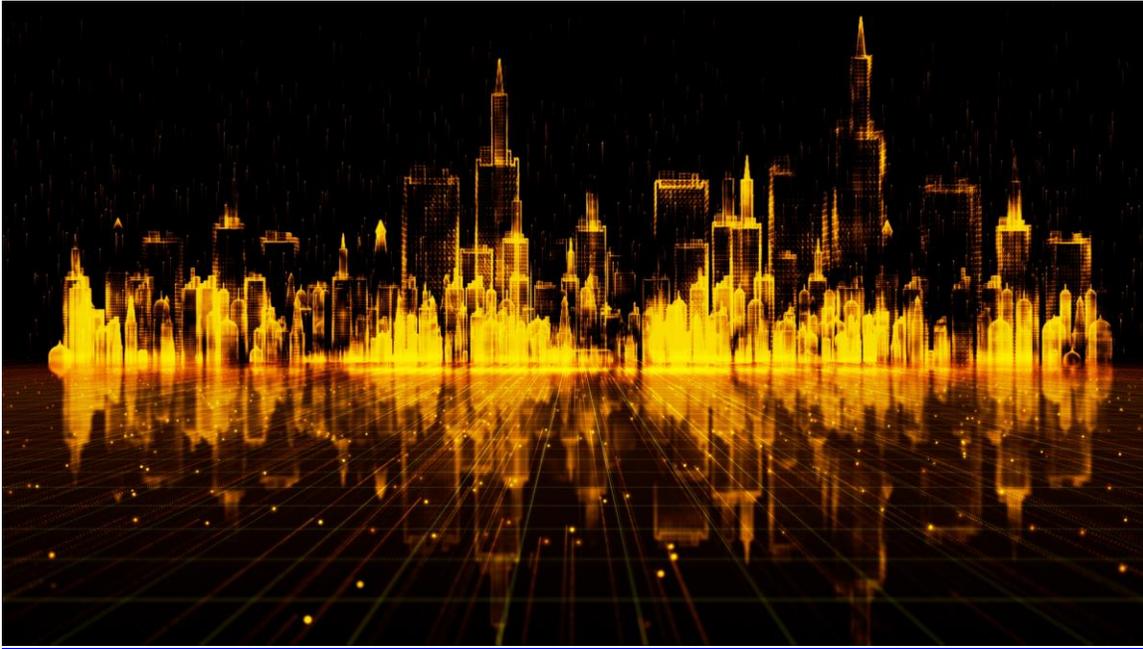


Basel iii Compliance Professionals Association (BiiiCPA)
 1200 G Street NW Suite 800 Washington DC 20005-6705 USA
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Basel iii News, November 2022

Dear members and friends,

The BIS Innovation Hub and the Hong Kong Monetary Authority have completed a retail *central bank digital currency (CBDC)* technology prototype.



Aurum is a full-stack (front-end and back-end) CBDC system comprising a wholesale interbank system and a retail e-wallet system. The aim was to bring to life two very different types of tokens: intermediated CBDC and stablecoins backed by CBDC in the interbank system.

The latter is unique in the study of CBDC to date. Privacy, safety and flexibility are core to the system.

The system is accompanied by technical manuals totalling over 250 pages that, together with the source code, are made accessible to all BIS member central banks on BIS Open Tech to help catalyse and inspire the global quest for the most suitable retail CBDC architecture.

In the era of digitisation, central banks stand before **a choice**: does retail central bank money need to go digital and, if so, how?

Jointly embarking on the challenge to design a full-stack central bank digital currency (CBDC) system, the Bank for International Settlements (BIS) Innovation Hub Hong Kong Centre and the Hong Kong Monetary Authority (HKMA) dubbed the project “Aurum”, the Latin word for gold, reflecting our starting premise that digital currency issued under the auspices of a central bank must be as robust and trustworthy as gold.



► Project Aurum

A Prototype for Two-tier Central Bank Digital Currency (CBDC)

October 2022

Through the creation of a technology stack comprised of:

- (1) a wholesale interbank system in which the wholesale CBDC (wCBDC) is issued to banks for onward distribution to retail users, and
- (2) a retail e-wallet system in which the retail CBDC (rCBDC) circulates among retail users, we set a goal to bring to life two very different types of retail tokens:
 - (a) intermediated CBDC, also referred to herein as CBDC-tokens, and
 - (b) CBDC-backed stablecoins, or in short, stablecoins.

Given the complexity of the endeavour, the project was executed in partnership with the Hong Kong Applied Science and Technology Research Institute (ASTRI).

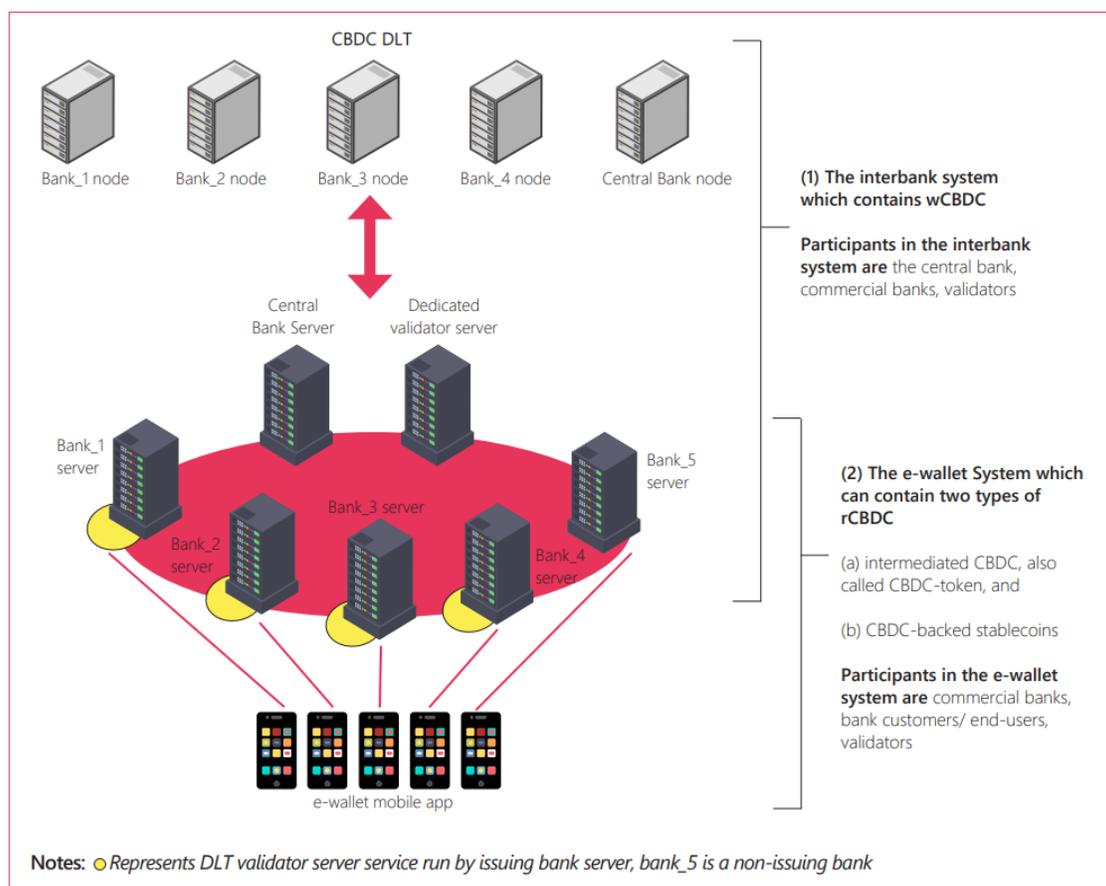
We are glad to report that after a year of development, the prototype system was successfully completed.

The present report provides an overview of the Aurum technology architecture. It is presented at a more technical level, supplemented by user interface visualisations, and should best be read in conjunction with the three e-HKD papers, as well as with the extensive body of foundational research issued by the BIS.

The Aurum system is accompanied by technical manuals totalling over 250 pages that, together with the source code, are made accessible to all BIS central bank members on BIS Open Tech to serve as a public good that furthers the study of rCBDC architectures.

The Aurum prototype also provides a solid basis for furthering the exploration and testing of e-HKD design in Hong Kong. Against this backdrop, we have no doubt that the Aurum prototype will catalyse and inspire the global quest for the most suitable rCBDC architecture.

Figure 6: High-level architecture of Aurum



To learn more: <https://www.bis.org/publ/othp57.htm>

<https://www.bis.org/publ/othp57.pdf>

Project Tourbillon

Launched by the BIS Innovation Hub's Swiss Centre, explores how to improve cyber resiliency, scalability and privacy in a prototype Central Bank Digital Currency (CBDC).



Central banks have identified cyber resiliency, scalability and privacy as core features of CBDCs. You may visit:

https://www.bis.org/publ/othp33_summary.pdf



However, designing them involves complex trade-offs between these three elements. For example, higher resiliency against cyber-attacks, especially from quantum computers, requires additional cryptography, which can slow down payment processing. Privacy must be weighed against the need to counter money laundering, terrorism financing and other illicit payments.

What is Tourbillon?

01	Prototype CBDC	Relevant for wholesale and retail CBDC Uses latest cryptography and CBDC design
02	Cyber resiliency	Experiments with latest post-quantum cryptography
03	Scalability	Linearly scalable system resources Verifies scalability with realistic parameters
04	Privacy	Privacy for payment sender Enables regulatory and compliance checks

Source: BIS Innovation Hub

Project Tourbillon aims to reconcile these trade-offs by combining proven technologies such as blind signatures and mix networks with the latest

research on cryptography and CBDC design suggested by researchers David Chaum and Thomas Moser. You may visit:

https://chaum.com/wp-content/uploads/2022/11/eCash_2.0_9-7-22-.pdf

eCash 2.0

Inalienably private and
quantum-resistant
to counterfeiting

Abstract: The digital cash introduced here provides better privacy than paper cash while protecting society against criminal use far better than paper money ever could. In particular, it provides each holder, though their payments are anonymous, with the ability to allow irrefutable tracing of any of their payments—and this ability is “inalienable” in that it simply cannot be given or taken away. This improved control by persons over the privacy of their own payments further allows the adoption of privacy where it might otherwise be blocked by regulation. Without such inalienability, moreover, it is believed that payment privacy intended for particular persons may be taken from them, by malware for instance, and used to protect the privacy of aggregated payments made by others. The supply of currency is completely controlled by its issuer, and the currency is provably protected against counterfeiting even by a quantum computer. Optionally, a blockchain, or individual customer choice of public blockchain, can bring the advantages of such chains, including transparency of the total amount of unspent digital cash outstanding. The design builds on several well-established cryptographic protocols, like public-key digital blind signatures and mix networks, as well as some new cryptographic techniques of its own. Its improved privacy and quantum resistance, when combined with its Visa- or PayPal-like scalability, make it an ideal candidate for central bank digital currency (CBDC).

Introduction

Most central banks are currently exploring the issuance of central bank digital currencies (CBDCs), and a recent BIS survey on the topic found

Cyber resiliency supports safe and effective digital payments infrastructures. The project achieves this by experimenting with the strongest known type of quantum-resistant cryptography.

Scalability accommodates the potential for high transaction volumes. Tourbillon achieves this by using an architecture that is compatible with, but not based on, distributed ledger technology. By making each transaction separate, the system resources scale linearly. The project seeks to verify the linear scalability of the design with realistic parameters.

Privacy is an important user requirement but at the same raises issues with regards to countering illicit activities. Tourbillon resolves this by providing privacy for the payment sender but not for the recipient. Regulatory and compliance checks will continue to apply.

The conclusions of this project will be relevant for both wholesale and retail CBDC systems. The goal is to finish the prototype by mid-2023.

“ Digital central bank money can make payments better and more inclusive. Yet delivering a CBDC involves difficult trade-offs between cyber resilience, scalability and user privacy. Project Tourbillon will build and test a prototype that reconciles these trade-offs and pushes central banks' technological frontier. ”

Morten Bech, Head of the BIS Innovation Hub Swiss Centre

“ Many central banks are researching CBDCs in the context of the digital asset transformation. I am proud to be a co-author with David Chaum on the eCash 2.0 paper, which is serving as the basis for this project. ”

Thomas Moser, Alternate Member of the Governing Board at the Swiss National Bank

“ I am thrilled to see these important advances in technology being tested out so that there is no doubt that privacy, including the more advanced type introduced here, can co-exist with the strongest type of quantum resistance and truly practical performance. This provides a better level of privacy than cash, with additional guarantees that the privacy cannot be taken from the end user. ”

David Chaum, inventor of eCash and creator of xx network

To read more:

<https://www.bis.org/about/bisih/topics/cbdc/tourbillon.htm>

Project Mariana: CBDCs in automated market makers



Decentralised finance (DeFi) employs public blockchain networks and smart contracts to build open, transparent, composable and non-custodial financial protocols.

One of the main activities in DeFi is the decentralised exchange of tokenised assets via so-called automated market makers (AMMs).

These are a kind of smart contract that uses liquidity pools to transfer digital assets automatically, as opposed to the traditional process of matching buyers and sellers and seeking consent for each operation.

As DeFi and its applications have the potential to become systemically important parts of the financial ecosystem, central banks need to understand their impact for cross-border payments.

Project Mariana investigates the use of AMMs to automate foreign exchange markets and settlement, potentially improving cross-border payments.

AMM protocols that combine pooled liquidity with innovative algorithms to determine the prices between two or more tokenised assets could form the basis for a new generation of financial infrastructures facilitating the cross-border exchange of CBDCs.

Thus, the project provides significant contributions to the G20 priority of making cross-border payments faster, cheaper and more transparent.

Project Mariana is a joint project between the Switzerland, Singapore, and Eurosystem BIS Innovation Hub Centres, the Bank of France, the Monetary Authority of Singapore and the Swiss National Bank.

The project explores the use of AMMs for the cross-border exchange of hypothetical Swiss franc, euro and Singapore dollar wholesale CBDCs between financial institutions to settle foreign exchange trades in financial markets.

The project has three main objectives:

- (i) explore the design and application of AMMs for wCBDCs;
- (ii) investigate if a supra-regional network could work as an efficient and trusted hub for cross-border settlement; and

(iii) research wCBDC governance models within that network.

To read more: <https://www.bis.org/about/bisih/topics/cbdc/mariana.htm>

BIS and central banks of France, Singapore and Switzerland to explore cross-border CBDC trading and settlement using DeFi protocols

- Project Mariana will use DeFi protocols to automate foreign exchange markets and settlement.
- Automated market makers can become the basis for new generation of financial infrastructure.
- Exploration on cross-border exchange of wholesale CBDCs is the first to involve three Hub centres.

The BIS Innovation Hub is launching a new project around central bank digital currencies (CBDCs) and Decentralised Finance (DeFi) protocols as part of its 2022 work programme.

Project Mariana explores automated market makers (AMM) for the cross-border exchange of hypothetical Swiss franc, euro and Singapore dollar wholesale CBDCs. It will seek to examine the potential between financial institutions to settle foreign exchange trades in financial markets.

The project involves the Eurosystem, Singapore and Switzerland BIS Innovation Hub Centres together with the Bank of France, Monetary Authority of Singapore and Swiss National Bank. The aim is to deliver a proof of concept by mid-2023.

Project Mariana uses DeFi protocols to automate foreign exchange markets and settlement, potentially improving cross-border payments (and supporting a priority of the Group of 20).

Today, DeFi built on public blockchains uses smart contract protocols to automate markets for crypto and digital assets. AMM protocols combine pooled liquidity with innovative algorithms to determine the prices between two or more tokenised assets. In the future, similar AMM protocols could form the basis for a new generation of financial infrastructures facilitating the cross-border exchange of CBDCs.

"This pioneering project pushes our CBDC research into innovative frontiers, incorporating some of the promising ideas of the DeFi ecosystem" said Cecilia Skingsley, Head of the BIS Innovation Hub. "Mariana also

marks the first collaboration across Innovation Hub Centres; expect to see more in the future," she added.

To read more: <https://www.bis.org/press/p221102.htm>

Irving Fisher Committee on Central Bank Statistics, IFC Bulletin No 57 [Machine learning in central banking](#)



On 18–22 October 2021, the Irving Fisher Committee on Central Bank Statistics (IFC) and the Bank of Italy co-organised, with the support of the European Central Bank (ECB) and the South African Reserve Bank (SARB), a workshop on “Data science in central banking” that focused on machine learning (ML) applications.

This event was an opportunity to take stock of how central banks are deploying ML across a variety of use cases. It also illustrated the importance of these new techniques in improving the efficiency and effectiveness of their related operations, including by increasing their availability to deal with larger and new sources of information in a more automatised way.

Indeed, the workshop underlined the diversity and maturity of ML approaches already developed and used by central banks. This reflects their potential and usefulness for central banks in dealing with the increasingly complex environment in which they operate.

To start with, the new techniques can help gather more and better information, which is key for central banks that rely heavily on data. ML can help respond to this demand by enhancing the data quality, eg dealing with outliers, addressing the problems posed by missing values, limited frequency and/or timeliness, and by providing richer contextual insights.

In addition, a key issue for central banks is to make sense of the wealth of data available to derive useful insights on specific economic and financial situations. This needs to happen in a reasonably fast and largely automated fashion, considering the constantly changing environment.

Coping with the often exponential growth of data and associated complexity of the statistical analysis is a challenge for central bank statisticians.

Fortunately, ML can greatly help central banks in this context by facilitating the modelling of economic and financial problems and supporting the related statistical exercises.

In turn, the insights gained can effectively back the conduct of evidencebased central bank policies.

This is obviously the case regarding monetary stability, not least in terms of better understanding the drivers of monetary policy decisions that can be provided by ML.

Similarly, applying ML in supotech can be instrumental in helping financial supervisors to perform their oversight tasks, including identifying and tackling micro-level fragilities and other emerging threats such as climate-related financial risks.

Turning to the macroprudential perspective, central banks can benefit from the increased use of ML to interpret information from various, often unrelated, data sources to assess system-wide vulnerabilities and their evolution over time.

Moreover, the new techniques can support other tasks that are also relevant from a financial stability perspective, including the functioning of the payment system, financial inclusion, consumer protection, anti-money laundering and the secure printing of money.

At a more practical level, the workshop provided useful benchmarking, feedback and training on ML models for the participants. Several lessons and observations are worth noting for those in charge of deploying ML-based tools in their central banks.

First, there is a wealth of alternative information sources that have barely been tapped by central banks and which can provide new, useful insights if explored with ML techniques.

The ultimate goal is that policymakers have at their disposal better quality, timelier and interpretable data when taking decisions, especially in uncertain times such as the Covid-19 pandemic.

Second, complementarity is essential: ML methods can provide additional insights to traditional approaches but have to be blended with other types of exercises as well as with strong business expertise.

Third, there are benefits to calibrating many ML tools, not just one, since combining different approaches can provide better results with usually limited additional effort.

Particular emphasis needs to be placed on avoiding ML model overfitting, eg through cross-validation.

Fourth, there is merit in following a pragmatic and gradual approach when implementing the new tools.

A considerably varied set of ML methods can be considered, and it is important to carefully assess them before actual deployment, with due consideration of the available skill set and computing environment.

Fifth, having more data is often better than increasing the sophistication of the ML model.

Sixth, while ML can be instrumental in dealing with complexity, there is also a risk of developing black box solutions that would compound the challenges faced by users as their functionality is rarely intuitive.

The focus should therefore be on the interpretability of the results obtained and on addressing well defined use cases.

Lastly, ML exploratory work has only started, and substantial staff and IT investment as well as business adjustments will continue to be needed to make the most of the new techniques, computing equipment and data.

Addressing these issues will require further modifications in central banks' current operational processes – eg in developing software (“DevOps”) and putting ML algorithms into production (“MLOps”) – and collaboration models – with close cooperation between core IT experts, data scientists and business specialists.

It also puts a premium on the IFC's mission to promote cooperation between central banks through the sharing of national use cases and to draw relevant lessons from the experiences observed outside the public community.

To read more: <https://www.bis.org/ifc/publ/ifcb57.pdf>

The U.S. Dollar and Central Bank Digital Currencies

Governor Christopher J. Waller, Board of Governors of the Federal Reserve System, at "Digital Currencies and National Security Tradeoffs," a symposium presented by the Harvard National Security Journal, Cambridge, Massachusetts.



Thank you, Professor Jackson, and thank you to the Harvard National Security Journal for the invitation to speak at this symposium.

As the payment system continues to evolve rapidly and the volume of digital assets continues to grow, it is critical to ensure that we keep both the benefits and risks of digital assets in the policy conversation, including the implications for America's role in the global economy and its place in the world.

My speech today focuses on exactly this issue and on an aspect of the digital asset world that is now the center of domestic and international attention—central bank digital currencies (CBDCs) and how they relate to the substantial international role of the U.S. dollar.

In January 2022, the Federal Reserve Board published a discussion paper on CBDCs to foster a broad and transparent public dialogue, including the potential benefits and risks of a U.S. CBDC.

To date, no decisions have been made by the Board on whether to move forward with a CBDC. But my views are well known.

As I have said before, I am highly skeptical of whether there is a compelling need for the Fed to create a digital currency.

I am not a national security expert. But one area where economics, CBDCs, and national security dovetail is the role of the dollar.

Advocates for creating a U.S. CBDC often assert how it is important to the long-term status of the dollar, particularly if other major jurisdictions adopt a CBDC. I disagree. As I will discuss, the underlying reasons for why the dollar is the dominant currency have little to do with technology, and I believe the introduction of a CBDC would not affect those underlying reasons.

I offer this view, again, in the spirit of dialogue, knowing how important these issues are, and I am very happy to engage in vigorous debate regarding my view. I remain open to the arguments advanced by others in this space.

The Role of the U.S. Dollar

After World War II and the creation of the Bretton Woods system, the U.S. dollar served as the central currency for the international monetary system.

Other countries agreed to keep the exchange value of their currencies fixed to the dollar, and eventually, countries came to settle international balances in dollars. That role has continued long after the Bretton Woods system dissolved.

By any measure, the dollar is the dominant global currency—for funding markets, foreign exchange transactions, and invoicing. It also is the world's predominant reserve currency.

In terms of the dollar's reserve currency status, 60 percent of disclosed official foreign reserves are held in dollars, far surpassing the shares of other currencies, with the majority of these dollar reserves held in safe and liquid U.S. Treasury securities.

Even in a world of largely floating exchange rates, many countries either implicitly or explicitly anchor their currencies to the dollar; together, these countries account for about half of world gross domestic product.

The dollar is by far the dominant currency for international trade. Apart from intra-European trade, dollar invoicing is used in more than three-fourths of global trade, including 96 percent of trade in the Americas.

Approximately 60 percent of international and foreign currency liabilities—international banking loans and deposits as well as international debt securities—are denominated in dollars.

And the dollar remains the single most widely used currency in foreign exchange transactions. Why does this matter to the United States?

As indicated in the Board's CBDC discussion paper, the dollar's international role lowers transaction and borrowing costs for U.S. households, businesses, and government.

It widens the pool of creditors and investors for U.S. investments. It may insulate the U.S. economy from shocks from abroad.

It also allows the United States to influence standards for the global monetary system.

The dollar's role doesn't only benefit the United States. The dollar serves as a safe, stable, and dependable form of money around the world. It serves as a reliable common denominator for global trade and a dependable settlement instrument for cross-border payments.

In the process, it reduces the cost of transferring capital and smooths the world of global payments, including for households and businesses outside of America.

For example, consider the dollar's role in foreign exchange markets. To make a foreign exchange transaction between two lightly traded currencies, it is often less expensive to trade the first currency with the dollar, and then to trade the dollar with the second currency, rather than to trade the two currencies directly.

The factors driving the dollar's role as a reserve currency are well researched and well demonstrated, including the depth and liquidity of U.S. financial markets, the size and openness of the U.S. economy, and international trust in U.S. institutions and the rule of law.

We must keep these factors in mind in any debate regarding the long-term importance of the dollar.

To read more:

<https://www.federalreserve.gov/newsevents/speech/waller20221014a.htm>

International Regulation of Crypto-asset Activities - Questions for consultation



The FSB is inviting comments on its proposed set of recommendations and on the questions set out below. Responses should be sent to fsb@fsb.org by 15 December 2022. Responses will be published on the FSB's website unless respondents expressly request otherwise.

General

1. Are the FSB's proposals sufficiently comprehensive and do they cover all crypto-asset activities that pose or potentially pose risks to financial stability?
2. Do you agree that the requirements set out in the CA Recommendations should apply to any type of crypto-asset activities, including stablecoins, whereas certain activities, in particular those undertaken by GSC, need to be subject to additional requirements?
3. Is the distinction between GSC and other types of crypto-assets sufficiently clear or should the FSB adopt a more granular categorisation of crypto-assets (if so, please explain)?
4. Do the CA Recommendations and the GSC Recommendations each address the relevant regulatory gaps and challenges that warrant multinational responses?
5. Are there any financial stability issues that remain unaddressed that should be covered in the recommendations?

Crypto-assets and markets (CA Recommendations)

6. Does **the report** accurately characterise the functions and activities within the crypto-ecosystem that pose or may pose financial stability risk? What, if any, functions, or activities are missing or should be assessed differently?

(The report: <https://www.fsb.org/wp-content/uploads/P111022-2.pdf>)



International Regulation of Crypto-asset Activities

A proposed framework – questions for consultation

7. Do you agree with the analysis of activity patterns and the associated potential risks?
8. Have the regulatory, supervisory and oversight issues and challenges as relate to financial stability been identified accurately? Are there other issues that warrant consideration at the international level?
9. Do you agree with the differentiated requirements on crypto-asset issuers and service providers in the proposed recommendations on risk management, data management and disclosure?
10. Should there be a more granular differentiation within the recommendations between different types of intermediaries or service providers in light of the risks they pose? If so, please explain.

Global stablecoins (GSC Recommendations)

11. Does the **report** provide an accurate analysis of recent market developments and existing stablecoins? What, if anything, is missing in the analysis or should be assessed differently?



Review of the FSB High-level Recommendations of the Regulation, Supervision and Oversight of “Global Stablecoin” Arrangements

Consultative report



(The report: <https://www.fsb.org/wp-content/uploads/P111022-4.pdf>)

12. Are there other changes or additions to the recommendations that should be considered?
13. Do you have comments on the key design considerations for cross-border cooperation and information sharing arrangements presented in Annex 2? Should Annex 2 be specific to GSCs, or could it be also applicable to crypto-asset activities other than GSCs?
14. Does the proposed template for common disclosure of reserve assets in Annex 3 identify the relevant information that needs to be disclosed to users and stakeholders?
15. Do you have comments on the elements that could be used to determine whether a stablecoin qualifies as a GSC presented in Annex 4?

To read more:

<https://www.fsb.org/2022/10/international-regulation-of-crypto-asset-activities-questions-for-consultation/>

Results of the Bank of England 2021-22 central counterparty supervisory stress-test published

Bank of England

The Bank of England has published the results of its first public supervisory stress-test of UK central counterparties (CCPs).

The exercise took place over 2021-22 with the clearing services of all UK CCPs, ICE Clear Europe Limited, LCH Limited, and LME Clear Limited, in scope.

The exercise assessed the credit and liquidity resilience of these CCPs under a severe market stress scenario and the simultaneous default of selected clearing member groups.

It was exploratory in nature, aiming to identify potential vulnerabilities or gaps in resilience, rather than testing CCPs against a pass-fail threshold.

The severe market stress scenario consisted of shocks to the prices of a wide range of products cleared by the UK CCPs, and was designed to be at the limits of historical observations.

The findings showed that the UK CCPs were resilient to this market stress scenario and the simultaneous default of the two clearing member groups who, in defaulting, create the largest losses or most negative liquidity balances. While results vary across CCPs, no CCP experienced full depletion of prefunded financial resources or a negative liquidity balance.

The exercise also included a reverse stress test where CCPs are subjected to combinations of increasingly severe assumptions to identify what might fully deplete their prefunded and non-prefunded resources.

The findings will now be used in conjunction with feedback to the Bank's Discussion Paper on CCP supervisory stress-testing to help further develop and refine the Bank's CCP supervisory stress-testing regime. The Bank intends to publish a final framework document for CCP supervisory stress-testing in the course of 2023.

Sir Jon Cunliffe, Deputy Governor for Financial Stability, said:

“The conclusion of the Bank's first public CCP stress-test marks a major milestone in the development in the supervision and regulation of CCPs. While the stress test was exploratory, with no pass-fail assessments, the results are evidence of the overall resilience of the UK CCPs.

We will engage these CCPs on our findings, which will help the Bank target its supervision and inform CCPs' approach to risk management. This stress test supports our commitment, in line with the UK's status as a global financial centre, to regulating CCPs with due transparency and in line with international best practice.”

Executive summary

In October 2021, the Bank announced the launch of the 2021–22 Supervisory Stress Test (SST) of UK Central Counterparties (CCPs) (the 2021–22 CCP SST).

This exercise is the Bank's first public CCP SST, and follows the Bank's (non-public) pilot CCP SST exercise in 2019, the publication of the Bank's Discussion Paper on Supervisory Stress Testing of Central Counterparties, and the Bank's participation in the European Securities and Markets Authority's (ESMA) EU-wide CCP Stress-Test exercises.

Purpose and design

This exercise is exploratory in nature. It aims to identify potential vulnerabilities and gaps in CCP resilience, rather than testing CCPs against particular pass-fail thresholds. The findings will be used to support and inform the Bank's supervisory and regulatory activities.

The lessons from running this exercise will also be used to support the continued development of the Bank's framework for CCP supervisory stress testing, in conjunction with the feedback received on the Bank's Discussion Paper on Supervisory Stress Testing of Central Counterparties.

The 2021–22 CCP SST exercise was launched in October 2021. It explores the individual and system-wide credit and liquidity resilience of the three UK CCPs (ICE Clear Europe Limited (ICEU), LCH Limited (LCH), and LME Clear Limited (LMEC)) and each of their Clearing Services.

In particular, the impact on CCPs' financial and liquidity resources is examined under a combined baseline severe financial market stress scenario (the 'Baseline Market Stress Scenario') plus the simultaneous default of selected Clearing Member groups (including in their capacity as service providers). The selected Clearing Member default scenarios include, but are not limited to, the default of the Cover-2 population at each CCP Clearing Service.

The exercise also explores the impacts of this Baseline Market Stress Scenario and the default of certain groups of Clearing Members on the non-defaulting Clearing Member and client populations at the UK CCPs.

The Baseline Market Stress Scenario consists of shocks to the prices of a wide range of products cleared by the UK CCPs. It is calibrated to be broadly equivalent in overall severity to the worst historical market stress scenario for each UK CCP Clearing Service (as at the time of the launch of this exercise in October 2021).

This scenario does not – and cannot – cover all possible sizes and combinations of market price shocks to which CCPs could be exposed. For example, the scenario is not focused on large hypothetical shocks that go far beyond historical limits in specifically selected asset classes or products.

In addition, sensitivity analysis and reverse stress-testing techniques are used to test CCP resilience against increasingly conservative assumptions. Reverse stress testing is used to evaluate CCPs' resilience to increasingly challenging combinations of assumptions that are intentionally well beyond historical precedence and regulatory requirements, and in combination are extremely severe.

This includes an examination of CCP resilience against additional market stress scenarios that overall are more severe than those historically observed and contain individual market shocks greater than historically observed for a variety of products.

To read more:

<https://www.bankofengland.co.uk/news/2022/october/results-of-the-boe-2021-22-central-counterparty-supervisory-stress-test-published>

<https://www.bankofengland.co.uk/stress-testing/2022/ccp-supervisory-stress-test-results-2021-22>

Meeting Investor Demand for High Quality ESG Data

SEC Commissioner Jaime Lizárraga. the Future of ESG Data 2022, London, United Kingdom



Thank you, Peter, for that kind introduction. It is a pleasure to be here with you today. I look forward to learning from today's discussion, and appreciate the opportunity to participate in this important exchange of ideas and perspectives.

It's an exciting time for ESG. You are working in a dynamic, fast-growing sector of our capital markets that is grabbing headlines and continuing to generate enormous interest among investors and the general public.

You're directly involved with some of the most consequential scientific challenges of our time – from climate change, to artificial intelligence, to big data analytics.

As active participants in this space, your contributions and innovative ideas can enrich the conversation.

I'd like to share with you a snapshot of what's happening in the U.S. ESG has become a lively topic that has moved beyond strictly financial circles. Several states are making headlines for their push against ESG investing, while other states are proactive in their ESG investments.

Against this backdrop, the SEC issued three rule proposals that would each help facilitate comparable ESG disclosures and focus on ensuring statements made to investors are not false or misleading:

- Enhanced climate risk disclosures by issuers.
- Enhanced ESG disclosures by registered funds and investment advisers.
- Modernized rules governing ESG-related fund names.

The common thread that binds these proposals and that guides my work as Commissioner is ensuring investors receive the information they need to make the most informed investment decisions.

We are in the process of reviewing thousands of comments submitted. None of us yet know what the final versions of these rules will look like. We continue to meet with stakeholders and to receive robust public feedback that informs our economic analysis.

To me, the SEC’s disclosure framework is most effective when investors benefit from objective, quantitative metrics that provide the highest degree of comparability. I believe the proposed rules are a significant step forward in getting investors this information. I look forward to working to ensure that the final rules are as robust as possible.

The SEC proposed these rules prior to my swearing in. Had I been a Commissioner at the time, I would have voted in favor of them.

Which brings me to the first of the SEC’s disclosure initiatives, on climate. Last year, for the first time, the U.S. Financial Stability Oversight Council identified climate change as an “emerging and increasing threat to U.S. financial stability.”

A recent climate risk assessment from the Office of Management and Budget found that the U.S. government will need to spend an additional \$25 billion to \$128 billion annually for policies to mitigate climate-related financial risks. And, an analysis by the Network for Greening the Financial System estimated that, under current policy pathways, climate change could reduce U.S. GDP by 3 to 10 percent by the end of this century.

It is thus not surprising that there’s been strong investor demand for climate-related disclosures. Investors with \$130 trillion in assets under management have requested that companies disclose their climate risks. And 5,000-plus signatories to the UN Principles for Responsible Investment—a group with a core goal of helping investors protect their portfolios from climate-related risks—manage more than \$121 trillion as of June 2022.

To read more:

<https://www.sec.gov/news/speech/lizarraga-speech-meeting-investor-de-mand-high-quality-esg-data>

Between mounting risks and financial innovation - the fintech ecosystem at a crossroads

Denis Beau, First Deputy Governor of the Bank of France, at the FinTech R:Evolution 2022, organised by France FinTech, Paris.



Ladies and gentlemen,

First of all, I would like to thank the France Fintech association and its President Alain Clot for inviting me to participate again in this important event for the French fintech ecosystem.

Since we met last year, the macroeconomic environment has changed radically. The effects of Covid are continuing to disrupt global supply chains; to that, the Ukraine conflict has added major economic disruption.

This potentially “stagflationary” shock is affecting the fintech sector, not just via its short-term impact on household and corporate demand, but also via the risk of a tightening of financing conditions.

Against this backdrop, beyond the observation that the macroeconomic outlook is darkening, I would first like to talk briefly about the mounting risks to our innovation ecosystem, before going on to highlight how the Banque de France and ACPR can help to tackle them.

I- An environment marked by mounting risks

Regarding the rise in risks, I would first like to underline that one of the corollaries of the digitalisation of the financial sector is an exacerbation of **cyber risk**. This is currently the **number one** operational risk to financial players, even more so in the context of Russia’s war in Ukraine. Cyber risk can jeopardise the stability of the entire financial system; it also tends to undermine confidence in innovation, which is one of the cornerstones of our future economic development.

Second, the profound reconfiguration of value chains in the financial sector is raising two potential risks. First, the risk of excessive fragmentation. Fragmentation can of course be beneficial as it creates competition – the rise of fintechs is the best proof of this – but it can also be a source of inefficiency if it leads to a lack of interoperability, especially in

payment solutions and market infrastructures. The second risk is that of a loss of sovereignty, if essential functions are taken out of the hands of European players and supervisors. I'm thinking here in particular of data, its usage and location.

Third, the relative youth and indeed immaturity of ecosystems can be a source of instability – which we need to make sure is limited for the overall financial system.

In this respect, certain economic models appear to be incompatible with the promises they make, as well as with customer expectations. I would like here to remind you of and reiterate the warnings issued by the ACPR in July this year regarding “mini-loans” and instalment payments, and especially on the critical need to clearly inform customers, verify their solvency and respect usury rates.

As part of our financial stability mandate, we at the Banque de France and ACPR pay particularly close attention to the exposure of certain business models to an economic turnaround, their dependency on third-party service providers, and any operational weaknesses that might emerge: in a dynamic and creative ecosystem, weak links and contagion effects pose a real risk to the stability of the financial system.

Within the crypto-asset and DeFi ecosystem, the collapse of the Terra-Luna system and its destabilising knock-on effects, is of course a prime example of this, even if it occurred in an ecosystem that was disconnected from real finance, and had no impact on the financial system.

II- How can the Banque de France and ACPR help to tackle these risks?

In response to these mounting risks, the Banque de France and ACPR can help the ecosystem to develop along the right path.

A. Future regulation

First, by contributing to the development of regulation that is adapted to the transformations under way. Regulation reduces uncertainty and puts all competitors on a level playing field, so that they are not exposed, for example, to competition from “rogue” players. Of course, it is possible that certain regulations may unduly hinder innovation. This is why I would like to remind you here of the importance of dialogue between authorities and innovators in order to identify real use cases and strike a fair balance between, on the one hand, the goals of protecting customers and financial stability, and on the other, operational realities.

On the European regulatory front, several important projects are under way or about to be launched. I would like to mention two.

1/ **First, open finance.** In the ongoing discussions in Europe on this issue, I draw at least two lessons from the directives on payment services: first, the quality of the data provided via APIs is crucial; second, the issue of paying for access to data should not be taboo.

Open data can be a formidable innovation driver, for the benefit of consumers: the ecosystem needs to be ready to seize this opportunity.

With this in mind, I encourage you to come and talk to the French supervisors (the ACPR and AMF), to properly identify real use cases and thereby ensure the future regulatory framework is as relevant as possible.

2/ **The second important project: decentralised finance or DeFi.** A first milestone has been reached with the Markets in Crypto-Assets (MiCA) regulation.

This will de facto impose rules on certain DeFi players, via its section on stablecoins. MiCA also lays some of the groundwork for the next phase, which is the broader regulation of decentralised finance in general.

Here again, we will contribute to reflections at the European level, drawing on our dialogue with the French ecosystem. There are a number of questions that we need to respond to collectively:

- Within this ecosystem, which economic models add value for the real economy?
- How can we make decentralised finance accessible on a broader scale to the general public, under conditions that genuinely guarantee trust?
- What regulatory approach should we adopt to each of the different “modules” of decentralised finance, and how can we regulate operations that are sometimes completely decentralised?

Some of the problems are complex, but we need to find solutions together because decentralised finance will not develop without a regulatory framework.

B. Our achievements, our action on innovation

Of course, adapting the regulatory framework does not, on its own, respond to all the challenges. At the Banque de France and ACPR, we firmly believe that, to help meet them, we also need to play an active part in innovation.

1/ This is why innovation is at the heart of our corporate strategy, with the creation of Le Lab, our innovation hub. Its mission is both to catalyse in-house innovations by supporting all our central bank functions, and to

develop links with our ecosystems, be this the world of research or the economic world.

Our target, and I want to stress this point, is to work more and more with you, through calls for contributions or thematic hackathons. In a few weeks, the Banque de France will host a dedicated platform for these challenges.

2/ For us, being a player in innovation also means supporting the tokenisation of securities by offering the safest and most liquid settlement asset directly on the blockchain, and improving cross-border and cross-currency payments.

This is the objective of our experiments on a wholesale CBDC. It is what we tested with our first nine experiments conducted in 2021, which we are now going to take further with three new experiments in 2022.

This is why we are working within the Eurosystem to support the experiments that will be conducted from 2023 onwards as part of the European Pilot Regime, by providing payment solutions in tokenised central bank money.

We are also participating actively in the Eurosystem's work on a potential retail CBDC, also called the "digital euro", which would be used by the general public in everyday payments.

3/ I shall finish with an example of the application of our experimentation approach in the field of supervision. This method also allows the ACPR to respond to several challenges: encourage supervised players to take advantage of new technologies to ensure their compliance and the security of the financial system, and prepare the supervision of the future.

It is with this in mind that in March we launched an experiment in collaborative methods to combat money laundering and terrorist-financing (AML/CFT). This is a subject that is in the general interest, the solution to which can be collective, as recently estimated by the Financial Action Task Force (FATF).

Which is why the ACPR proposed a method of co-construction to economic players, by organising a Tech Sprint on 13 September this year. Its goal was to examine several different solutions aimed at pooling data while at the same time keeping it confidential. The event was a resounding success: 12 teams made up of 23 firms proposed a broad range of innovative techniques.

The ACPR will continue its work with teams of voluntary banks and technical service providers, and will share the findings widely.

It is time for me to conclude now with a simple message. Now that we have reached this crossroads, it is only together that we can find the right path to follow, by sharing our experience and our expertise.

Our commitment on this is clear: to accompany you so that we can together contribute to the vitality and resilience of our economy.

To read more:

<https://www.banque-france.fr/en/intervention/between-mounting-risks-and-financial-innovation-fintech-ecosystem-crossroads>

Progress Report on Climate-Related Disclosures



Executive summary

Work to strengthen the comparability, consistency and decision-usefulness of climate-related financial disclosures has moved forward rapidly over the past year.

A milestone has been the publication in March 2022 by the newly established International Sustainability Standards Board (ISSB) under the IFRS Foundation of two Exposure Draft standards, on general sustainability-related and climate-related disclosures, for public consultation with the aim to issue the final standards by early 2023, subject to feedback.

The timely issuance of a final global baseline climate reporting standard, ready for adoption across jurisdictions, is critical to provide decision-useful information to investors and other stakeholders on climate-related risks and opportunities.

Interoperability between the common global baseline and national and regional jurisdiction-specific requirements is essential.

The ISSB standards aim to establish a common global baseline that is interoperable with jurisdictions' frameworks through a building block approach that will drive more comparability and consistency on common climate disclosures across jurisdictions.

This will help avoid harmful fragmentation and unnecessary costs for preparers of disclosures. It can also ensure that disclosures by different firms are made on a common basis, and that users can compare and aggregate exposures across jurisdictions.

Alongside a global baseline reporting standard on climate, there is a growing recognition of the importance of global assurance standards to drive reliability of disclosures.

The International Auditing and Assurance Standards Board (IAASB) is working to develop a new sustainability-related assurance framework and the International Ethics Standards Board for Accountants (IESBA) is developing sustainability-related ethics and independence standards, in both cases supported by IOSCO.

The FSB's July 2021 Report on Promoting Climate-Related Disclosures had reported that, already, a large majority of FSB jurisdictions had set or planned to set requirements, guidance or expectations for both financial institutions and non-financial corporates.

Since then most FSB jurisdictions have taken additional actions. In particular, several emerging market and developing economies (EMDEs) have taken active steps to incorporate climate-related information in mainstream disclosures.

More broadly, the Task Force on Climate-related Financial Disclosures (TCFD) Recommendations continue to be referenced as the common basis in most FSB jurisdictions, and many jurisdictions have set out specific metrics or guidance that provide additional detail beyond the recommendations.

Steps to improve the reliability of climate-related disclosures by firms are still at an early stage in most jurisdictions.

Looking ahead to the finalisation of ISSB standards, more than half of FSB jurisdictions state that they already have or are putting in place structures and processes to bring the ISSB standards into local requirements, once finalised.

Authorities note a number of challenges to be addressed in the implementation of the ISSB climate standard, such as consistency and comparability of disclosures across jurisdictions and across firms, data availability, proportionality, transition arrangements, and materiality.

This report highlights the findings of the 2022 TCFD Status Report that reports encouraging further progress in companies' disclosure practices across a wide range of types of firms including asset managers and asset owners as well as non-financial companies.

The percentage of companies disclosing information aligned with TCFD Recommendations and the amount of climate-relevant information in such disclosures has increased.

Even with this continued progress, the TCFD remains concerned that not enough companies are disclosing decisionuseful climate-related financial information, which may hinder investors, lenders, and insurance underwriters' efforts to appropriately assess and price climate-related risks.

During the period until the ISSB global baseline standard is agreed and the implementation of that standard across jurisdictions begins to be monitored, there is a continuing need to maintain momentum by monitoring and reporting on progress in firms' climate disclosures.

The FSB therefore requests TCFD to prepare another progress report on firms' disclosures in 2023.

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To read more: <https://www.fsb.org/wp-content/uploads/P131022-2.pdf>

Advances in digital currency experimentation

Michelle Neal, Executive Vice President and Head of Markets of the Federal Reserve Bank of New York, at the Singapore FinTech Festival 2022, Singapore.



Good afternoon. It is a pleasure to be here with you at the Singapore Fintech Festival. It is exciting to be a part of this gathering of industry professionals, policy leaders, and investors to discuss key developments in the fintech industry.

Digital innovation has the potential to benefit the financial system writ large by reducing transaction costs, increasing competition, and broadening access to a wider range of participants.

However, harnessing the full potential of financial innovation and related technologies – especially regarding cross-border settlements and payments – will require collaboration across a range of international partners.

In my remarks today I will discuss the landscape of digital assets and some of the ways that the Federal Reserve System is engaging in research and experimentation that support ongoing innovation.

As always, the views I express today are my own, and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

Digital Assets and the Federal Reserve

We are all experiencing the incredible pace of growth and change within the digital asset domain, which encompasses a range of opportunities and risks. The market capitalization of digital assets reached \$3 trillion in November 2021.

The rapid growth of digital assets presents opportunities to both reinforce the role of central banks and regulatory bodies in stewardship of the global financial system and be positioned at the technological frontier.

However, this growth is not without risks: in May, the crash of Terra, an unbacked algorithmic stablecoin, and the subsequent wave of insolvencies, wiped out over \$600 billion of investor and consumer funds.

Currently, the total cryptoasset market capitalization rests around \$1 trillion, a 66 percent decline from its November 2021 peak.

When I consider the ways in which digital assets impact the mission of the Federal Reserve, I see several channels – including monetary policy and the provision of an elastic currency, the preservation of financial stability, and the smooth operation of the payments system.

Regarding monetary policy and currency, in January, the Federal Reserve released a discussion paper that considers a future where digital assets may play a large role in our financial system, and in particular, establishes some broad principles and outlines some of the pros and cons of a central bank digital currency, or CBDC.

While at present the Federal Reserve has neither issued a CBDC nor plans to do so imminently, ongoing research improves our understanding of the risks and opportunities inherent to a CBDC.

Central bank money – a liability of the Federal Reserve – is the bedrock of the U.S. financial system. It is held by depository institutions as bank reserves or by individuals in the form of paper currency.

Demand for central bank money is driven by many fundamental factors, including the settlement of both retail and wholesale transactions and its role as a store of value.

In addition to these factors, which are likely familiar to any of you who have studied monetary economics, demand for the U.S. dollar is also driven by international factors owing to the role of the dollar in the global economy.

In fact, while precise estimates are challenging to come by, available data suggests that more than half of all dollars in circulation may be held outside the United States.

As a result, innovation related to money provided by the Federal Reserve will have impacts that extend far beyond U.S. borders.

A U.S. CBDC – a digital form of the U.S. dollar that is a direct liability of the Federal Reserve – has the potential to offer significant benefits. It could enable a payment system that is more efficient, provide a foundation for further technological innovation, and facilitate faster cross-border transactions. It could promote financial inclusion and equity by enabling access for a broad set of consumers and foster economic growth and stability.

In order to fully realize benefits such as these, a digital dollar would need to be thoughtfully designed and implemented.

A CBDC would need to protect against cyber and operational risks, safeguard the privacy of sensitive data, and minimize risks of illicit financial transactions.

Additionally, one of the most important aspects in our deliberations is that any form of a CBDC in the future would need to be intermediated.

This means that the private sector would need to act as intermediaries in that system, and a direct account approach would not be contemplated.

While the Federal Reserve has made no decision on whether or how to issue a CBDC, we are actively conducting technical investigations into both retail and wholesale CBDC design.

Project Hamilton, which is a partnership between the Federal Reserve Bank of Boston and MIT, has experimented with potential approaches to a digital dollar, with work focused on retail uses and payment channels.

In the use case they explored, the Hamilton team was able to demonstrate the potential for usage at scale, which would be a key design element of a retail CBDC.

As a complement, and in line with the New York Fed's unique role in the Federal Reserve System with wholesale payments in both domestic payments and foreign exchange, the New York Innovation Center is researching technical aspects related to wholesale CBDCs.

In addition to CBDC, the broader digital assets landscape, which includes stablecoins – cryptoassets that are backed by assets such as U.S. Treasury securities to stabilize their value – and unbacked cryptoassets, has grown significantly in recent years, and continues to evolve quickly.

While many digital-asset-related activities fall within existing U.S. laws and regulations, the rapid evolution and adoption of digital assets highlight unique risks that warrant a more comprehensive and aligned approach by agencies across the U.S. government with different regulatory remits.

The Federal Reserve, as an independent central bank, is only one part of the puzzle. Many of these other stakeholders across the U.S. government, such as the Treasury Department, market regulators, and federal banking supervisors, will be involved in providing guidance and guardrails to the financial system as the universe of digital assets continues to evolve.

In the current environment of rapid technological change, it is crucial that innovation proceeds responsibly in order to safeguard the stability of the financial system.

To that end, on March 9 of this year, President Biden issued an Executive Order on Ensuring Responsible Development of Digital Assets.

This executive order outlined the first whole-of-government approach to addressing the risks and harnessing the potential benefits of digital assets and their underlying technology.

In response, over the past six months, agencies across the government have worked together to develop frameworks and policy recommendations that advance the six key priorities identified in the executive order: consumer and investor protection; promoting financial stability; countering illicit finance; U.S. leadership in the global financial system and economic competitiveness; financial inclusion; and responsible innovation.

The executive order will be a catalyst to increased coordination among U.S. regulators.

Last month, as part of the approach outlined in the executive order, the Financial Stability Oversight Council, or FSOC, released a report that considers the financial stability risks of crypto assets.

In the report, the FSOC noted that financial stability risks of crypto assets are drawn mainly from interconnections with the traditional financial system.

The report identified vulnerabilities unique to crypto assets and recommended approaches to regulation and supervision in the future, highlighting the importance of ongoing research to improve our understanding of risks and opportunities, and planning to ensure we can continue to achieve our mission including supporting safety and stability in this evolving domain.

The Fed also collaborates with other U.S. regulators on the topic of stability risks arising from digital assets, and coordinates with international authorities through forums including the Bank for International Settlements (BIS) and the Financial Stability Board.

Finally, a third key dimension through which innovation – both broadly and in digital assets specifically – impacts the mission of the Federal Reserve is in relation to the payments system.

On a daily basis, roughly \$4 trillion of transactions are settled through FedWire, the real-time gross settlement (RTGS) service offered by the Federal Reserve.

FedNow, targeted for release in mid-2023, represents a key innovation to modernize the future of payments. This new cloud-based RTGS system will

enable consumers and businesses to send payments instantly through their depository institutions on a 24-hour, 365-days-a-year basis.

Of course, payments do not always stay within national borders. The Federal Reserve is an active participant in international efforts regarding payment systems via the Committee on Payments and Markets Infrastructures (CPMI) at the BIS.

The CMPI collects best practices and issues recommendations for managing payments, clearing, and settlement risk across financial market utilities.

At present, a high-priority area of study for the CMPI is coordinating the development of 24/365 RTGS systems – like FedNow – globally.

Innovation in cross-border settlements will reduce liquidity outlays and settlement risks, leading in turn to cheaper cross-border payments.

The New York Innovation Center and Project Cedar

In the remainder of my remarks, I'd like to focus on an example of ongoing innovation research that is currently underway at the Federal Reserve Bank of New York.

To further enhance our ability to contribute to financial innovation globally, the New York Innovation Center, or NYIC, was established in 2021.

The NYIC bridges the worlds of finance, technology, and innovation. Through technical research, experimentation, and prototyping, our team generates insights into high-value central-bank-related opportunities, enabling stakeholders and the central bank community to enhance the functioning of the global financial system.

Project Cedar is the inaugural project of the NYIC and represents the first stage of the NYIC's research efforts into CBDCs, the NYIC's biggest focus area in 2022.

A goal of the NYIC is to progress CBDC research with an objective of defining a technical design for a CBDC addressing the wholesale market in the Federal Reserve context.

After taking a close look at the foreign exchange space with economists, traders, and market analysts, the NYIC team zeroed in on settlement of foreign exchange spot transactions as a first area of investigation.

FX spot transactions are critical in the context of cross-border payments, and serve as a building block for longer, more complex transactions.

Traditionally, settlement generally takes two days after a transaction, which leaves some room for improvement.

By demonstrating improvements in settlement of FX spot transactions, the NYIC could address settlement time and risk, which would have implications to speed and access for the broader cross-border market.

We are not the first to address this topic, of course, but the NYIC wanted to investigate it from the perspective of the Federal Reserve, through the lens of a wholesale CBDC.

The NYIC developed a hypothesis that there is a distributed ledger technology solution for wholesale FX settlement that results in instant and atomic settlement in which a wholesale CBDC is the settlement asset.

NYIC then built a working prototype and tested it.

Results from the experiment indicated that settlement could occur in fewer than 10 seconds on average and that horizontal scaling was possible.

This indicates that a modular ecosystem of ledgers has the potential for continued scalability, and that distributed ledger technology could enable settlement times well below the current industry standard of two days, with the added guarantee of atomic settlement.

Conclusion

Innovations in digital assets have the potential to impact financial markets in many fundamental ways; it is essential to understand these developments and the impact they may have on the mission of the Federal Reserve. Through ongoing investment in research, experimentation, and collaboration, leveraging the full potential of digital assets is possible. I look forward to building on the successes of Project Cedar and similar efforts.

To read more: <https://www.bis.org/review/r221104c.htm>

Privacy Policy



We're updating our Privacy Policy with effect from 2 December 2022.

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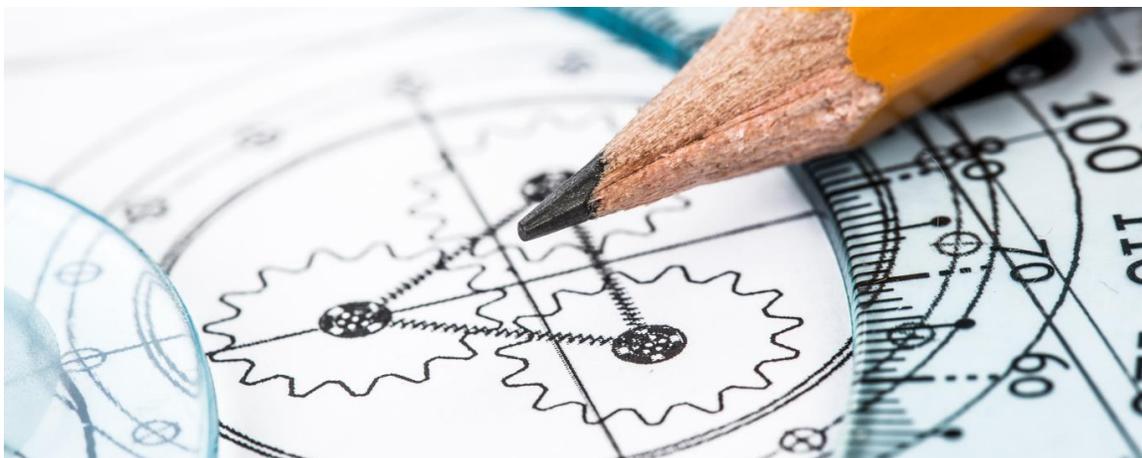
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Basel iii Compliance Professionals Association (BiiiCPA)



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