. Critical elements of such a study would include impacts on bank funding costs, lending rates and volumes, bank strength and capital ratios, and broader measures of the real economy.

Such an assessment should be done in close collaboration with regulated financial institutions (FIs) and payment service providers (PSPs). If the timeline built into President Biden’s [Executive Order on Ensuring Responsible Development of Digital Assets \(Executive Order\)](#)

does not allow for such an assessment to be done before the submission of the Treasury's report on a U.S. CBDC under section 4(b) of the Executive Order (due by September 5, 2022), it could be added as an explicit further step in the process after that waypoint. We would also stress the importance of gaining a fuller understanding of these impacts through pilots and market testing exercises executed directly with regulated financial intermediaries should the Fed pursue development of a U.S. CBDC.

As to the **economic and liability model**, we observe that a mismatch between significant new risks for intermediaries (for example, AML/CFT risk and cyber theft risk) and a lack of a viable business model may drive regulated financial intermediaries away from offering CBDC wallets. Of concern to our members is the potential for CBDC and its attendant infrastructure to crowd out private sector financial innovation and investment. Any distribution or intermediation model that sees significant cost and risks placed onto the intermediary layer without commensurate compensation may only attract intermediaries with business models that depend on extracting maximum economic value from user data (in other words, BigTech providers).

In **Annex 1**, we suggest key policy considerations we hope may be of assistance to the Fed, and the other actors considering a potential U.S. CBDC in the broader framework of the Executive Order. In **Annex 2**, we set out our answers to the Fed's detailed questions, as submitted in abbreviated form (where necessary) through the [web form](#) the Fed has provided.

In line with the above, we would foremost stress the importance of the Fed developing its thinking around a potential U.S. CBDC in close collaboration with the private sector. The IIF stands ready to assist further with these momentous decisions, for example by convening or attending roundtables or bilateral discussions as appropriate, or by assisting with data gathering. Please do not hesitate to contact me or Clay Lowery with any follow-up questions, data requests, or invitation for further dialogue.

Yours sincerely,



Jessica Renier
Managing Director, Digital Finance

Annex 1 – Key policy considerations

1. We believe that the following threshold considerations are crucial prior to any proposed launch of a U.S. CBDC (retail or wholesale):
 - a. the **public policy objectives** sought to be advanced by a U.S. CBDC are clearly enunciated and prioritized;
 - b. it is determined that **a U.S. CBDC would be more effective than other means** in achieving those public policy objectives;¹
 - c. **trade-offs** between those objectives have been clearly enunciated and determined;
 - d. the **preferred scope** – e.g., whether retail or wholesale – is clearly defined;
 - e. **infrastructure and an economic and liability model** required for implementing the preferred scope of CBDC is determined.²
2. Any U.S. CBDC should be introduced only after it has successfully passed a **robust pilot phase**, including stress testing for market operations and major operational risks, including AML/CFT³, privacy, cyber security and operational resilience. Iterative and close engagement with the private sector, specifically FIs and PSPs, would be essential at this stage, prior to launch, particularly in a two-tier distribution framework.
3. Any CBDC should strengthen, not weaken, the financial system. In particular:
 - a. any CBDC should not materially harm the financial system’s ability to finance the real economy through lending and maturity transformation, including through mortgage and SME lending, or materially threaten financial stability, including in times of crisis;⁴
 - b. any CBDC should **interoperate** with private sector means of payments and existing infrastructure. This entails integrating CBDC with existing payment instruments like credit transfers, payment cards and mobile money. It requires interoperability with other cross-border CBDC systems and with government payment and collection streams;^{5, 6}
 - c. any CBDC could be based on the Federal Reserve’s proposed **“intermediated” system** where “the private sector would offer accounts or digital wallets”. This public-private cooperation, often referred to as a “two-

¹ The IIF would not expect a U.S. CBDC to be more effective than other means on every metric in achieving those public policy objectives; however, when considered as a whole, the cumulative effectiveness of a U.S. CBDC in achieving those policy objectives should be determined to, on substantial grounds, be superior to those achieved by other means. Other means could include changes to the law or regulation, or technical means or initiatives, including forms of private money or ongoing innovations or policy changes in existing payment systems.

² This should be determined in close coordination with financial institution (FI) intermediaries. This could be facilitated through establishment of a mechanism similar to that of the European Central Bank’s Market Advisory Group for the digital euro project.

³ As used in this submission, the term “**AML/CFT**” (anti-money laundering and countering the financing of terrorism) includes countering financial crime or financial crime risks, and also screening for politically exposed persons (PEPs) and sanctioned individuals/entities.

⁴ To that end there may be merit in exploring whether and, if so, how the fractional banking model could operate upon customer-held CBDC balances operated by FDIC insured institutions. This would involve a range of implications and evaluation of whether changes to bank capital or liquidity regulation would be necessary.

⁵ Auer et al, (2022), [Central bank digital currencies: a new tool in the financial inclusion toolkit?](#), *FSI Insights* No. 41.

⁶ A broad range of use cases could facilitate wider adoption of a potential CBDC. Preferably, a CBDC would make use of existing acceptance infrastructure that is linked to the user’s existing devices and accounts. This would make adoption easier for both consumers and merchants and would be crucial to maximize the day-one ubiquity of the system and minimize complexity of adoption for users and merchants.

- tier” CBDC, is critical to ensuring an open and competitive payment ecosystem characterized by strong innovation; and
- d. access to the system should be provided only to **regulated FIs or PSPs subject to effective oversight and supervision** who are eligible to hold Federal Reserve master accounts.
4. The **economic and liability model** should be clearly resolved and adequate incentives for participation by regulated FIs or PSPs should be considered. A business model that sees significant cost (for example, for AML/CFT compliance) and risks (for example, around cyber theft from customer wallets) placed onto the intermediary layer without commensurate reward may not attract any intermediaries other than business models that depend on extracting maximum economic value from user data (in other words, BigTech providers).
 - a. The ability of intermediaries to deploy viable business models that encourage further innovation and investment in the development of value-added services will be important for operationalizing a CBDC.
 - b. Costs of connecting to central infrastructure and funding cyber security investments, and liability for cyber attack or AML/CFT risk, should be transparent and clarified *ex ante*.
 - c. We would note that arriving at a workable business model, as of yet, is proving challenging for our members. Collaboration with regulated FIs and PSPs on this point, as well as potential design aspects of a CBDC, would be critical.
 5. **Mitigants for identified risks**, including risks to financial stability, and **other design features** should be identified and evaluated for their effectiveness and their effects on the financial system *ex ante*.
 - a. Reductions arising from such mitigants in the effectiveness of a CBDC in delivering the public policy objectives should be acknowledged and included in the assessment referred to above.
 - b. Mitigants should not open arbitrage opportunities between a CBDC and cash on the one hand, and a CBDC and commercial bank deposits on the other. In other words, they should not threaten fungibility or the “singleness” of the unit of account.
 - c. Similarly, design features should be carefully evaluated in terms of risks including as to fungibility (in the case of programmability, for example, which programs (if any) should be deployed).
 6. The **international dimension** of any CBDC is critically important. In this regard, crucial considerations to be assessed include:
 - a. the possible contribution (or lack thereof) of a CBDC to the attractiveness of the USD as a reserve currency;
 - b. the possible effects on the U.S. or on other economies, particularly but not exclusively emerging economies, of “digital dollarization”, including the possible tendency of those in low- or zero-interest rate economies to accumulate large holdings of digital dollars;
 - c. possible market impacts, including on exchange rates, that may arise from foreign demand for a U.S. CBDC; and
 - d. the further work that would be required to develop international interoperability standards.⁷
 7. **Privacy controls** need to be further articulated for any CBDC to proceed.
 - a. It is not sufficient simply to delegate all privacy aspects to the intermediary layer. Any personally identifying information held by the operator(s) of the core CBDC infrastructure should be subject to a legally binding privacy regime. For

⁷This work could build on technical work already undertaken by the Bank for International Settlements (BIS) such as Project Dunbar, and perhaps include agreement on a Common Domain Model similar to that which has been developed for the derivatives industry, and/or build on applicable financial messaging standards such as ISO 20022.

example, restrictions on individual or corporate holdings, assuming multiple intermediaries, or applying to offline capability, would seem to require at least pseudonymity at the level of the core ledger.

- b. Privacy expectations should also be set for intermediaries in a legally binding and user-centric way which does not discriminate against regulated FIs or PSPs. At the same time, payments data plays an essential role in the provision of financial services, e.g., to analyze risks better and provide credit more accurately and at a better price. Intermediaries should therefore be allowed **to access transactional data to provide value-added services**, while complying with applicable data protection legislation.
 - c. A particularly critical aspect to be tackled is the degree to which intermediaries would be permitted to earn remuneration by monetizing user data, and potential impacts on protecting consumer privacy. Explicit and well-informed user consent must be at the heart of any data monetization, as should maintaining the principle of “same business, same risks, same regulation” as between regulated FIs and PSPs on the one hand, and any other permitted wallet providers (including BigTech providers) on the other.
8. **Cyber security** (resistance and resilience), particularly with regard to hostile state and state-sponsored actors, and **operational resilience** will both be fundamental. Any sustained outage of a retail CBDC system would be hugely disruptive, and possibly crippling, to both the U.S. and global economies.
- a. Each bank in the Federal Reserve System could be an issuer of CBDC and a validator of transactions in a consensus mechanism, for example.⁸
 - b. Another mitigant could be to provide for segregation of systems operating any retail CBDC from those operating any wholesale CBDC. This could provide for the continued availability of commercial bank money even if the retail CBDC were offline.
9. For resilience reasons during natural disasters or major incidents, an **offline capability** of any CBDC would appear to be essential. AML/CFT and financial crime risks must be mitigated, likely through holdings limits, either at the individual or device level. This may require establishment of a, possibly tiered, digital identity solution to be effective.
10. The **energy and climate footprint** of any CBDC should be evaluated.
11. **Independent oversight** of adherence of the CBDC system to applicable regulatory and technical standards would be an expectation of our members. An independent body could be set up to oversee compliance in this regard; for instance, an inspectorate, reporting directly to the Board of Governors, and independent of the operation and planning of the CBDC system, could be established to ensure operational resilience of the system. Such a body would also usefully cooperate with other global, regional or national bodies internationally with similar CBDC oversight responsibilities.
12. The applicable **standards** should be based on appropriate models such as the CPMI–IOSCO Principles for Financial Market Infrastructures, and be available to intermediaries to aid them with their own resilience planning.

In our view, the issues around a U.S. CBDC are of such fundamental importance to the future of the economy, including the ability of the banking sector to support the real economy through mortgage and SME lending that, before determinations are made about key design choices or on the larger question of whether to proceed with issuing a U.S. CBDC, there should be a **quantitative and qualitative impact assessment** by the Fed and/or other relevant agencies. The assessment should, at a minimum, attempt to model:

- a range of possible designs for a retail CBDC;

⁸ In this regard, we acknowledge the observations of the Financial Stability Institute (**FSI**) to the effect that DLT has both positive and negative cyber-security aspects. See Auer et al, (2022), [Central bank digital currencies: a new tool in the financial inclusion toolkit?](#), *FSI Insights* No. 41.

- a range of mitigants against identified risks (including systemic risk); and
- the effects of those designs and mitigants on the financial system's ability to service the real economy, including through mortgage and SME lending.

Critical elements of such a study would include impacts on bank funding costs, lending rates and volumes, bank strength and capital ratios, and broader measures of the real economy. It is important that these are sufficiently understood and tested prior to concluding that a retail CBDC should be pursued.⁹

⁹ Such an assessment would preferably be done in close collaboration with regulated FIs. If the timeline built into the Executive Order does not allow for such an assessment to be done before the submission of the Treasury's report on a U.S. CBDC under section 4(b) of the Order (due by September 5, 2022), it could be added as an explicit further step in the process after that waypoint.

Annex 2 – Answers to consultation questions

Note: the Fed’s web form allows for only 5000 characters to be submitted per question. In the case of those answers that go beyond that limit, we have submitted an abbreviated form of the answer through the web form and the whole answer (including full references) is set out below.

Consultation questions	IIF position
CBDC Benefits, Risks, and Policy Considerations	
<p>1. What additional potential benefits, policy considerations, or risks of a CBDC may exist that have not been raised in this paper?</p>	<p>The Discussion Paper raises most of the relevant issues, but some only in very general terms. Below are some of the issues that the IIF suggests merit further work and, where appropriate, further quantitative or qualitative assessment.</p> <p>Mitigants for identified risks, including financial disintermediation risk and systemic run risk, should be clearly identified and evaluated for their effectiveness and their effects on the financial system <i>ex ante</i>.</p> <p>Possible mitigants for the risk of financial disintermediation, and the heightened risk of systemic runs from bank deposits, that have been identified in the literature include:</p> <ul style="list-style-type: none"> • limits on holdings by single individuals, households, or corporations; • tiered remuneration designed to render use of the CBDC as a store of value unattractive (relative to a means of payment); and • limits on transactions or accumulations within a particular time. <p>There may also be merit in exploring whether and if so how the fractional banking model could operate upon customer-held CBDC balances operated by FDIC insured institutions. This would involve a range of implications and evaluation of whether changes to bank capital or liquidity regulation would be necessary.</p> <p>Any reduction in effectiveness of a CBDC in delivering the public policy objectives arising from such mitigants should be identified and evaluated in a quantitative and qualitative assessment undertaken by the Fed and/or other U.S. authorities.</p>

	<p>The Fed and other U.S. authorities should clarify their attitude toward the relevant mitigants and say which ones they would not consider, only consider as transitional or emergency measures, or consider as permanent features, and why.</p> <p>Mitigants should not open arbitrage opportunities between a CBDC and cash on the one hand, and a CBDC and commercial bank deposits on the other. In other words, they should preserve fungibility and “singleness” of the unit of account.</p> <p>Privacy controls need to be further articulated for any CBDC to proceed.</p> <ul style="list-style-type: none"> • It is not sufficient simply to delegate all privacy aspects to the intermediary layer. Any personally identifying information held by the operator(s) of the core CBDC infrastructure should be subject to a legally binding privacy regime. For example, restrictions on individual or corporate holdings, assuming multiple intermediaries, or applying to offline capability, would seem to require at least pseudonymity at the level of the core ledger. • Privacy expectations should also be set for intermediaries in a legally binding and user-centric way which does not discriminate against regulated FIs or PSPs. At the same time, payments data plays an essential role in the provision of financial services, e.g., to analyze risks better and provide credit more accurately and at a better price. Intermediaries should therefore be allowed to access transactional data to provide value-added services, while complying with applicable data protection legislation. • A particularly critical aspect to be tackled is the degree to which intermediaries would be permitted to earn remuneration by monetizing user data, and potential impacts on protecting consumer privacy. Explicit and well-informed user consent must be at the heart of any data monetization, as should maintaining the principle of “same business, same risks, same regulation” as between regulated FIs and PSPs on the one hand, and any other permitted wallet providers (including BigTech providers) on the other. <p>Cyber security (resistance and resilience), particularly with regard to hostile state and state-sponsored actors, and operational resilience will both be fundamentally important. Any sustained outage of a retail CBDC system would be hugely disruptive, and possibly crippling, to the economy.¹⁰</p>
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¹⁰ In this regard, we note with concern that the Eastern Caribbean CBDC system went offline on January 14, 2022 and was still offline six weeks later, as [reported](#) in Forbes magazine on February 28.

	<ul style="list-style-type: none"> • Each bank in the Federal Reserve System could be an issuer of CBDC and a validator of transactions in a consensus mechanism, for example.¹¹ • Another mitigant could be to provide for segregation of systems operating any retail CBDC from those operating any wholesale CBDC. This could provide for the continued availability of commercial bank money even if the retail CBDC were offline. <p>Costs of connecting to central infrastructure and funding for cybersecurity investments, and liability in case of cyber attack or AML/CFT¹² risk, should be transparent and clarified <i>ex ante</i>.</p> <p>Intermediaries should be regulated financial institutions (FIs) or payment service providers (PSPs) who are eligible to hold Federal Reserve master accounts. Further work on structuring, issuance and strategy for distribution with particular attention to access considerations and liability frameworks across the ecosystem will be necessary. These decisions will involve important trade-offs that require clearly articulated policy objectives.</p> <p>The energy and climate footprint of any CBDC should be fully evaluated.</p> <p>Independent oversight of adherence of the CBDC system to applicable regulatory and technical standards would be an expectation of our members. An independent body could be set up to oversee compliance in this regard; for instance, an inspectorate, reporting directly to the Board of Governors, and independent of the operation and planning of the CBDC system, could be established to ensure operational resilience of the system. Such a body would also usefully cooperate with other global, regional or national bodies internationally with similar CBDC oversight responsibilities.</p> <p>The applicable standards should be based on appropriate models such as the CPMI-IOSCO Principles for Financial Market Infrastructures and be available to intermediaries to aid intermediaries with their own resilience planning.</p>
<p>2. Could some or all of the potential benefits of a CBDC be better achieved in a different way?</p>	<p>Other means may be as effective, or more effective, than a CBDC in delivering some of the potential benefits identified of a CBDC. For example (taking the “potential benefits” identified by the Fed as a proxy for a U.S. CBDC’s public policy objectives):</p> <ul style="list-style-type: none"> • Safely meet future needs and demands for payment services:

¹¹ In this regard, we acknowledge the observations of the FSI to the effect that DLT has both positive and negative cyber-security aspects. See Auer et al, (2022), [Central bank digital currencies: a new tool in the financial inclusion toolkit?](#), *FSI Insights* No. 41.

¹² As used in this submission, the term “**AML/CFT**” (anti-money laundering and countering the financing of terrorism) includes countering financial crime or financial crime risks, and also screening for politically exposed persons (PEPs) and sanctioned individuals/entities.

	<ul style="list-style-type: none"> ○ The private sector in partnership with the Fed already delivers a range of high-quality, cost-effective payment services to U.S. residents and businesses. ○ Direct payments to billers and peers by electronic commercial bank money are fast, efficient and reliable. Most FIs offer a degree of programmability with scheduled and recurring payments. ○ Existing initiatives such as the Clearing House’s RTP service and FedNow, scheduled to debut in 2023, will improve the existing performance of the payments system over time. Performance could also be improved by extending Fedwire’s operating hours, acknowledging there may be additional costs and risks with such a change as mentioned in our January 14, 2022 submission to CPMI on this topic. ○ As the President’s Working Group (PWG) <i>et al.</i> November 2021 report on stablecoins and the Discussion Paper have noted, well-designed and appropriately regulated stablecoins might potentially support fast, efficient, and inclusive payment options, though more research is needed to verify this. ○ A wholesale CBDC, i.e., a digital liability of the central bank that is not widely available to the general public, would be another, and possibly less risky, means to provide a platform for payment innovation than a retail CBDC. There may be some benefits from the introduction of a wholesale CBDC for use between financial institutions. While the wholesale operations of the monetary system are already efficient, a wholesale CBDC may help to further enhance efficiency in securities trading and settlement, but further exploration and experimentation are necessary.¹³ ○ While a CBDC might generate new capabilities to meet the evolving speed and efficiency requirements of the digital economy, more plausibly, complex features such as programmability and micropayments would likely be built by intermediaries on top, and these features could equally apply to other underlying asset types including commercial bank money. ● Improvements to Cross-Border Payments: <ul style="list-style-type: none"> ○ There are other more immediate means to improve the speed, cost, transparency and accessibility of cross-border retail payments than a retail CBDC. Of course, most of the building blocks of the G20’s cross-border payments roadmap, which the IIF is helping to take forward, are not currently predicated on a retail CBDC.
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¹³ House of Lords (2022), [CBDCs - A solution in search of a problem](#), at para. 125.

	<ul style="list-style-type: none"> ○ As the Fed acknowledges, however, realizing potential improvements through a CBDC would require significant international coordination to address issues such as common standards and infrastructure. Even if the Fed wished to coordinate closely with other central banks considering or already piloting a CBDC, such as the People’s Bank of China, such coordination measures may be hampered by the fact that technical choices in many jurisdictions have already been or are already being made, setting <i>de facto</i> standards. <i>Ex post</i> data standardization may take a long time and be only partly complete. ○ The most salient alternative measures include: <ul style="list-style-type: none"> ▪ Linking domestic faster payment systems together on a cross-border basis, such as is occurring bilaterally in South-East Asia, and could take place multilaterally through projects such as the BIS Innovation Hub’s Project Nexus. This could involve the activation of One-Leg-Out instant payment schemes with higher payment limits to increase the scope of such schemes to cover business payments. ▪ Based on our understanding of proof-of-concept efforts such as Project Jasper and Project Ubin, programmability could help achieve efficiency within an enclosed system of special purpose CBDC that is designed to facilitate cross-border payments. ▪ Addressing data barriers that arise from regulatory fragmentation (e.g., in implementation of KYC and AML/CFT rules) or inconsistent implementation of international payment message standards and the data required to be included within payment messages, including the potential for PSPs to interpret domestic requirements on an individual basis,¹⁴ or different jurisdictions providing their own individual guidance. ● Support the USD’s International Role <ul style="list-style-type: none"> ○ The question whether CBDC would support the USD’s international role is a complex one. ○ On the one hand, a retail CBDC is neither sufficient nor likely necessary for reserve currency status. In our view, the key drivers of reserve currency status are not likely to be the availability of a retail CBDC but rather the rule of law, monetary and financial stability, and full convertibility.
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¹⁴ See further IIF (2022), [Response](#) to FSB request for written feedback on data frameworks affecting cross-border payments, 14 January.

	<ul style="list-style-type: none"> ○ Digital networks may also drive “digital dollarization” even if they permit users outside the U.S. to hold only e-money or commercial bank money representations of USD or stablecoins, and not CBDC.¹⁵ ○ On the other, hand, wide availability of a retail U.S. CBDC, together with its availability to non-residents, may drive some invoicing to be denominated in USD that is not already. ○ There may also be intangible perception effects associated with the non-issuance of a retail CBDC in circumstances where other competing economies, particularly other advanced economies including the European Union (EU), have moved forward. The U.S. would need to consider interoperability and possible effects on cross border payments in that context, and design a plan to address those issues. ● Financial Inclusion: <ul style="list-style-type: none"> ○ As the House of Lords report on a U.K. CBDC concluded, it is likely that there are more straightforward and targeted ways to support access to financial services than to launch a CBDC.¹⁶ ○ One way is to tackle the problem of the unbanked in more direct ways, such as by extending low-cost basic account services, including through public subsidies or tax incentives where necessary. In the US, certified Bank On accounts have been successful to date and should remain a core component of efforts to reduce un-/under-banked populations. ○ Inside and outside the regulated banking sector, there are an increasing number of PSPs providing private digital wallets or mobile payment solutions including to “unbanked” customers. Removing unnecessary regulatory barriers to entry to these services, including through State-based mutual recognition schemes, would help. ○ The encouragement (through chartering reforms) of low-cost, digital-only banks can help reach those consumers who are digitally literate but cost sensitive, would also assist. ○ Another means would be to increase the level of digital financial inclusion by improving internet broadband services, and access to simpler, more accessible devices for the elderly, visually impaired or those with other disabilities.
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¹⁵ For the concept of “digital dollarization”, see Brunnermeier et al. (2021), [The digitalization of money](#), BIS Working Papers No 941

¹⁶ House of Lords (2022), [CBDCs - A solution in search of a problem](#), at para. 5.

	<ul style="list-style-type: none"> ○ Improving financial literacy through schools and college and the provision of useful information in a range of community languages could assist. ○ Other important drivers of financial inclusion include: access to secure identity (digital or otherwise); and sufficient savings or earnings to make engaging with the formal financial system worthwhile. ○ We note that a CPMI and World Bank report highlighted the potential risk that CBDCs could crowd out private sector initiatives that could be equally or better suited to providing individuals with a basic means of payment, such as fast payment systems.¹⁷ ○ We also note that ensuring CBDC systems are interoperable with private sector digital payment systems and arrangements is important for financial inclusion.¹⁸ ● Extend Public Access to Safe Central Bank Money: <ul style="list-style-type: none"> ○ Offering the public access to commercial bank money via unquestionably strong, well-regulated FIs, backed with solid deposit insurance, continues to be an obvious alternative means of providing access to safe money, albeit not a central bank liability. ○ Well-regulated stablecoins could also potentially play this role, pending an assessment of their impacts on credit formation and financial stability. ○ Other means to ensure ongoing access to cash could see public subsidies of bank branches, or (as has taken place in Australia) the growth of low-cost or zero-cost agency banking services at local post offices. Continued operation and maintenance of ATMs, including those serving higher-denominations bills, could reduce the displacement of cash in the economy.
<p>3. Could a CBDC affect financial inclusion? Would the net effect be positive or negative for inclusion?</p>	<p>Overall, the IIF is sceptical that a retail U.S. CBDC itself would materially improve financial inclusion. Rather, a neutral effect appears more likely. A CBDC would neither be sufficient nor necessary to drive higher rates of financial inclusion.</p> <p>On lack of sufficiency, other more important drivers of financial inclusion include: financial literacy; digital literacy and measures to address the “digital divide”; access to secure identity (digital or otherwise); and sufficient savings or earnings to make engaging with the formal financial system worthwhile. See our response to question 2 for further detail.</p>

¹⁷ CPMI and World Bank (2020), [Payment aspects of financial inclusion in the fintech era](#), cited in Auer et al, (2022), [Central bank digital currencies: a new tool in the financial inclusion toolkit?](#), *FSI Insights* No. 41.

¹⁸ Auer et al, (2022), [Central bank digital currencies: a new tool in the financial inclusion toolkit?](#), *FSI Insights* No. 41

	<p>To illustrate the lack of necessity, measures of financial inclusion have risen sharply in Latin America in recent times, partly in response to the choices made by governments in delivering pandemic relief. Prior to the pandemic, an average of only 55% of Latin American adults had an account at an FI.¹⁹ COVID-19 related social benefits programs, including pandemic relief payments to bank accounts, through payment apps and to private digital wallets, helped financially integrate more than 40 million people in Brazil, Colombia, and Argentina alone. Brazil reduced its unbanked population by 73%, while Colombia and Argentina also made reductions of 8% and 18% respectively. If similar programs in Chile, Peru, and Uruguay had a similar effect, it is estimated that the unbanked population in all of Latin America will have been reduced by 25% due to the impact of COVID-19 social benefit programs alone.²⁰</p> <p>Further, a recent report²¹ suggests that the fact that many Americans are currently unbanked would not simply be resolved by introducing a U.S. CBDC, as distrust of the banking system is among the main reasons for financial exclusion.</p>
<p>4. How might a U.S. CBDC affect the Federal Reserve’s ability to effectively implement monetary policy in the pursuit of its maximum-employment and price-stability goals?</p>	<p>The answer to this question is highly sensitive to the choice of mitigants for financial stability risks (chiefly, disintermediation risk and systemic run risk) that may be exacerbated (in probability or impact) by a displacement of bank deposits by retail CBDC holdings.</p> <p>See our answer to question 7 below on possible mitigants for these risks.</p> <p>Any mitigants involving non-zero remuneration on CBDC balances (positive or negative) would likely confer on the central bank a proliferation of new policy tools that may unduly complicate the conduct of monetary policy, or on the other hand, provide the Fed greater flexibility in crisis scenarios.</p> <p>There could arise at least 4 different policy rates for which the central bank would be responsible:</p> <ul style="list-style-type: none"> • the federal funds target rate; • the remuneration rate on “payments” or smaller holdings of retail CBDC; • the remuneration rate on “store of value” or larger holdings of retail CBDC; • the remuneration rate on wholesale CBDC.

¹⁹ Mastercard and Americas Market Intelligence (AMI) (2020) [Financial Inclusion during COVID](#), October, citing the World Bank.

²⁰ Mastercard and AMI (2020), *op cit*. Figures measured as at August 2020 relative to pre-pandemic levels. As cited in IIF (2022), [Cloud in Latin America: Opportunities and Challenges for Financial Services](#), 28 February (IIF members only).

²¹ Maiden and MIT Digital Currency Initiative (2021), [The Future of Our Money: Centering Users in the Design of Digital Currency](#), December 16.

	<p>The complicated signaling effects from having so many interacting policy levers may be undesirable.²²</p> <p>On the other hand, a fixed policy that CBDC balances must be zero remunerated clearly strengthens the zero lower bound to monetary policy. This effect would be attenuated to the extent that it did not apply to wholesale CBDC, but this could “break” par between the retail and wholesale instruments, driving significant arbitrage.</p>
<p>5. How could a CBDC affect financial stability? Would the net effect be positive or negative for stability?</p>	<p>The economic literature around CBDC, disintermediation and financial stability suggests a CBDC could negatively affect financial stability.</p> <p><i>Systemic run risk</i></p> <p>As the BIS and a group of central banks including the Fed have found, CBDC and certain new forms of digital money could increase the latent risk of systemic bank runs, where depositors may seek to run from bank deposits to CBDC across all or many banks.²³</p> <p>A period of rapid substitution from deposits to CBDC would be equivalent to a run on the banking system. The cost and frictions of running to CBDC would likely be much lower than running to cash.²⁴</p> <p>Importantly, the lower costs of running to CBDC compared to cash imply that more depositors would quickly withdraw at a lower perceived probability of a system-wide bank solvency crisis.²⁵ In addition to the potential impact of CBDC in benign conditions, during crisis periods a CBDC could be perceived as a safe haven making bank deposits, particularly uninsured deposits, more flighty and thus increasing the risk of bank runs.²⁶ Evidence from previous systemic bank runs indicate how powerful the impetus of a bank run is, and therefore how reduced transaction costs of a CBDC could exacerbate bank runs.²⁷ Large-scale money-market fund outflows in the global financial crisis (GFC) and at the onset of the Covid-19 pandemic also indicate that a CBDC could increase the risks of “runs” from non-banks in stressed conditions.²⁸</p>

²² As to signalling effects, see Panetta et al, (2021) [Central Bank Digital Currency: functional scope, pricing and controls](#), *ECB Occasional Paper 286*, p. 13.

²³ BIS and Group of Central Banks (2021), [Central bank digital currencies: Financial stability implications](#), September, p. 2.

²⁴ Bank of England (2020), [Central Bank Digital Currency: opportunities, challenges and design](#), 22 March, p. 38

²⁵ BIS and Group of Central Banks (2021), [Central bank digital currencies: Financial stability implications](#), p. 9, citing Broadbent (2016) and Callesen (2017).

²⁶ BIS and Group of Central Banks (2021), *Ibid.*, p. 13.

²⁷ BIS and Group of Central Banks (2021), *Ibid.*, p. 13.

²⁸ BIS and Group of Central Banks (2021), *Ibid.*, p. 14.

	<p>Thus, the introduction of a CBDC or new forms of private money such as stablecoins could affect the latent risk of systemic runs, and banks may also need to adapt their own practices.²⁹</p> <p>According to the CPMI and the Markets Committee, although the existence of deposit insurance helps to ensure bank runs are rare, there is a concern CBDCs could make such events more “frequent and severe”, with them unfolding with “unprecedented speed and scale.” Depending on the context, the shift in deposits could be large in times of stress.³⁰</p> <p>Authorities may also need faster-acting crisis management tools. The potential for a CBDC or new private forms of digital money to increase the pace of bank runs may also necessitate examining crisis measures such as limits or controlling fund outflows from bank deposits.</p> <p><i>Effects of possible mitigants to systemic run risk</i></p> <p>Possible mitigants for the risk of financial disintermediation, and the heightened risk of systemic runs from bank deposits, that have been identified in the literature include:</p> <ul style="list-style-type: none"> • limits on holdings by single individuals, households, or corporations or “end users”; • tiered remuneration designed to render use of the CBDC as a store of value unattractive (relative to a means of payment); • limits on transactions or accumulations within a particular time; and • crisis measures such as limits or controlling fund outflows from bank deposits. <p>More research and analysis is needed on the viability of limits, and the trade-offs between limiting the speed of possible bank runs to CBDC and reducing the usefulness of CBDC in normal times.³¹ This observation applies to tiered remuneration and other mitigants as well.</p> <p>Changing the interest rate charged on CBDC balances in times of stress or crisis, even if the tool were available, would be unlikely to reduce systemic run risk given that savers fearing a loss of all their savings may not be price sensitive to interest charges over relatively short periods.³²</p>
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²⁹ BIS and Group of Central Banks (2021), *Ibid.*, p. 16, citing Juks (2018).

³⁰ BIS and Group of Central Banks (2020), [Central bank digital currencies: foundational principles and core features](#), 9 October. A crucial element in such system-wide shifts is the stronger sensitivity of depositors to the actions of others. The more other depositors run from weaker banks, the greater the incentive to run oneself. It would be difficult to stem runs under such conditions, even when providing large lender of last resort facilities: *ibid.*

³¹ Bank of England (2020), [Central Bank Digital Currency: opportunities, challenges and design](#), 22 March, p. 38

³² BIS and Group of Central Banks (2021), [Central bank digital currencies: Financial stability implications](#), p. 17.

	<p>Therefore, it is plausible that a CBDC supplied in unlimited quantities and without other control tools, as for banknotes, could make bank runs worse, as it would neither create physical security issues nor be subject to scarcity-related price disincentives. A poorly designed CBDC could facilitate deposit runs during banking crises.³³</p> <p>Any attempt to introduce holding or transaction limits or tiered pricing may either reduce the appeal of a retail CBDC significantly, or open a pricing basis or spread between it and cash on the one hand and commercial bank money on the other, thus fragmenting the ‘singleness’ of the currency as a unit of account, and opening up opportunities for arbitrage.</p> <p>The cross-border and global dimensions of CBDCs available to non-residents could be especially pronounced during times of generalised flight to safety. Under such conditions, exchanging a CBDC for an international currency could potentially enable faster deleveraging in capital markets. If CBDCs accelerated flights from risk, deleveraging pressures could manifest themselves in the form of tight funding conditions and sharp movements in foreign exchange markets.³⁴</p> <p><i>Systemic risks arising from increased funding costs</i></p> <p>Authoritative studies and modelling strongly suggest that introduction of a retail CBDC would increase bank lending interest rates and reduce bank strength, as detailed in our answer to question 6.</p> <p>Reduced bank net interest income, as well as its constraining effect on lending to the real economy, including through mortgage and SME lending, can be expected to weaken financial stability if it impairs the ability of FIs to raise capital to meet prudential capital requirements, including in times of stress.</p>
<p>6. Could a CBDC adversely affect the financial sector? How might a CBDC affect the financial sector differently from stablecoins or other nonbank money?</p>	<p>A retail CBDC could adversely affect the financial sector through a reduction of funding that would translate into a reduced availability of credit and an increase in lending costs to the real economy (including of mortgage and SME lending), with business model implications for FIs.</p> <p>Studies suggest there would be substitution away from retail bank deposits to CBDC in normal times, as end users take advantage of the low credit risk associated with CBDC. Estimates of</p>

³³ Panetta et al (2021), [Central Bank Digital Currency: functional scope, pricing and controls](#), ECB Occasional Paper 286, 15 December, p. 9, citing Bindseil and Panetta (2020).

³⁴ BIS and Group of Central Banks (2021), *Op. cit.*, p. 18.

	<p>this effect vary considerably, but one study estimates that up to 55% of commercial bank deposits could be diverted.³⁵</p> <p>This can be expected to significantly increase funding costs for banks wishing to keep lending at the same level, as they would need to raise the rate of interest on deposits considerably or source more expensive wholesale funding in order to do so.</p> <p>This would in turn substantially impede banks' ability to create credit for the broader economy, including through mortgage and SME lending.</p> <p>It can also be expected to generate strong incentives to considerably increase the role of the Fed in credit creation by deploying CBDC reserves to acquire bonds or provide other forms of wholesale funding. While central banks can in principle also be a source of alternative funding, such funding – whether temporary or structural – may need to be provided against lower quality collateral as only that would increase HQLA for banks.³⁶ We would suggest that a situation in which the Fed has an ever-greater role in the provision of credit because CBDC crowds out bank lending is inconsistent with market economy principles.</p> <p>According to quantitative modelling by the BIS and a group of central banks including the Fed, bank return on equity (RoE) would be negatively affected monotonically with both the substitution effect and the wholesale:deposit spread, such that at a 25% outflow from deposits to CBDC, with a 2% pts spread, RoE would decline by 0.9% pts.³⁷</p> <p>The same study also found there would need to be a significant increase in the banking sector lending rate to maintain net interest income, such that at a 25% outflow, with a 2% pts wholesale to deposit spread, lending rates would increase by 0.7% pts.³⁸ The possibility that banks could try to offset the higher cost of funding by engaging in riskier forms of lending could in turn create financial stability risks.³⁹ Reduced bank net interest income, as well as its constraining effect on lending to the real economy, could be expected to weaken financial</p>
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³⁵ One study has found that households could be expected to hold from 4% to 55% of their combined cash and deposit holdings in a CBDC, depending on whether the CBDC had more 'cash like' features or whether it was more competitive with bank deposits. See Li (2021), Swiss National Bank, ['Predicting the Demand for Central Bank Digital Currency: A Structural Analysis with Survey Data'](#), 18 November.

³⁶ BIS and Group of Central Banks (2021), [Central bank digital currencies: Financial stability implications](#), p. 10,

³⁷ BIS and Group of Central Banks (2021), [Central bank digital currencies: Financial stability implications](#), p. 9, Graph 3.

³⁸ Ibid.

³⁹ CPMI and Markets Committee (2018), [Central bank digital currencies](#), p. 16, cited in BIS and Group of Central Banks, [Central bank digital currencies: foundational principles and core features](#), 9 October and in turn in House of Lords (2022), [CBDCs - A solution in search of a problem](#), at n. 115.

	<p>stability if it were to impair the ability of FIs to raise capital to meet prudential capital requirements, including in times of stress.</p>
<p>7. What tools could be considered to mitigate any adverse impact of CBDC on the financial sector?</p> <p>Would some of these tools diminish the potential benefits of a CBDC?</p>	<p>Possible mitigants for the risk of financial disintermediation, and the heightened risk of systemic runs from bank deposits to retail CBDC, that have been identified in the literature include:</p> <ul style="list-style-type: none"> • limits on holdings, or limits on transactions or accumulations within a particular time, by single individuals, households, or corporations; • tiered or no remuneration designed to render use of the CBDC as a store of value unattractive (relative to a means of payment); • providing alternative sources of funding to compensate commercial banks for the loss of bank deposit funding; and • crisis measures such as limits or controlling fund outflows from bank deposits. <p>All of these mitigants introduce complications which may render them unusable or ineffective, or reduce trust in the integrity of the system if there is wide-scale abuse:</p> <ul style="list-style-type: none"> • Limits on individual holdings, and tiering of remuneration above certain limits, require either a secure national or digital identity scheme, both for individuals and corporations, or a certain, high tolerance for duplicate accounts being created through multiple intermediaries. • Access by corporations to a retail CBDC would also introduce the ability for individuals to ‘hide’ CBDC wallets inside corporations. Such corporations could be sold on the secondary market. Aggregating holdings across these corporations would be extremely difficult. • Any inability to aggregate limits over individuals’ multiple or corporate holdings could diminish trust in the integrity of the system and in the central bank, and may undermine AML/CFT efforts. • Once a retail CBDC exists, political pressure to make it competitive with commercial bank deposits on inclusion and other grounds may lead to the relaxation of holding limits and increases in interest rates paid. • More generally, assuming trusts over CBDC wallets are recognized by law, limits on individual holdings could be rendered ineffective unless details of trust holdings are registered.

	<p>Transaction limits could be considered to reduce systemic bank runs, including in a crisis. They may however also open wide basis between the retail CBDC and cash, or the CBDC and commercial bank money (or other instruments such as stablecoins) in a crisis.</p> <p>There may also be merit in exploring whether and if so how the fractional banking model could operate upon customer-held CBDC balances operated by FDIC insured institutions. This would involve a range of implications and evaluation of whether changes to bank capital or liquidity regulation would be necessary. If viable, this could be a mitigant to bank deposit disintermediation risk, but not a complete solution.</p>
<p>8. If cash usage declines, is it important to preserve the general public’s access to a form of central bank money that can be used widely for payments?</p>	<p>We would suggest the central bank has a role to play in ensuring the ongoing availability of cash for several reasons, including resilience, the existence of a digital divide, and a lack of financial education within a significant part of the population that is unlikely to be resolved by issuance of a retail CBDC (and may even be exacerbated).</p> <p>That said, if the use of cash does otherwise decline significantly, it may be necessary to provide an alternative (in the form of a retail CBDC) to citizens to preserve the monetary anchor. It is unclear, however, to what extent the use of cash would have to be reduced before this monetary anchor would be endangered.</p>
<p>9. How might domestic and cross-border digital payments evolve in the absence of a U.S. CBDC?</p>	<p>As for the domestic payments agenda, the Discussion Paper usefully summarizes some of the key developments, including RTP and FedNow. We note ongoing consideration of the possibility of extending RTGS operating hours, by CPMI and others.⁴⁰</p> <p>In the absence of a CBDC, efforts can be expected to continue to be made to regulate stablecoins, either through regulatory guidance or through actions by the Congress.⁴¹ We would also expect FIs and PSPs to continue to innovate and prepare themselves for more digital and integrated payments and settlement systems. We note in this regard the recommendations of the recent report of the PWG and other agencies on stablecoins. Adequate regulation and additional research will be essential in order to consider the viability of these instruments as long-term options for cross-border digital payments.⁴²</p>

⁴⁰ See the IIF’s [submission](#) to CPMI dated January 14, 2022, in which we observed that there would be considerable cost and risk associated with moving to 24/7 operation of RTGS systems.

⁴¹ See e.g. Brunnermeier et al. (2021), [The digitalization of money](#), BIS Working Papers No 941

⁴² PWG, FDIC and OCC (2021), [Report on Stablecoins](#), November

	<p>Cross-border payments are of course a key priority for the G20 through its 2020 cross-border payments roadmap, to which the IIF has contributed through comment letters, by co-convening the Global Payments Forum, and by establishing a formal task force. We fully support the objectives of the roadmap, while we would suggest adjustments in aspects of its implementation, and are committed to working with our members and the official sector on its implementation. Most of the building blocks in the roadmap could be accomplished independently of the establishment of CBDC. We are confident that the goals of the roadmap could be accomplished without a retail U.S. CBDC.</p> <p>Separately, private sector and public-private initiatives that have helped and will continue to help improve cross-border payments around speed, cost, transparency and accessibility include:</p> <ul style="list-style-type: none"> • SWIFT gpi, a new initiative developed to improve the experience of making a payment via the SWIFT network for both customers and banks. SWIFT gpi combines the traditional SWIFT messaging and banking system with a new set of rules. • SWIFT GO, a service whereby FIs can enable their SME and retail customers to send predictable, fast, highly secure, and competitively priced low-value cross-border payments anywhere in the world, direct from their bank accounts. • The continuing roll-out of ISO 20022, including ongoing efforts to improve the alignment of implementation. • Initiatives to directly connect faster payments schemes, both bilaterally (such as the recent Singapore–Thailand link) and multilaterally (such as the coming Singapore–Thailand–Malaysia link), and the work of BIS Innovation Hub’s Project Nexus. • Initiatives to introduce digital identity schemes and digital verifiable credentials schemes domestically and across borders, such as the IIF’s Open Digital Trust Initiative and the Global Assured Identity Network proof of concept. • The advent of increasing competition from Paytechs in the cross-border payments space, including those exploiting a multilateral netting model. • Well-regulated stablecoins, pending an assessment of their impacts on credit formation and financial stability.
<p>10. How should decisions by other large economy nations to issue CBDCs influence the decision whether the United States should do so?</p>	<p>The U.S. should extract lessons learned from what the central banks of other large economies do, including the EU, and consider the geopolitical and interoperability implications of their actions, including in relation to cross-border payments. However, those experiences may have</p>

	<p>limited relevance to the U.S. economy, given the USD’s unique role in the global economy as the reserve currency and should not, in and of themselves, determine U.S. action.</p> <p>The experience of small countries, including on cyber issues, will also be instructive.</p> <p>Retail CBDC is neither sufficient nor likely necessary for reserve currency status. In our view, the key drivers of reserve currency status are not likely to be availability of a retail CBDC but rather the rule of law, monetary and financial stability, and full convertibility.</p> <p>Digital networks may drive “digital dollarization” even if they permit users outside the U.S. to hold only e-money or commercial bank money representations of USD or stablecoins, and not CBDC.⁴³ That said, wide availability of a retail U.S. CBDC, together with its availability to non-residents, may drive some invoicing to be denominated in USD that is not already.</p> <p>There may also be intangible perception effects associated with the non-issuance of a retail CBDC in circumstances where other competing economies have done so.</p> <p>The USD and supporting payment networks should continue to interoperate with currencies of major economies. Should major economies develop a CBDC system that would not otherwise be interoperable with existing U.S. payment systems or USD-denominated stablecoins, the Fed may wish to consider the implications and risks associated with being unable to participate in such a system. This should not, however, drive the U.S. to prematurely adopt CBDC.</p>
<p>11. Are there additional ways to manage potential risks associated with CBDC that were not raised in this paper?</p>	<p>Possible mitigants for the risk of financial disintermediation, and the heightened risk of systemic runs from bank deposits to retail CBDC, that have been identified in the literature are set out in our answer to question 5.</p> <p>Additionally, authorities could impose a “systemic run tax” or “haircut” on CBDC transactions during times of crisis to disincentivise runs into the CBDC. However, this could be unpopular and may open a basis between bank deposits and CBDC during a crisis.</p>
<p>12. How could a CBDC provide privacy to consumers without providing complete anonymity and facilitating illicit financial activity?</p>	<p>The Bank of England has suggested a “platform model” whereby:</p> <ul style="list-style-type: none"> • A CBDC payment system would need to be compliant with AML/CFT regulations and requirements. This means the identity of CBDC users would need to be known to at least some authority or institution in the wider CBDC network that can validate the legitimacy of their transaction.

⁴³ For the concept of “digital dollarization”, see Brunnermeier et al. (2021), [The digitalization of money](#), BIS Working Papers No 941

- In the platform model, one possibility is that the core ledger only stores pseudonymous accounts and balances, but that each account in the core ledger is linked to a Payment Interface Provider (**PIP**) who knows the identity of each user.
- PIPs would be responsible for applying AML/CFT checks to users, and for reporting suspicious transactions to the authorities.
- This arrangement means that the Bank would not hold granular personal data on any user, reducing the privacy concerns that could arise in connection with holding personal user data, but AML/CFT requirements could still be met by the CBDC system as a whole. AML/CFT responsibilities could be handled entirely by the PIPs.⁴⁴

We consider that the Bank of England ‘platform’ model with pseudonymity could be a useful model for the Fed to investigate further. However, payments data plays an essential role in the provision of financial services, e.g., to analyze risks better and provide credit more accurately and at a better price. Payments data is also a core element of offering improved personalized solutions. Many potential value-added services will rely on access to and use of this data. Therefore, it is important that the central bank’s focus on privacy does not translate into a general restriction on the use of data from CBDC transactions. Intermediaries should be allowed **to access transactional data to provide value-added services**, while complying with applicable data protection legislation. CBDC design should ensure that data is used in a responsible way, ensuring both security and privacy.

The Fed paper states that a general-purpose CBDC would generate data about users’ financial transactions in the same ways that commercial bank and nonbank money generates such data today, and that in the intermediated CBDC model that the Federal Reserve would consider, intermediaries would address privacy concerns by leveraging existing tools.

Privacy controls need to be further articulated for any CBDC to proceed.

- It is not sufficient simply to delegate all privacy aspects to the intermediary layer. Any personally identifying information held by the operator(s) of the core CBDC infrastructure should be subject to a legally binding privacy regime. For example, restrictions on individual or corporate holdings, assuming multiple intermediaries, or applying to offline capability, would seem to require at least pseudonymity at the level of the core ledger.

⁴⁴ Bank of England (2020), [Central Bank Digital Currency: opportunities, challenges and design](#), 22 March, p. 31

	<ul style="list-style-type: none"> • Privacy expectations should also be set for intermediaries in a legally binding and user-centric way which does not discriminate against regulated FIs or PSPs. At the same time, payments data plays an essential role in the provision of financial services, e.g., to analyze risks better and provide credit more accurately and at a better price. Intermediaries should therefore be allowed to access transactional data to provide value-added services, while complying with applicable data protection legislation. • A particularly critical aspect to be tackled is the degree to which intermediaries would be permitted to earn remuneration by monetizing user data, and potential impacts on protecting consumer privacy. Explicit and well-informed user consent must be at the heart of any data monetization, as should maintaining the principle of “same business, same risks, same regulation” as between regulated FIs and PSPs on the one hand, and any other permitted wallet providers (including BigTech providers) on the other.
<p>13. How could a CBDC be designed to foster operational and cyber resiliency?</p> <p>What operational or cyber risks might be unavoidable?</p>	<p>Cyber security (resistance and resilience), particularly with regard to hostile state and state-sponsored actors, and operational resilience will both be fundamentally important. While cyber risk is unavoidable, the impact of a hostile state actor attack on the core ledger of, or major wallet providers to, a U.S. CBDC cannot be overstated. Any sustained outage of a retail CBDC system would be hugely disruptive, and possibly crippling, to the U.S. and global economy. In this regard, we note with concern that the Eastern Caribbean CBDC system went offline on January 14, 2022 and was still offline six weeks later, as reported in Forbes magazine on February 28.</p> <ul style="list-style-type: none"> • Each bank in the Federal Reserve System could be an issuer of CBDC and a validator of transactions, for example. • Another mitigant could be to provide for segregation of systems operating any retail CBDC from those operating any wholesale CBDC. This would provide for the continued availability of commercial bank money even if the retail CBDC were offline. <p>For resilience reasons during natural disasters or major incidents, offline capability of any CBDC would appear to be essential. AML/CFT and financial crime risks must be mitigated, likely through holdings limits, either at the individual or device level.</p> <p>Independent oversight of adherence of the CBDC system to applicable regulatory and technical standards would be an expectation of our members. An independent body could be set up to oversee compliance in this regard; for instance, an inspectorate, reporting directly to the Board of Governors, and independent of the operation and planning of the CBDC system, could be established to ensure operational resilience of the system. Such a body would also</p>

	usefully cooperate with other global, regional or national bodies internationally with similar CBDC oversight responsibilities.
14. Should a CBDC be legal tender?	Yes, any retail U.S. CBDC should be legal tender to avoid opening up an undesirable basis and differentiation between it and its cash and commercial deposit representations of the currency, with resulting fragmentation risk and loss of fungibility.
CBDC Design	
15. Should a CBDC pay interest? If so, why and how? If not, why not?	<p>We are conscious that a CBDC could confer on the central bank a proliferation of new policy tools that may complicate the conduct of monetary policy. The IIF also acknowledges, however, that it may provide the central bank additional avenues of flexibility during crises. That said, interest being payable on CBDC by the central bank would strongly add to such complication. The IIF finds this unfavorable.</p> <p>The BIS study results earlier cited about bank net interest earnings and lending rates are quite sensitive to the spread between wholesale and deposit rates.⁴⁵ Further, substitution effects are <i>very</i> sensitive to the characteristics of the CBDC, including the extent to which it replicates cash (and is zero coupon) or replicates bank deposits.⁴⁶</p> <p>As such, we would advocate that retail CBDC not be remunerated at a rate above zero. An interest-bearing CBDC, as well as potentially increasing systemic risk, could also raise issues as to fungibility with cash and commercial bank money and could create legal and fragmentation risks.</p> <p>Wholesale CBDC is subject to different financial stability considerations, so remuneration of that asset would be subject to a different range of considerations. As a starting point, any wholesale CBDC should be remunerated at the same rate as commercial bank reserves.</p> <p>As to the lower bound of retail CBDC remuneration, in times of negative or near-negative interest rates, considerations around the zero lower bound and the stability of the bank deposit base would suggest that negative interest rates should apply to CBDC and be applied to retail holdings at a level intended to dissuade large-scale substitution into CBDC. However, negative interest rates may lack public acceptance and may create political issues for the central bank.</p>

⁴⁵ BIS and Group of Central Banks (2021), *op. cit.*

⁴⁶ Li (2021), Swiss National Bank, '[Predicting the Demand for Central Bank Digital Currency: A Structural Analysis with Survey Data](#)', 18 November.

	<p>There may also be concerns about fungibility if a retail CBDC can be programmed to have negative interest rates.</p>
<p>16. Should the amount of CBDC held by a single end user be subject to quantity limits?</p>	<p>As stated in our answer to question 7, any tiering of remuneration in such a manner as to incentivize use of a CBDC as a means of payment, and not as a store of value, would introduce added complications, which may render limits unusable or ineffective, or reduce trust in the integrity of the system if there is wide-scale abuse.</p> <p>Limits on individual holdings, or periodic limits on transactions or accumulations, and tiering of remuneration above certain limits, require either a secure national or digital identity scheme, both for individuals and corporations, or a certain, high tolerance for duplicate accounts being created or operated through multiple intermediaries.</p> <p>Access by corporations to a retail CBDC would also introduce the ability for individuals to ‘hide’ CBDC wallets inside corporations. Such corporations could be sold on the secondary market. Aggregating holdings across these corporations would be extremely difficult.</p> <p>Any inability to aggregate limits over individuals’ multiple or corporate holdings could diminish trust in the integrity of the system and in the central bank.</p>
<p>17. What types of firms should serve as intermediaries for CBDC?</p> <p>What should be the role and regulatory structure for these intermediaries?</p>	<p>Except as provided below, regulated FIs and PSPs that are eligible to hold Fed master accounts should be the only firms qualified to serve as intermediaries for CBDC.</p> <p>Non-resident firms could be permitted to qualify, so long as they qualify under the above. Consideration could also be given to permitting equivalently regulated firms, so long as they conform with relevant requirements such as appointing local agents, submitting to local jurisdiction, maintaining a local responsible officer, undertaking basic reporting, etc.</p> <p>This implies that, at least insofar as they are custodians of CBDC, they could be permitted to hold retail CBDC offshore.</p> <p>The privilege of being an intermediary for a U.S. CBDC should be limited to institutions that operate within robust regulatory and supervisory frameworks in the following areas:</p> <ul style="list-style-type: none"> • safety and soundness; • fiduciary operations; • AML/CFT; • tax withholding and reporting; • risk-based capital requirements; • personal/consumer data privacy;

	<ul style="list-style-type: none"> • cybersecurity (resistance and resilience); and • operational resiliency. <p>Intermediaries that perform services for end users and incur the costs and liability involved (e.g., for hacking, AML/CFT or operational errors) will need to be compensated for taking on these risks to make the business model feasible for a U.S. CBDC.</p>
18. Should a CBDC have “offline” capabilities? If so, how might that be achieved?	<p>For resilience reasons during natural disasters or major incidents, an offline capability of any CBDC would appear to be essential.</p> <p>This could be achieved, for example, through a stored value card with merchant readers, or through a mobile phone application with an NFC peer-to-peer capability.</p> <p>AML/CFT risks must be mitigated, likely through holdings limits, either at the individual or device level. However, our observations in our answer to question 7 above about the issues with individual holding limits apply.</p> <p>One possible specific mitigant (beyond an individual holding limit) would be to limit the wallet size for offline capability to one wallet per individual mobile number. That way, some AML/CFT information would be available at the mobile operator, which would presumably be shared with the intermediary at time of “charging” of the offline wallet.</p> <p>The cost of new offline wallets could be quite high to dissuade trafficking of wallets, at the expense of deterring tourists from using the offline CBDC.</p>
19. Should a CBDC be designed to maximize ease of use and acceptance at the point of sale?	<p>Costs of connecting to central infrastructure and funding cybersecurity investments, and liability in case of cyber attack or AML/CFT risk, should be transparent and clarified <i>ex ante</i>. Intermediaries should be regulated FIs or PSPs that qualify for access to Fed master accounts, subject to effective oversight.</p> <p>We would observe that pricing a CBDC at below cost may risk crowding out other private sector payment methods.</p>
If so, how?	<p>Intermediaries would, over time, be expected to design features that render a CBDC attractive to retail users. Some of these features may include programmability, multi-asset wallets, tokenization features, and peer-to-peer payment capabilities.</p>
20. How could a CBDC be designed to achieve transferability across multiple payment platforms?	<p>The G7, including the U.S., have said that “CBDCs should coexist with existing means of payment and should operate in an open, secure, resilient, transparent and competitive</p>

	<p>environment that promotes choice and diversity in payment options.”⁴⁷ This principle of coexistence is a “must have” and any U.S. CBDC design should deliver on this requirement.</p> <p>We note that the BIS, through projects such as Project Dunbar, is actively investigating technical means of ensuring connectivity between CBDC platforms.</p> <p>We would note that technical means of interoperation are not the same as agreement on the governance layer which would need to sit at the top of any such system. Such a governance layer, which would likely consist of agreements or understandings, as well as protocols, among system operators, would seem to need to be robust to growing geopolitical stresses, including the possibility of war among member states.</p>
Would new technology or technical standards be needed?	<p>It is likely that the central bank would need to promulgate technical standards to which the intermediaries would be expected to adhere, as well as to maintain and publish all APIs and data schemata needed by the system as a whole.</p> <p>Interoperability of CBDC internationally would further require development of a broader Common Domain Model or similar data architecture, building on the ISO 20022 standard, so that similar concepts in particular CBDCs could be readily mapped and translated (where not identically expressed).</p>
21. How might future technological innovations affect design and policy choices related to CBDC?	<p>Any CBDC system will need to be adaptable to emerging security threats and technological change, including fast-developing quantum computing.⁴⁸</p> <p>The Fed will need to keep aware of design choices by other economies pursuing CBDCs and consider the extent to which they could positively or negatively impact the interoperability of its own design choices, should it pursue a U.S. CBDC.</p>
22. Are there additional design principles that should be considered?	No comment.
Are there tradeoffs around any of the identified design principles, especially in trying to achieve the potential benefits of a CBDC?	In our view, the main tradeoff is between financial stability and usability of the CBDC. As discussed, many mitigants to financial stability risk breaking the “singleness” of the CBDC and opening basis with cash on the one hand and with private money such as commercial bank deposits and stablecoins on the other.

⁴⁷ Group of Seven (G7) (2021), [G7 Public Policy Principles for Retail CBDC](#), 14 October.

⁴⁸ House of Lords (2022), [CBDCs - A solution in search of a problem](#), p. 5.

The International Monetary Fund (IMF) has also identified in its report on CBDC that there is a potential policy trade-off between limiting competition with bank deposits and ensuring an effective transmission mechanism of monetary policy.⁴⁹

The G7 has identified some of the other main tradeoffs.⁵⁰ It identified four key trade-offs, being:

- **Cyber security vs system performance, utility and adoption:** Cyber resilience and system security is fundamental to trust and confidence – a system at risk of breach will not be used. But any requirements may have knock-on implications for system performance (speed, range of functions including the potential applications of programmability). This, in turn, may impact CBDC adoption and utility, particularly in how far such CBDCs can support innovation.
- **Operational resilience vs diversity and competition:** CBDC will be critical infrastructure, so operational resilience is of utmost importance. But compliance requirements to deliver this resilience may risk excluding smaller firms with fewer resources from participating and may limit diversity and competition.
- **Reducing illicit finance vs privacy and inclusion:** CBDC systems might enable enhanced transparency and rigorous standards of documentation and verification which are not possible with cash. This could help reduce illicit finance and ensure sanctions compliance. But this could have implications for users' privacy and the ability of those without documentation to access the CBDC system.⁵¹
- **Privacy vs diversity in business models and financial inclusion:** Strong standards of privacy support inclusion by giving confidence to use CBDC. But strict restrictions on data use could serve to reduce the range of possible business models in a CBDC system, and increase costs to users, which could deter use or encourage the use of less private alternatives.

⁴⁹ IMF (2022), [Behind the Scenes of Central Bank Digital Currency](#), February 9.

⁵⁰ Group of Seven (G7) (2021), [G7 Public Policy Principles for Retail CBDC](#), 14 October.

⁵¹ The IMF has also identified that anonymity can be used for illicit purposes and can undermine AML/CFT measures. Anonymity, therefore, poses a policy trade-off—the more anonymity, the larger the risk for illicit use. See IMF (2022), *op. cit.*