THE PAYPERS

Central Bank Digital Currencies for Dummies

A Quick Guide into CBDCs

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- Currency Research
- Dutch Central Bank
- eCurrency
- Innopay
- Mastercard
- Sögur
- The Paypers

A collection of educational articles and interviews on CBDC written between July and November 2020

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Table of Contents

The Paypers

Central Bank Digital Currency (CBDC) – Building Together the Future of Money (and Humanity), Part 1

About Mirela Ciobanu: Mirela Ciobanu is a Senior Editor at The Paypers and has been actively involved in drafting industry reports, carrying out interviews, and writing about innovation in payments and fintech. She is passionate about finding the latest news on AI, crypto, blockchain, DeFi and she is an active advocate of the need to keep our online data/presence protected. Mirela has a bachelor's degree in English language and holds a master's degree in Marketing. She can be reached at mirelac@thepaypers.com or via **Linkedin**.

Mirela Ciobanu | Senior Editor | The Paypers

> *'We can do better than build back the pre-pandemic world – we can build forward to a world that is more resilient, sustainable, and inclusive. We must seize this new Bretton Woods moment'* ***Kristalina Georgieva, IMF Managing Director, Washington, DC on 15th October 2020.***

The international debate on central bank digital currency (CBDC) is gaining momentum. And as a result, the world has been sieged by CBDC initiatives stemming from all the parts of the world, that aim to digitalise payments, encourage financial inclusion, improve cross border payments, support fiscal transfer, etc. But what is triggering discussions around this topic and why is it important today? **Some industry experts say** that **Central Bank Digital Currencies are coming**, and whoever is in denial mood is missing the big and important picture. 'This is going to be the biggest overhaul of the global financial system since Bretton Woods'. Raoul Pal, Founder/ CEO - Global Macro Investor and Real Vision Group.

We don't know yet what will happen, if digital currencies will break through (get adopted and, if they will, when it will happen) but for sure the way we pay today will be massively disrupted in the upcoming period.

Is it Covid-19, payments digitalisation, time to change, Libra, or all?

At the beginning of 2020 no one anticipated how much our **life would change due to Covid-19** pandemic and how sticking together to fight it in any possible way has become so important. In March 2020, the public attention focused on CBDCs projects amid fears that the **Covid-19 virus might live on banknotes and coins**.

But, going beyond the impetuous need to avoid the virus and protect the most vulnerable ones (health wise), it has become **crucial that nations collaborate to give a helping hand also to those economically vulnerable** (people left without a job, SMEs, citizens in underdeveloped/developing countries, immigrants, and many more).

As such, **governments and central banks around the world have unleashed unprecedented fiscal and monetary stimulus** and other support for economies floored by the coronavirus pandemic. But because many of these people are unbanked, it took longer for the financial aid to reach its destination. At a national level, **the use of CBDC would enable governments to directly stimulate the economy** down to every citizen through 'helicopter money'. CBDC could also **influence in a positive way cross-border payment**, as once CBDC are interoperable, payments can become cheaper, faster, and more secure; it could be just like sending an email.

In recent years there have been already some improvements in local and cross-border payments due to **payments digitalisation**. As such, the use of cash has started to decline, with many users and merchants **embracing digital and innovative ways to transact like cryptocurrencies, tokens, and stablecoins**. →

For instance, **PayPal joined the crypto market**, enabling users to buy, sell, and hold Bitcoin and other virtual coins using Venmo not only to encourage global use of virtual coins, but also to prepare its network for new digital currencies that may be developed by central banks and corporations.

The announcement that sparked the whole (finance) world and CBDC discussions is by far **Facebook's initiative Libra**. Connected to the social media network, Libra has the potential to reach billions of people solving problems like financial inclusion, digital identity, enabling cheaper payments, and more. Facebook has the technology and pockets to develop a global infrastructure that could also be used for digital token exchange, complementing and accelerating the already existing infrastructures of Bitcoin and Ethereum. And of course, CBDC can use this new infrastructure. But it is also a threat to monetary policies, causing financial instability in some parts of the world were people would start adopting the new stablecoin – Libra - instead of their local currency. Not to mention concerns over data privacy related to Facebook's way of 'keeping our data safe'.

Digital currency is a political issue as much as a technological issue. At a macro level, the **on-going geo-political currency wars** have also led national central banks to consider the use of CBDC in international transactions and investments to bypass US' banking system SWIFT and reduce their dependence on the US dollar. Furthermore, CBDC could be an important adoption element in the **evolution of world reserve currency**.

In August 2019, **Mark Carney, the Governor of the Bank of England** at that time, gave a speech in which he stressed the dominance of the US dollar in today's global monetary system and the need to 'change the game'. **The US dollar's global hegemony** *'made sense after World War II, when the US accounted for 28% of global exports. Now, the figure is just 8.8%, according to the IMF. Yet the dollar still dominates international trade'*.

In his speech, Carney went on to talk about the idea of a **Synthetic Hegemonic Currency (SHC)**, a digital currency/token, backed by other currencies. An SHC could dampen the domineering influence of the US dollar on global trade, and widespread use of the SHC in international trade and finance would imply that the currencies that compose its basket could gradually be seen as reliable reserve assets, encouraging emerging markets to diversify their holdings of safe assets away from the dollar.

All in all, the economic downturn triggered by Covid-19, fiscal stimulus by governments worldwide, Libra's introduction, crypto-technologies maturing, citizens seeking refuge for their savings, financial inclusion drive, and of course the on-going geo-political currency wars **might propel CBDC into reality**.

De Nederlandsche Bank

Central Bank Digital Currencies for Dummies – A Quick Guide into CBDCs from the Dutch Central Bank

About Harro Boven: Harro Boven is a Policy Advisor at the Dutch central bank. This article is based on the Occasional Study (DNB, 2020) that he co-authored with Peter Wierts.

Harro Boven | Policy Advisor | De Nederlandsche Bank

> ***Harro Boven**, Policy Advisor at the **Dutch Central Bank:** 'The introduction of CBDC would involve a structural reform of the monetary system'.*

Facebook's Libra announcement in June 2019 has shaken up the finance industry, forcing regulators around the world to take a closer look at it. This has sped up analyses and projects around Central Bank Digital Currencies (CBDCs). Moreover, public attention focused once more on CBDCs projects amid fears that the Covid-19 virus might live on banknotes and coins.

Still, many experts are sceptical when it comes to the viability of these projects.

Most notable examples of initiatives come from China's CBDC, known as Digital Currency Electronic Payment, or DCEP, and Sweden's e-Krona.

It was reported that **China's four largest state-owned commercial banks** have been developing and testing a wallet application that will be used to store, send, and receive the DCEP. The test phase is ongoing in four cities in China with selected commercial shops such as McDonald's, Starbucks, and Subway as well as government entities to participate in the trial.

Back in December 2019, Swedish financial authorities announced they had embarked on a pilot scheme to test the feasibility of an e-krona, in partnership with Accenture. The pilot project will run until the end of February 2021. Still, there could be more tests: 'There is currently no decision on issuing an e-krona, how an e-krona might be designed or what technology might be used', **according to Riksbank economist Gabriel Söderberg**.

Still, central banks from countries such as Italy, Switzerland, Ecuador, South Korea have **cancelled their CBDCs projects**.

Before we delve deeply into the topic, The Paypers has invited Harro Boven, Policy Advisor at the Dutch Central Bank, to present Central Bank Digital Currencies, in general.

Why now the topic of Central Bank Digital Currencies (CBDC)?

The international debate on central bank digital currency has gained momentum. First, the announcement of the Libra initiative has made policy makers aware of the risks for monetary policy, financial stability, and competition that could emerge if such a crypto would become successful on a large scale. Second, the availability and use of a public form of money issued by the central bank has come under pressure due to the decline in use of cash, particularly in Scandinavian countries, Canada, and The Netherlands.

What is CBDC?

In the context of this article, CBDC is regarded as general-purpose central bank digital currency, which has three elements: 1) digital currency; 2) issued by the central bank; and 3) universally accessible. It is digital currency and therefore only exists electronically. →

It is central bank money, therefore a public form of money and thus is issued directly by the central bank. General purpose CBDC assumes general access for households and businesses.

CBDC is a third form of central bank currency in addition to cash and reserve accounts. Only banks, suppliers of market infrastructure, and governments may hold reserve accounts with the central bank. In effect, they already have direct access to central bank money. Those balances cannot be held by households or businesses and therefore do not constitute general purpose central bank digital currency. Cash does constitute central bank currency for general use, but is not digital.

Why might CBDC be useful?

There are a number of possible objectives for CBDC. Three potential rationales for CBDC are highlighted here.

CBDC could play a role in retaining public money for general use. The increasing adoption of user-friendly digital money reduces the demand for cash, currently the only public form of money. That could create a future scenario in which citizens only have access to private money, putting pressure on the one-to-one fungibility between public and private euros.

CBDC could also act as a back-up for the critical infrastructure in the payment system. Cash currently has a function as back-up during failures in non-cash payments. This function could come under pressure due to the declining use and acceptance of cash. If cash use continues to decrease, CBDC could serve as a parallel back-up and its role could gradually become more prominent. The infrastructure for CBDC then has to be sufficiently separate from the current infrastructure to prevent both becoming disrupted.

In addition, CBDC could be designed to cater for the preferences of the public, related to privacy and the use of data for public objectives. Some citizens and businesses value privacy when paying, as it is the case with cash. Central banks could restrict the use of data generated by CBDC transactions to just that information required for public duties such as compliance with anti-money laundering legislation.

Who should be involved in providing the CBDC system?

The introduction of CBDC must provide a fit with the structure of the financial system, with the public and private sector each focusing on their own comparative advantages within their own mandate. The Eurosystem has exclusive competence to conduct the monetary policy in the euro area. The introduction of CBDC in the Eurozone will thus fall under the tasks and responsibilities of the European System of Central Banks (ESCB).

CBDC can be designed as a locally stored digital value, but in practice it will probably be an account with the central bank. Locally stored CBDC, for example on a smart card, known as value-based CBDC comes with serious drawbacks due to the risk of hacks, loss, challenges in preventing money-laundering, lack of centralised control of the system, and lack of an identity. This explains why almost all digital payment systems used on a large scale work with credit balance in an account.

An account-based CBDC infrastructure would focus on a ledger with balances and transactions in CBDC (Bank of England, 2020). The central bank manages the infrastructure and determines standards, security, and solidity. Intermediaries would be given access to the core ledger through Application Programming Interfaces (APIs). Using this interface, intermediaries could develop user-friendly applications with which consumers and businesses can make CBDC payments. Payment functions such as identification, authentication, and validation could also be performed by the private sector.

In our reference design, transactions from CBDC accounts may only be initiated by regulated operators so that the role of the central bank as the bank of professional operators is guaranteed. This access mechanism is comparable with access to a payment account by third party operators as currently regulated in the revised Payment Services Directive (PSD2). This allows the private sector to compete for convenience and drive the demand for CBDC. ➔

A design of CBDC that has little overlap with the infrastructure for payments in commercial bank money is most valuable as a fall-back option. But this option is also the most expensive. This requires greater understanding of the costs for such a parallel payment infrastructure.

What is the potential impact of CBDC on financial stability?

CBDC could accelerate a bank run. The demand for a public and secure form of money generally increases in times of uncertainty for precautionary reasons. During a financial crisis, that substitution may happen too fast and consequently banks see their funding slip away and the risks to stability increase. Such a substitution effect also plays a role with cash but with CBDC it could be much faster because of the absence of physical restrictions on withdrawing and storing. CBDC could affect the funding base of banks by substituting bank deposits, which could increase banks' dependence on market funding. A stronger dependence on market funding makes banks more vulnerable to unexpected changes in market conditions. There are degrees to this effect, of course, e.g. it could be mitigated in case banks replace deposits with long-term market funding or central bank funding.

CBDC could affect commercial banks' potential to cross-sell profitable products if customers were to switch to CBDC entirely. Banks use the payment account as an anchor to offer and grant higher-margin products such as mortgages and personal loans. Customers switching to CBDC entirely could make cross-selling harder for banks, which in turn could put pressure on their profitability. Structural pressure on profitability could ultimately jeopardise the banks' prudential obligations.

To mitigate these risks, CBDC should be designed in such a way that it encourages substitution up to the publicly desired amount of CBDC and discourages substitution above that. Control measures can be devised through quantity and price. The central bank may charge an unattractive fee if the amount of CBDC per person, household or business exceeds a particular level. Under normal circumstances this could keep levels of CBDC within reasonable limits. More far-reaching control measures - such as an absolute ceiling - may be needed in order to dampen demand spikes in times of crisis. Because behavioural responses are hard to predict and the effect may be considerable, it makes sense to consider a gradual introduction of CBDC.

Conclusion

The introduction of CBDC would involve a structural reform of the monetary system. The debate should therefore be seen on a long horizon. However, in a society where digital technology is becoming the norm, it is key that a public form of money remains available. CBDC could play this role.

References

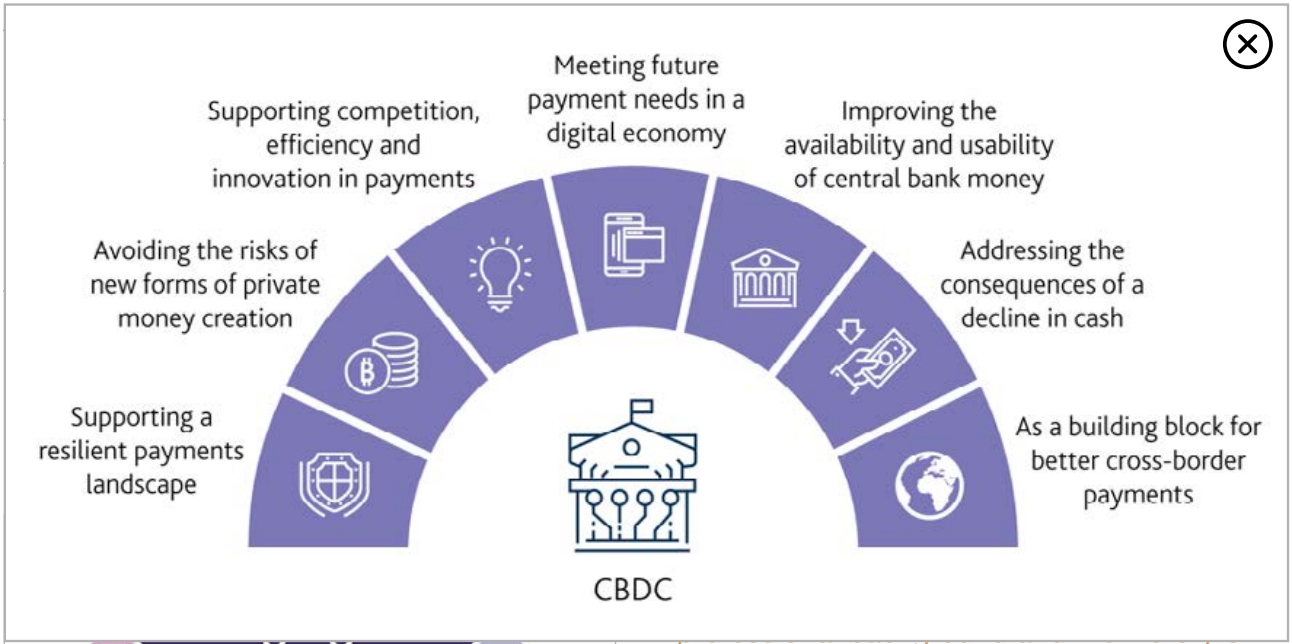
Bank of England (2020), 'Central Bank Digital Currency. Opportunities, challenges and design', Bank of England Discussion Paper. **https://www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper**.

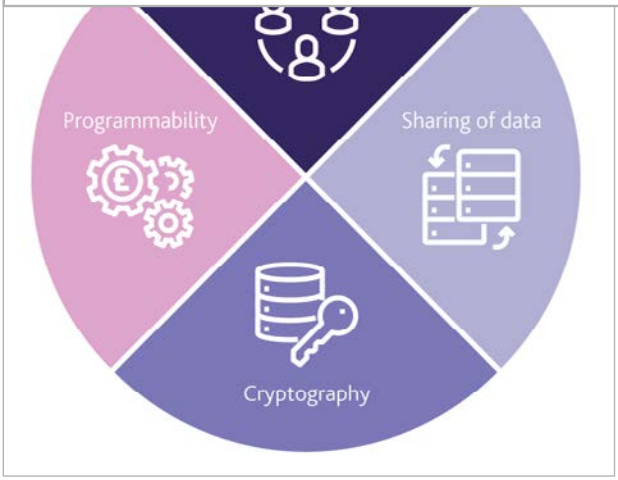
De Nederlandsche Bank (2020), 'Central Bank Digital Currency: Objectives, Preconditions and Design Choices', DNB Occasional Study. https://www.dnb.nl/en/news/news-and-archive dnbulletin-2020/dnb388309.jsp

eCurrency

eCurrency Brings CBDC Benefits to All in Ecosystem Utilising Digital Symmetric Core Currency Cryptography (DSC3) Technology

> *'Choices around the technology used for CBDC are important as they would have a significant impact on the extent to which CBDC meets our overall objectives',* ***The Bank of England.***





Overall, in their discussion paper around the topic of CBDC, **Bank of England admits** 'there is no inherent reason it could not be built using more conventional centralised technology', and that 'there are trade-offs between different design principles, so we would have to strike the right balance in order to achieve the Bank's policy objectives'.

eCurrency?

eCurrency is a research, development and operational company founded in 2011 with the mission to enable central banks to issue and distribute digital fiat currency.

eCurrency was founded by a team of seasoned technology and business professionals with a track record of success. The team of highly skilled scientists, policy experts, and expert technologists has met the exact standards and requirements, set through ongoing and direct consultation with central banks around the world, for the issuance and distribution of CBDC.

eCurrency designed, built, and piloted the Digital Symmetric Core Currency Cryptography (DSC3) technology to enable central banks to issue, control, and supervise digital fiat currency that is then distributed through commercial banks and payment service providers. We are active globally in providing thought leadership on the motivation, design, and policy issues driving CBDCs through extensive engagement with central banks and participation in international forums and standards bodies. →

Lars Arvidsson
Chief Commercial Officer
eCurrency

I have more than 30 years of experience in the ICT industry with extensive international experience developing and building sustainable markets in the financial infrastructure area. Currently, I am the Chief Commercial Officer at eCurrency and I am in charge of all commercial and businesses worldwide for eCurrency.

During many years of experience, I held several senior executive roles as VP and Head of Global Sales & Partnering for Ericsson Financial Services, VP & Head of Strategic Outsourcing IBM Nordic, Head of Global Sales and Alliances Sun Microsystems, and General Manager ICL Retail Scandinavia. Also, I have participated as a member of committee and taskforce in several strategic global initiatives with World Bank, ITU and Bill & Melinda Gate Foundation to drive and support initiatives in the area of interoperability and sustainability in the financial ecosystem.

When it comes to customers, you serve central and commercial banks. How do you cater for each segment?

The company was formed to create a highly secured technology specifically for CBDC. The eCurrency solution was designed for the sole purpose of enabling central banks to issue and manage digital fiat currency based on their strategy and policy. The process and technology have been designed and applied such that central banks can release the vast benefits of digital payments.

Commercial banks have also deployed the solution to provide security to their customers with the built-in safeguards. The deployment of the technology in commercial environments has provided the opportunity for the country's central bank to monitor and study the solution. The commercial deployments have acted as a proving ground for the technology. It's also worth mentioning that to drive and be engaged on various location worldwide we need, of course, to engage and partner with talent and state-of-the-art local partners in order to address our customers and target customers' needs and expectations.

Thomas Kudrycki, eCurrency's CTO, ***said in an interview*** *that eCurrency tech was developed in a traditional way, firstly gathering requirements from central banks about what CBDC should look like. Please tell us more about the responses your company got.*

What did eCurrency.net find striking while gathering input from the market?

eCurrency has worked with over thirty central banks over the past several years to gather requirements. The founding team came together to create a solution that enables central banks to issue a secure and efficient digital currency that is legal tender of that land. What was unwavering was that central banks all wanted to preserve the security, transparency, and efficiency of physical currency while safeguarding its citizens' privacy.

What technology could CBDC use?

A purpose-built technology serves best when aiming to comply with the requirements that are being set forth by central banks and regulatory authorities. eCurrency has based its solution on the DSC3 technology, specifically pioneered for the purpose of enabling central banks to issue and manage a secure digital currency with the characteristics of physical currency based on the requirements and policy defined by these institutions and authorities. The solution is also enabled with an open API to secure sustainable interoperability with actors in the financial ecosystem and we, at eCurrency, are strong believers that these components and attributes in our DSC3 technology are essential for the long-term success of our customers and stakeholders in the CBDC marketplace.

What are the benefits of CBDC for end users?

The eCurrency solution ensures that the end user's experience does not change from their current interaction in their use of payment cards, mobile money wallets, etc. The benefit is that the Central Bank issued digital object infuses trust in them by turning the digital values into sovereign-backed currency. →

CBDC is interoperable between all the systems that central banks, commercial banks and credit unions, merchants, e-wallet, and mobile money providers, as well as consumers have become accustomed to using.

What is the impact of successful CBDCs on different parties in the market?

CBDCs provide a broad set of benefits for consumers, businesses, governments, and all stakeholders across the financial ecosystem. The eCurrency solution, enabling secure and efficient central bank issued digital currency, supports opportunities presented by the transition to digital payments including increased business activity, productivity, financial inclusion, and economic growth. Merchants and businesses benefit from cost savings and trust infused in the digital instrument which they are able to transfer to the consumer. Central banks realise their responsibilities as the sole issuers of national currencies, reducing the need to regulate private sector forms of digital value. With eCurrency technology, we provide powerful new policy tools to help governments achieve better outcomes in terms of long-term policy and financial infrastructure capabilities.

Mastercard

How CBDCs Can Operate Seamlessly with Existing Networks – and Why They Should

About Raj Dhamodharan: Raj Dhamodharan is EVP Digital Asset/Blockchain Products & Partnerships. In this role Raj is responsible for managing Mastercard's global strategy, products & partnerships in the blockchain and digital assets space. Previously Raj held various leadership roles in Mastercard including managing global digital partnerships, managing Click to Pay standards and leading Mastercard's digital payment products and Labs group in Asia Pacific.

Raj Dhamodharan | Digital Asset/Blockchain Products & Partnerships | Mastercard

> ***Mastercard's Raj Dhamodharan*** *agrees that CBDCs could work alongside existing schemes such as RTP to enable central banks to focus on CBDC minting and issuance while banks and PSPs focus on payment processing and distribution through existing channels.*

Many believe we are at a moment of an inflection where we face two options for modernising payments. On one path, payment providers have an existing payments infrastructure that moves money efficiently with the potential for far more efficiencies through upgrades to real-time payments, as many countries are pursuing.

On the other path, we have distributed ledger and digital asset technologies that promise to usher in superior experiences for the payments' world. Policymakers and regulators everywhere are exploring central bank digital currencies, or CBDCs, which offer many of the same capabilities as real-time payments – real-time tracking and tracing, immediate settlement and enhanced programmability of money – while offering consumers and businesses a new way to pay. If the two paths remain separate, people could find themselves in a confusing and cumbersome situation where money cannot flow quickly or smoothly – like a consumer who receives a check but has no bank account in which to deposit it.

The good news is that we need not choose. The two options can live in concert with each other, and this will provide the best and most seamless consumer experience. They can be interwoven, leveraging the existing systems and bringing in newly-formed digital assets that provide instant settlement and real-time visibility. The payments community can realise greater customer satisfaction and cost savings and mitigate unnecessary complexity for all ecosystem users. As central banks explore CBDCs use cases — identifying benefit, market impact, and adoption strategies — they must consider how a new monetary instrument will operate and interact with the existing payment infrastructure and payment endpoints. A CBDC operating in a separate ecosystem with new rails and user interfaces will create complexity for users, require significant up-front investment to create ubiquity, and slow down adoption. Instead, CBDCs need to be interchangeable between ecosystems to simplify usage and facilitate mass consumer adoption.

Paying with CBDCs

A direct-to-consumer CBDC, without the participation of existing financial institutions, will struggle with customer experience and protections. But CBDCs that work alongside existing schemes such as real-time payment (RTP) could enable central banks to focus on CBDC minting and issuance while banks and payment service providers (PSPs) focus on payment processing and distribution through existing channels.

In most countries, RTP networks provide a scalable platform that can enable CBDC payment transfers and offer a seamless experience for consumers and businesses. →

To enable a CBDC-initiated payment or credit an account in CBDC, the existing RTP infrastructure can be used with only a few significant upgrades to the scheme, such as 24/7 settlement. Sending and receiving banks and Payment Service Providers could exchange funds via the RTP scheme just as they do today. Once communicated, the transaction is mapped to the appropriate account crediting the consumer in CBDC. Both institutions would settle as they do today.

Reaching the most consumers and businesses is only possible with a currency that can cross a multitude of private networks. Here is how it could work in practice: A person initiates payments at checkout. Transaction information is routed by a payments processor to the card issuer to verify balance and authorise the transaction, finally debiting the appropriate amount from the individual's balance. All this occurs without any changes to the existing infrastructure across the transaction value chain. Loyalty and fraud detection programs continue to run on this mechanism. Clearing and settlement between issuers and acquirers take place as they occur today through a settlement network with no need for upgrades. Depending on the adoption of CBDCs, network participants may settle in commercial bank money or directly in CBDCs.

Central banks can test this out for themselves – **we recently announced a virtual testing environment** with our proprietary permissioned blockchain platform to simulate the issuance, distribution, and exchange of CBDCs between banks, financial service providers and consumers, validating use cases and evaluating interoperability with existing payment rails.

Since our announcement, we have engaged with a dozen central banks, assisting policymakers and regulators to determine which CBDC technology design and use cases might be the most valuable and feasible in market, and evaluate technical build, security and early testing of the design and operations.

Paving a path to success through integration

A CBDC fully integrated with an existing payments infrastructure, leveraging the role of banks and licensed wallet providers, will promote competition and accessibility and will enable CBDCs to leverage continued innovation from the private sector. CBDCs are an exciting tool, but that does not mean they are the right tool to fix every problem – a real-time payment system, for example, may be a better fit. That's why we continue to invest in innovative approaches to payment infrastructure and services, including the use of blockchain. For any payment system, trust is at the heart of what we do and ensuring strong consumer protection, including privacy and security of the consumers' information and transactions is paramount. A level playing field encourages the collaboration among providers that will bring the most innovative products to the market. Interoperability has always been and must continue to be an integral part of the payment ecosystem. It weaves capabilities, networks, and trust together to support the evolution of payment networks. The existing rules and network effects will become integral to the evolving payments landscapes. Technology itself is only a tool – we need open competition and the free market of providers to bring it to people in the smartest and most seamless way possible, particularly in today's fast-changing world.

The Paypers

Central Bank Digital Currency (CBDC) – Building Together the Future of Money (and Humanity), Part 2

Mirela Ciobanu | Senior Editor | The Paypers

So far, there have been many experiments, pilots, and proof of concept initiatives in the sphere of central bank digital currency (CBDC), with everyone holding their breath to see what country will get it rolling out first. Because it has great impact on financial systems and monetary policies, the topic of CBDC is constantly debated and **we expect more proof of concepts/trials to happen in the coming months and more articles and reports coming out**. Let's delve into some CBDC projects that have captured the media attention to learn more about them and analyse whether they stand a chance: **Europe's plan to digitalise the euro, China's national digital currency DCEP** (Digital Currency Electronic Payment, DC/EP), the US' digital Dollar Project, and of course **Facebook's Libra**.

Europe – do we stand a chance?

During a virtual conference, **François Villeroy de Galhau, the Governor of the Banque de France**, made a forceful speech in favour of a digital euro: *'Let me be clear: we cannot allow ourselves to lag behind on CBDC'*.

Over the last decade, **Europe has fallen behind its major competitors**. Payment experts warn that if there won't be any changes any time soon in our fiscal and monetary policy, along with structural reforms, it will be difficult to catch up with the US and China.

The economic decline in Europe started **after the financial crisis** and the associated recession, and it is mainly influenced by factors such as **the current state of education** (**top three Universities in the world are US-based**) which **reduces the prospects for future inventors, financial services** (**none of the five largest financial groups globally** are based in Europe), **low military spending, demographic deterioration, lack of VC/PE funding**. However, the **greatest threat relates to technology** (adopting the next generation of technological advances). Europe has no technology companies on the scale of Apple and Microsoft in the US, or Alibaba and Tencent in China – indeed, **none of the ten largest technology companies globally can be found on the continent**. Plus, Europe must act to avoid a potential situation in which non-European private sector companies such as social networks (e.g. Facebook) or international card networks (e.g. Mastercard) may control a significant proportion of Europe's payments infrastructure.

To regain its competitiveness over the coming ten years, Europe needs to act quickly. A **Deutsche Bank Research – called Imagine 2030** – recommends that the **EU's new leadership should adopt a 'Three Arrows' approach**, based on fiscal and monetary policy, along with structural reforms.

- **The first fiscal arrow** proposes the establishment of a large EU fund for investment used to finance high-quality technology infrastructure;
- **The second arrow** is structural reform, suggesting a re-examination of EU competition policy to allow for greater economies of scale, plus the consolidation of the banking industry;
- **The third arrow** demands for a fundamental reconsideration of the monetary policy.

Referring to the third arrow, the European Central Bank (ECB) has pursued a variety of unconventional policies in recent years **to boost the Euro Area economy. On October 12, 2020, the ECB launched a three-month consultation** and started carrying out a series of experiments on the feasibility of a digital euro. Furthermore, the ECB President Christine Lagarde announced that the **ECB has applied to trademark the term digital euro**, suggesting that the bank is focusing on innovating the payments ecosystem in Europe, aiming to compete with existing means of electronic payments such as digital wallets, online banks, or cryptocurrencies. →

Design and technology costs

The innovative part in CBDC initiatives is played by many aspects. According to a **BIS report**, in a CBDC system, a payment is a transfer of a central bank liability, recorded on a ledger. In designing a CBDC ledger, there are five key factors such as structure, payment authentication, functionality, access, and governance. These key factors influence the ledger design, which could be:

- **Centralised** – requiring an intermediary to manage and transfer the liabilities, making anti-fraud and security features easier to incorporate;
- **Decentralised** – needing no intermediary. It could be developed based on distributed ledger technology and could have the potential to make peer-to-peer and offline payments easier;
- **Combination** – able to be developed but the resulting complexity could create a significant burden on the functioning of a system.

Returning to the point Deutsche Bank researchers made that EU lacks investment funds to finance high-quality technology infrastructure, one fair point to make here is **who will pay for the design of a European CBDC**? In their report, BIS adds that the cost of designing a CBDC ledger could be **recovered from public users**, which would be transparent, but could be a disincentive to adoption. Other options include **charging service providers**, but this would require them to have a viable business model to recover their costs. Or, assigning a public good and/or the seigniorage earned by the central bank that could **reduce or eliminate the need for charges**.

The final decision on who will sponsor for the digital euro, will be based on whether all costs are transparently charged through fees (and whether these are borne by merchants, users or both) or if some subsidisation through public funding, private cross-subsidy, or allowing access to consumer data is permitted.

All in all, these are just consultations, discussions, small experiments, as the ECB will be deciding around mid-2021 whether or not to launch a digital euro, with **officials reportedly saying** that it will take between 18 months and three or four years to see the initiative come to life.

China – no more the new kid on the block

China is on its path to world economic dominance. Without further ado, let's **quote Wikipedia on this**: 'China is the world's largest manufacturing economy and exporter of goods. It is also the world's fastest-growing consumer market and second-largest importer of goods. China is a net importer of services products.'

Traditionally, Chinese households have been saving a lot, but China's younger generation are exhibiting a preference for consuming more and saving less. As such, **China's consumption spending per person has grown by 8% per year**, in the past decade, with the country's share of world consumption spending increasing from 2% in 1980 to 12% in 2018 in dollar terms. That puts China on track to become one of the world's biggest consumer markets. What's more, it could reach or even surpass the size of the US and EU markets.

Untroubled by the uncertainties of 'the new', **Chinese urban population have proved rapid adopters of new technology** such as electronic payments, mobile wallets, IoT, AI, and others. Chinese tech companies Alibaba and Tencent pioneered digital merchant payments and have driven the shift away from cash in the Chinese economy, making China the **world's largest mobile payment market**.

China is a manufacturing and export-driven economy. However, it runs a trade surplus - it sells more to the world than it purchases. Chinese exporters receive US dollars (USD) for their exports but must pay for local expenses and wages in local currency, the Chinese yuan or renminbi (RMB). Due to the huge supply of USD and the demand for yuan, the rate of yuan can rise against the USD. If that happens, Chinese exports become costlier and lose their competitive price advantage in the international market. The Chinese central bank intervenes to avoid this situation, keeping the exchange rates lower through artificial measures. Still, over the last ten years, **Chinese money supply has risen significantly**. There has been an increase in demand for the Chinese currency, which stimulated commercial bank lending and boosted the money supply. Yet, despite all the above, **China remains very much entangled in the dollar standard**.

Could China's digital yuan start a 'horse race'?

To counter fight this (and not only), **the People's Bank of China (PBOC) has begun trialling the digital Yuan**, which is an electronic version of the physical Yuan, that consumers can use with merchants, such as restaurants, supermarkets, gas stations, metro stations, department stores, and other everyday businesses. The official name is **the Digital Currency Electronic Payment system (DCEP)**.

Back in 2019, the PBOC announced that the new Chinese digital currency **will be powered partially by blockchain technology** and will be centrally controlled by the large Chinese bank. The bank adopted a two-tier approach to the roll out of the digital yuan initiative. Initially, it will issue the currency to commercial banks and other institutions, who will then resend it to the public. Then financial institutions will compete during this period to provide the best tech and offer, and the front runner will take the whole market.

In July 2020, Chinese businesses like local ridesharing company **DiDi started DCEP tests** for taxi payments. In October 2020, **Shenzhen's Luohu District distributed the DCEP to 50,000 recipients** through a 'lottery' system. By the time of the announcement, PBOC had processed over three million transactions—worth 1.1 billion yuan as part of its trial of the DCEP.

Reports suggest **the country plans to fully launch the DCEP before the start of the 2022 Winter Olympics** in Beijing.

The main motivations behind the DCEP project are:

- **China's desire to protect its capital borders**, as it fears that newer global payment systems and advanced technology could facilitate illegal cash flows;
- Chinese regulators' **concerns about Libra**;
- China's broader plans to incorporate digital currencies within its economic framework, as it looks **to reduce its reliance on the US dollar**;
- **Internationalisation of the yuan** – as **the digital yuan could form a parallel ecosystem to run alongside SWIFT**, carried around the world by the Belt and Road Initiative.

Internationalisation of the digital yuan

According to David Birch, the principal threat to the role of the dollar as prime currency comes from China (not from Facebook). The perfect testing ground for the internationalisation of the digital yuan is compounded by China's Belt and Road Initiative (BRI) and the massive adoption of Alipay and WeChat wallets by people living in that region. If indeed, the digital yuan will offer speed, convenience, and person-to-person transfers, billions of users might shift from their local currencies to the new digital currency.

From a travelling perspective, though because of Covid-19 this seems far away, the cost-benefits of Chinese tourists using digital yuan when overseas on holiday may well encourage vendors in other countries to accept the digital yuan as a means of payment. →

When it comes to transactional demand for a currency, **efficiency** is a key variable. If the digital yuan and its payments system offer **increased efficiency**, faster settlement, and lower transaction costs with clearing through a central bank, it might surpass the global banking system. Furthermore, **circumventing SWIFT** will provide appeal to some counterparties like Russia, Iran, North Korea, and other countries subject to US sanctions, keen to obviate the SWIFT network for many years. Still, if it were for North Korea to evade sanctions using the digital yuan instead of the global banking system to buy nuclear materials, the internationalisation of the digital yuan does not look that promising.

Therefore, developing digital equivalents of cash/CBDC projects in cross-border payments, is not only a matter of payments digitalisation, but also about world safety and not circumventing law/human rights.

The US digital dollar project

'It's our obligation to understand it well and not wake up one day and realise that the dollar is no longer the world reserve currency because we just missed a technological change', **Federal Reserve Chairman Jerome Powell**.

For the last decades, the US has been a leader in innovation and building systems for the next generation (space programs, developing the Internet, working on quantum computing projects, etc.). Based on the availability of financial instruments denominated in dollars and the depth of the US financial markets, the **US dollar is the most important money in today's global world**.

However, the international use of the dollar has attracted considerable criticism. Some suggest that the US incurs undue benefits, often associated with the notion of '**exorbitant privilege**', which means being the international reserve currency (the notion of exorbitant privilege can be traced back to remarks made by President Charles de Gaulle in 1965). Others see the dollar's popularity as a burden, because its universal use coupled with a large proportion of foreigner-held liabilities in dollars, have caused considerable interdependencies between the US and other countries.

The United States cannot take the US dollar's predominant status in the international financial system for granted and, in line with the digital transformation happening across all industries and the CBDC announcements in various regions/countries, **the Federal Reserve started to ponder over issuing a CBDC**.

Do we need a digital dollar?

On August 13, 2020, the FED published a paper called '**Comparing Means of Payment: What Role for a Central Bank Digital Currency?**' based on research and tests conducted over technologies that might support a CBDC. The paper made some relevant points such as **what problems these currencies actually solve** and if they were to be developed **what added benefits they should bring to the end users** as to be more innovative that **what already the US has in terms of money** and payments (cash and RTGS systems).

Some fair points the paper made were that:

- **Consumers continue to hold Federal Reserve notes** even if cash usage for payment transactions may be declining;
- On a typical day in 2019, **FedACH** - an automated clearinghouse service that supports credit transfers and direct debits, and the **Fedwire Funds and National Settlement Services**, which support wholesale payments, **processed more than USD 3 trillion in transaction value** (compared to the fact that the **Federal Reserve had roughly USD 2.5 trillion** in deposits made by commercial banks in March 2020);
- The FED announced that it **would develop the FedNowsm Service**, a new interbank 24x7x365 real-time gross settlement (RTGS) service with integrated clearing functionality to support instant payments in the United States, to be launched in 2023/2024. →

But then again, **what sparks the development of a CBDC is**:

- **declining cash use in some jurisdictions** – the 2019 Diary of Consumer Payment Choice highlighted that US consumers used cash in 26% of transactions, down from 30% in 2017;
- **technological developments** – Distributed ledger technology (DLT) has the potential to allow a broad range of participants to update a shared, synchronised ledger, a departure from traditional payment systems that rely on a single entity managing a centralised ledger. But further technological developments need to be made to address some of the early limitations of DLT implementation (blockchain is unequipped to process large volumes of data at scalable speed, coping with network fees, blockchain payments solutions greatly favour large value payments, etc.);
- **the emergence of privately issued global stablecoins** (such as Facebook's proposed Libra) - the prospect of a currency-backed stablecoin being used by billions of people on Facebook has galvanised central banks across the globe into putting tougher rules. Existing national rules do not fully cover this type of money and regulators should ensure that global stablecoins are fully accountable, keep data safely, have effective safeguards against cyber-attacks and money laundering.

The tokenized dollar

Besides the published paper, some work on what technology to apply in order to digitise the dollar has been done by **the Boston branch of the Federal Reserve together with MIT's Digital Currency Initiative**. But the project that captured much attention is **The Digital Dollar Project**.

The Digital Dollar Project is a partnership between the Digital Dollar Foundation, a not-for-profit organisation, and Accenture to advance the exploration of a central bank digital currency (CBDC)—or a 'digital dollar'. The project aims to encourage research and public discussion on the potential advantages of a tokenised dollar, viewed as an opportunity to enhance the technological infrastructure underpinning the current US currency. The initiative **does not view the digital dollar in antithesis with the development of private sector payments and stablecoin initiatives**.

The project founders believe that **the success of the US dollar rests on** having the necessary infrastructure for currency transacting, clearing, and settlement, and enjoying comparable economic and governmental stability, rule of law, and trust to be used outside its home country. The project supports **a champion-challenger approach**, where the 'champion' model is a tokenised form of the US dollar. 'The champion model' operates alongside existing monies; it is primarily distributed through the existing two-tiered architecture of commercial banks and regulated money transmitters; and it is recorded on a new transactional infrastructure, potentially supported by distributed ledger technology. The champion model of a digital dollar **differentiates itself through its nature as a token**, combining cash-like properties with many of the benefits of the existing account-based payment mechanisms.

The **tokenised digital dollar would work in** retail payments as it could expand the ability of currently un-or-underbanked populations to access digital financial services and transact on ecommerce platforms that do not deal in physical cash, and in wholesale payments. A digital dollar could facilitate broader, more diverse access for institutions to large value payments and support the emergence of digital financial market infrastructures.

But its best use case would be for financial inclusion - **expanding financial access and inclusion** for unbanked populations. Roughly **14 million American adults lack a bank account**. The figure became even more important during the current pandemic when the US government struggled to distribute emergency relief funds to many of these individuals. Providing individuals with **wallet services** might be **lower than the costs of hosting a traditional bank account**, particularly given the range of programs and government benefits that can be distributed using wallet services. →

The wallet could be readily registered through a regulated hosting intermediary performing requisite Know Your Customer/Anti-Money Laundering (KYC/AML) checks. Had this been the case during the COVID-19 crisis, many of the currently underbanked may have had an alternative means of receiving funding other than by physical check, the Project's white paper states.

Furthermore, features such as portability, facilitate the distribution of central bank money/the digital dollar abroad. While the Federal Reserve dollar swap lines only reach foreign central banks and do not afford foreign financial institutions settlement in central bank money, the Federal Reserve could allow digital dollars to be sent abroad through the domestic banking system directly to foreign institutions in need.

It seems that the FED, the Digital Dollar Project, other US entities have thought of many aspects of issuing a US CBDC, and even if they have not presented so many practical implementations/trails as the Chinese have (though they might not publicise it that much), one cannot be blind to the fact that the project that stirred the whole debate (the world) on CBDC is Facebook's Libra – a US-based concept/idea/social network, you name it.

The bomb everyone expects to (or is afraid will) explode – Facebook's Libra

Social networks have come to play an important part in our history. Facebook started as a social networking tool for Harvard students, but went to influence national elections, change the face of socialising and commerce, reaching out billions of people, all over the world.

When Facebook announced Libra for the first time in June 2019, the world poured a storm of **criticism and negative responses towards the proposed stablecoin**. The announcement was accompanied by a white paper explaining what it is, a **document updated in 2020**, after Facebook worked with regulators, central bankers, elected officials, and various stakeholders around the world to **determine the best way to 'marry' blockchain technology with accepted regulatory frameworks**.

Their objective is for the *'Libra payment system to integrate smoothly with local monetary and macroprudential policies and complement existing currencies by enabling new functionality, drastically reducing costs, and fostering financial inclusion'*. Furthermore, the **Libra Association hopes** to be able to **collaborate with central banks** on issues such as **direct custody of cash** or **cash equivalents** and very short-term government securities or **the integration of the Libra payment system with CBDCs**.

These CBDCs could be directly integrated with the Libra network, removing the need for Libra networks to manage the associated reserves, reducing credit and custody risk. For example, if a central bank develops a digital representation of the US dollar, euro, or British pound, the Association could replace the applicable single currency stablecoin with the CBDC.

Besides the multi-currency Libra coin (a currency tied to one currency or a basket of bank deposits and short-term government securities for a slew of historically stable international currencies), Libra Association announced in April 2020 that it is augmenting the Libra network by including single currency stablecoins in addition to its own Libra coin. Initially, they aim to start with some of the currencies in the proposed Libra basket (e.g., LibraUSD, LibraEUR, LibraGBP, LibraSGD).

This will allow people and businesses in the regions whose local currencies have single currency stablecoins on the Libra network to directly access a stablecoin in their currency. But people and businesses in countries that do not have a single-currency stable-coin on the network, yet, can use the Libra coin in cross-border payments, as a low-volatility option. This approach allows the network to support a wider range of domestic use cases and to provide a path for integrating central bank digital currencies (CBDCs) as they become available. But what if the opposite effect takes place, and let's imagine LibraUSD/digital dollar becomes part of emerging markets central banks networks, enforcing again the US dollar position in the world economy? →

Libra poses a risk of domestic currency substitution. In underdeveloped countries, where there is a lack of confidence in the current (local) currency, domestic users might adopt in significant numbers stablecoins and foreign CBDCs, and thus the use of the domestic sovereign currency diminishes.

Central banks agree that the private sector has an important role to play, fostering innovation and boosting competition, but central banks should be in the lead, as they play a crucial role by ensuring trust in money. Commercial payment service providers, like bigtechs, benefit from strong network effects, potentially leading to concentration and monopolies or fragmentation. Central banks have public policy, rather than profit objectives. This enables neutrality in providing services to users, allowing for an open and inclusive system.

Still, according to BIS, Libra alone cannot become a CBDC.

Why Libra could be viewed as a 'Synthetic CBDC' and not a CBDC - BIS

First, what is a 'Synthetic CBDC'? Private sector payment service providers could issue liabilities matched by funds held at the central bank, to offer a potential alternative framework under which central banks could engage with the rise of digital currencies. These payment service providers would act as intermediaries between the central bank and the end users. In addition:

- They cannot be claimed by the end user with the central bank;
- They lack some key features of central bank money – as they are not directly liable with a central bank, because they need to be matched by funds held at a central bank;
- Commercial payment service providers benefit from strong network effects, potentially leading to concentration and monopolies or fragmentation;
- Central banks have public policy, rather than profit objectives. This enables neutrality in providing services to users, allowing for an open and inclusive system;
- Liquidity – a payment service provider cannot expand its balance sheet, while central banks can expand their balance sheets and create additional liabilities, at short notice, in response to underlying demand.

Now the headlines are made mostly by central banks discussing, testing, analysing CBDC, and Libra is more in the back of the meeting rooms. But I am sure that they will blow the world anytime soon. This reminds me of an interesting article from **Harvard Business Review** on Lessons from Tesla's Approach to Innovation – *Tesla's core strategy has unique elements at each level of the ecosystem: overturning the core product architecture, positioning themselves in key bottleneck components, and resolving system-level limitations that slow the adoption of the technology. At the same time, they have applied an effective approach to build their innovation capital so they can win the resources and support to execute on their vision*. Just like Libra, I might add.

INNOPAY

The American Central Bank Digital Currency Plan – Quiet, Powerful, Imminent

About Douwe Lycklama: Douwe Lycklama co-founded INNOPAY in 2002 and is one of the thought leaders of digital transactions, like paying, billing, identity, data sharing, and applicable regulation. His drive is to bring innovation in these areas to financial institutions, startups, businesses, and governments and help them innovate to make opportunities in digitisation a reality.

Douwe Lycklama | Co-founder | INNOPAY

> ***Douwe Lycklama, Innopay:*** *After years of cash reduction in favour of commercial banks debt money, now central banks can regain some of their position once held in a cash society.*

There hasn't been too much media around Central Bank Digital Currency (CBDC) plans/projects coming from the US. So far Libra, China's digital yuan initiative, also known as DCEP, and Sweden's digitalisation plan have captured the public attention. However, the US has taken strong steps towards adopting digital currencies and in the coming months, we can expect a further acceleration of these.

We continue our series on the topic of Central Bank Digital Currencies and today we are speaking with Douwe Lycklama, co-founder of Innopay and co-author of 'Everything Transaction' to learn more about US' plan to drive CBDC adoption.

Substantial development is the somewhat unnoticed bill '**Banking Act for All**', where potentially all US citizens may end up with a 'digital dollar wallet' at the FED. The bill was put to congress already on March 23, 2020 and discussed on a public hearing on June 30, 2020. The project group has published **a white paper in May 2020**.

The bill outlines that (starting with January 1, 2021) banks must offer these wallets legally segregated from their operations, with the similar functionalities (apps, cards, web) as regular payment account and at no additional cost to customers. The balance of the wallet corresponds one-to-one to the balance of central bank moneys (M0) held by the bank offering the wallet.

Adoption is ensured because 'COVID relief funds' will be distributed through this FED digital dollar system.

I suggest we insert an image here based on the keyword – digital dollar, something like the image below

Why is this big? For the first time, citizens get a digital version central bank money, i.e. digital cash, or Central Bank Digital Currency (CBDC). That is FED money, which is full reserve, primarily not made of debt created in the commercial banking system. Today only banks and some market infrastructures can hold an account at the FED. →

If all this happens, the CBDC isn't a theoretical topic anymore. Some considerations:

- Citizens may find it more attractive to hold their balances in their FED wallet and move their money away from commercial banks. This puts pressure on commercial banks, as this is the digital version of the much-feared 'bank run', something to consider carefully when implementing. After years of cash reduction in favour of commercial banks debt money, now central banks can play their part more.
- CBDC enables governments to directly stimulate the economy down to every citizen through 'helicopter money', a term coined by Ben Bernanke already in 2002, as a policy option to counter deflation. Today's fiscal stimulus through 'quantitative easing' programs mainly inflates financial assets and therefore has difficulty reaching the population at large. On August 27, 2020 FED's president Jay Powel announced a more aggressive continuation of the US inflationary policy. CBDC's direct reach may help toward this goal.
- Libra's initiative will provide a global infrastructure for digital token exchange, complementing and accelerating the already existing nascent infrastructures of Bitcoin and Ethereum. CBDC can use this new infrastructure as well, by integrating the FED digital dollar system into these rails. This increases the utility of CBDC as it will have a global reach instantly. This also helps to enforce the US dollar position in the world economy. A second order effect of the adoption of different rails may be the acceleration of Decentralised Finance (DeFi), a movement aimed at replicating some core function of the financial systems, such as checking account, lending, saving and asset trading.
- CDBC potentially can be made 'programmable' by giving them specific functionalities, e.g. some tokens can be interest bearing, some tokens can only have a designated spending goal or tokens can trigger tax collection. The latter will reduce today's cash-driven informal economy, while the other functionalities influence its application.

The FED is not alone with its CBDC project. Other jurisdictions are working on this as well, notably the Eurozone, Japan, Sweden, UK, and, last but not least, China with their digital Yuan, coinciding with their global BSN blockchain initiative. On August 29, 2020 the Chinese had a supposedly secret soft launch but was pulled back fast when more people than expected showed interest. In the coming months a lot of developments will come together and propel CBDC into reality: the economic downturn triggered by COVID, fiscal stimulus by governments worldwide, Libra's introduction, crypto-technologies maturing, citizens seeking refuge for their savings, financial inclusion drive and, of course, the ongoing geo-political currency wars.

Consult Hyperion

Does China's Digital Currency Have a Chance to Supplant a Digital Dollar as a Global Reserve Currency?

About David Birch: David Birch is an author, advisor, and commentator on digital financial services. An internationally recognised thought leader in digital identity and digital money; he was named in the top 15 favourite sources of business information by Wired magazine and awarded 'Contributor of the Year' by the Emerging Payments Association. Currently, he is Director at Consult Hyperion and Advisor to the Board at AU10TIX.

David Birch | Director | Consult Hyperion

> *"The principal threat to the role of the dollar as Prime currency comes not from Facebook but from China'* **'The Digital Currency Revolution'** *by* ***David Birch.***

Digital currency is undergoing a rapid ascent to the top of financial organisations' strategy concerns and digital currency projects are springing up in central banks around the world. It is rapidly moving from Powerpoint to production. There are obviously a number of different ways that a digital currency could be implemented but, in general, central banks prefer to control the creation of the digital currency, but have it distributed by the commercial banks through their existing channels. This is what is known as the 'two tier' implementation of digital currency. This is how it was done for the world's first CBDC Mondex, a generation ago. In the UK, we wouldn't use smart cards for it today, though, you would implement it using mobile phones, a kind of **BritDex**.

A cheaper alternative is to have the central bank create accounts for all citizens, businesses, and other organisations. You could imagine something like M-Pesa but on population scale, **BritPesa** if you like. This will be cheaper because it will be completely centralised and the marginal cost of transferring value from the control of one person or organisation to another through such a system would be absolutely negligible. Central banks do not really want to implement this kind of 'one tier' solution, however, because it would mean having to manage millions of accounts and they would prefer somebody else to do this and deal with everything else that goes with interacting with the general public. The commercial banks and plenty of other non-bank players (think Alipay in China, for example) already have the apps, the infrastructure, and the innovative approach that would not only bring the digital currency to the mass market but would also open up the potential for the digital currency as a platform for innovation and development.

Alternatively, there could be something like USDC, a digital asset backed by central bank reserves. This **BritCoin** would still be a two-tier solution distributed to the public by the commercial banks but it would remain under the control of the central bank. I think this is by far the most interesting of these three practical CBDC options because it would create a new infrastructure, a platform for real innovation Whether you call them 'smart' 'contracts' or not (I don't), persistent scripts executing on a generalised digital asset platform would lead to real innovation. →

We need this innovation soon. The noted historian Niall Ferguson stated plainly in The Sunday Times that *'if America is smart, it will wake up and start competing for dominance in digital payments'*. What he means is that if Chinese digital currency becomes widely used by a couple of billion people, starting with those along the 'belt and road' trading corridors, they may well find it more than a little convenient to order goods from a Chinese partner via WeChat and settle via Alipay. And if they can settle instantly with their Chinese digital currency (or, to be fair, Libra or something similar) then they will soon find themselves accepting the same in payment. In this case, we could see a new kind of Cold War as digital currency blocs battle for control of the international money and financial system, with Facebook's Novi facing off against Alipay on the one hand but, more importantly, the digital Yuan facing off against the digital Dollar.

This is a competition that is about more than hash rates and APIs. Whether you agree with it or not, the fact that global trade is largely in dollars means that America is able to exercise soft power through the international monetary and financial system. If other digital currencies begin to provide alternatives, then that has political ramifications that are considerably greater than they may seem at first. We (the UK, Europe, the USA) need an integrated strategy for digital currency, and we need it now.

About Consult Hyperion: Consult Hyperion is an independent consultancy. We hold a key position at the forefront of innovation and the future of transactions technology, identity, and payments. We are globally recognised as thought leaders and experts in the areas of mobile, identity, contactless and NFC payments, EMV, and ticketing.

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Consult Hyperion

Libra May Not Deliver Digital Currency, But Digital Identity

David Birch | Director | Consult Hyperion

> *'In large parts of the world, Know-Your-Customer (KYC) could be replaced by Known- by-Zuck (KYZ) to the benefit of society as a whole'* ***'The Digital Currency Revolution' by David Birch.***

We're not talking about digital currency today because people like me are interested in it or because Bitcoin fanatics are interested in it, or because businesses are using it. Or, for that matter, because anyone is using it for anything. We're talking about it because central bankers are talking about it. Mark Carney, then governor of the Bank of England, got the ball rolling last year when he said that a new form of global digital currency could be *'the answer to the destabilising dominance of the US dollar in today's global monetary system'* and went on to talk about the international monetary system using some kind of 'synthetic hegemonic currency' (SHC) instead.

Now, a globally acceptable SHC in the form of a digital currency implemented as electronic cash with a 100% fiat currency reserve and denominated in a synthetic unit of account sounds a little like Facebook's much-discussed Libra. While Libra has dominated the headlines, it will undoubtedly be only the first of many attempts to create a global digital currency. From a payments' perspective alone, Libra is interesting but not a revolution. I'm sure that a frictionless global Facebook payment system would be beneficial. The ability to send money around on the internet is clearly useful and there are all sorts of new products and services that it might support.

A currency, however, has more far reaching implications than a payment system. What if, for example, the inhabitants of some countries abandon their failing inflationary fiat currency and begin to use Libra instead? The ability of central banks to manage the economy would then surely be subverted and this must have political implications. Hence, it is unsurprising that both the international Financial Stability Board and the UK's Financial Conduct Authority said they would not allow the world's largest social network to launch its planned digital currency without 'close scrutiny' and other regulators took a similarly stern view. People refer to the new currency as 'Facebook's Libra' but as Mark Zuckerberg testified to the House Finance Committee, Facebook is merely one of the 21 members of the Libra Associations that launched in Geneva. The association recently issued their new white paper in which they talked about creating stablecoins tied to national currencies (e.g., Lib$ and Lib£) alongside the original 'basket' stablecoin. The white paper says that the consortium hopes *'as central banks develop central bank digital currencies (CBDCs), these CBDCs could be directly integrated with the Libra network, removing the need for Libra Networks to manage the associated Reserves'*.

At the same time. Facebook renamed their Calibra digital wallet 'Novi', presumably to emphasise that their ambitions extend beyond simply serving as a personal storage mechanism for Libra value. This is where I think the effort is most interesting. Facebook's ability to create a global standard digital wallet and activate it for a couple of billion people has much more disruptive potential than the currency basket that they are proposing for it, and that's because the global problem of financial inclusion has much more to do with identity than it does with money. I've long maintained that digital wallets will get interesting when they can store more than money, just as actual wallets do. The most valuable things in your Novi wallet won't be your Facebucks but your proof of age, your financial services passport, your trusted traveller status and your store loyalty cards. Standardising these will unlock great economic value and deliver global benefits by bringing trade (and therefore prosperity) to hundreds of millions more people than the banking system has been able to.

Currency Research

Is CDBC the Key to Unlocking Financial Inclusion?

About Gonzalo Santamaria: Gonzalo Santamaria, with nearly 35 years of cash & payments industry experience, has held the VP Payments position at Currency Research since 2013 and has successfully led the business development of the flagship Central Bank Payments Conference (CBPC), the e-publication Central Bank Payments News (CBPN), the regional Global Payment Summits (GPS), and the Digital Currency Conference (DCC).

Gonzalo Santamaria | VP Payments | Currency Research

About Jens Seidl: Jens Seidl has been in the industry for 30 years with senior management roles in sales and marketing, operations, customer service, business development, and general management. Throughout his career, his work spanned across cash and payments, including leading highly complex automation projects, transformation programs and highly profitable global business units. Jens joined CR in 2018 as Vice President, Business Development and Consulting. In November 2020, he was appointed as President/CEO.

Jens Seidl | President/CEO | Currency Research

While the payments industry is making great strides at driving innovation and new technologies, very few of the new products and services being developed are helping to drive financial inclusion on a large scale. Mobile payments are perhaps the most obvious and promising exception, but they typically are not interoperable, resulting in a wide range of competing services that don't play or interact well with each other. Can central bank digital currency (CDBC) be the key to changing that? Let's take a brief look at how we got here.

Considered the first widely-known peer-to-peer electronic cash system, Bitcoin recently blew out its 12th birthday candles. This crypto-asset lay the grounds for many ideas and innovations in digital currencies, including distributed ledger technology (DLT) and blockchain. By design, it lacks government backing (it was indeed created in the aftermath of the financial crisis in 2008 as 'the people's money', independent of central and commercial banks) and its innovative technology also included some design flaws that resulted in high volatility, energy-intensity, transaction delays and costs, rendering it useless as a high volume, mass-market payment instrument.

Enter stablecoins. After several iterations, it was not until the whitepaper released by Facebook's Libra in June 2019 that an awakening truly arose amongst the central banks and regulatory compliance community. Stablecoins reduce volatility and provide trust by means of pegging one or more currencies or other tangible tradable assets, such as oil or gold, effectively introducing an intrinsic value to the crypto asset that Bitcoin lacks. Libra opted for a representative currency basket including USD, EUR, JPY, GBP, and SGD, and add to this a market reach of 2.7 billion captive users, eyebrows suddenly raised, and ears had perked. Financial stability was potentially at risk and the alarms sounded globally.

CBDC, a concept that had been discussed for quite a while in the central bank community, was suddenly pushed into the spotlight, lauded by some as the best way to counter the Libra threat (other than through restrictive regulations, of course). →

CDBC is not a particularly well-defined term; it is a new form of electronic central bank fiat money that can potentially be accessed directly by consumers, typically a privilege that only commercial banks and other financial institutions enjoy through reserve and settlement accounts. In that regard, it can have a lot in common with cash, the only central bank money currently accessed by the public. Some central banks have experimented with CDBC as a wholesale settlement instrument, which provides a safe environment to get familiar with the technology – it does not however provide the perceived 'game-changing' aspect of direct access by the public.

A survey issued by the Bank for International Settlements reported that 80% of the 66 central bank respondents were either exploring, researching, or indeed planning to issue a CBDC in the near future. This figure is sure to rise in the coming months. A recent survey commissioned by Currency Research in collaboration with Lipis Advisors shows that the majority of central bank respondents believe that COVID-19 will accelerate the launch of CBDC globally.

Developed nations contemplating issuing CBDCs are apparently doing so primarily for financial stability and monetary policy reasons. However, a stronger case can arguably be made for the issuance of CBDC in developing economies. **According to Jean-Michel Godeffroy**, Chairman of the Central Bank Payments Conference and former Director General of Payment Systems and Market Infrastructure at the European Central Bank, *'in many developing countries there is insufficient competition between banks, as well as a very loose network of bank branches and little or no deposit insurance. The business case of CBDC in developing countries is probably stronger than in most developed countries; in these parts of the world, the issuance of CBDC in parallel to banknotes could enhance economic growth and financial inclusion'*.

With bank deposits being uninsured and depositors risking their savings (should commercial banks become insolvent), not to mention the costly barrier of commission fees, many citizens consciously 'opt' to remain excluded from financial services. Providing access to risk-free reserves via a CBDC can therefore create new opportunities to individuals that had previously declined financial access. Furthermore, many use cases suggest that the widespread global adoption of mobile phones can be a key to resolving many of these issues. A great majority of citizens in countries across the globe, including those in emerging economies, now own mobile devices—and in some regions, these include a healthy proportion of smartphones. A CBDC can easily be distributed via these channels, removing the need to use cash to move money in and out of a closed-loop mobile payments system, or even the need for a commercial bank account.

In parallel, 'network effects' such as those described in the International Monetary Fund's Designing CBDC working paper*, can cause mass disruption in the usage of payment instruments. An example is the declining cash use in many countries, accentuated over the recent months by pandemic-related commercial lockdowns. Banks may reduce branches/ATMs and in some markets, retailers even refuse to accept cash, all of which are resulting in a decline in cash availability. Determining whether this remains a punctual disruptor or a true shift/change in habits is yet to be seen. However, these network effects may cause some payment instruments to disappear, or indeed fall below a critical usage threshold, thus affording a CBDC further incentive and justification, with Sweden's e-krona initiative perhaps being the best example. ➔

* WP/19/252 IMF- Designing Central Bank Digital Currencies by Itai Agur, Anil Ari and Giovanni Dell'Ariccia

Currency Research and Enryo recently launched a global initiative, 'Universal Access to Payments' or UA2P, recognising the need to both understand such effects and to implement plans that will proactively address potential issues. UA2P seeks to help further financial inclusion by providing access to new digital payment instruments, while ensuring that access to cash will not suffer as a consequence.

An opinion often discussed is that CBDC should be issued in partnership with commercial banks in order to avoid the potential disintermediation of the established banking infrastructure. The scenario of a 'super bank run' has been repeatedly described in the CBDC literature, wherein a financial crisis similar to the one experienced in 2008 would lead consumers and even corporates to abandon the commercial banking system and convert all their funds into central bank-backed CBDC, effectively leaving the commercial banks with only debt. While the logistical challenges of cash make such a bank run less likely (we would argue impossible, as in most countries there would not be enough cash in circulation to fulfil such extreme demand), real-time access to CBDC may just open that Pandora's Box.

If the approach taken by developing countries is to distribute CBDC through commercial bank partners, will the central bank's role as the lender of last resort be perceived as a sufficient benefit for those that currently do not use a commercial bank? Or is the key to financial inclusion to develop distribution channels for CBDC outside the commercial banking systems? What functionality does a CBDC have to provide to drive financial inclusion and how will that influence the technology implementation?

And finally, how different will a CBDC designed to drive financial inclusion in a developing country be from one that is intended to provide a digital alternative to cash in a mature market where cash usage is declining year on year?

Recognising the need to debate such questions, share knowledge and learn from experience already gathered, Currency Research is launching the new Digital Currency Conference in 2021, providing a platform to help shape a critical element of the future payments landscape—and hopefully, a more inclusive one.

About Currency Research: Currency Research's mission is to inspire and progress industry dialogue and efficiency across cash and payments through their core initiatives of Conferences, Consulting, Communication and Community. CR has successfully positioned itself as the leading global resource for central banks, their suppliers, and the related supply chain for currency and payment systems. CR has published a number of research-driven reports considered mandatory reading by the industry, publishes the monthly Central Bank Payment News, and provides consulting services with a focus on strategy and policy to central banks, regulators, and commercial organisations. To learn more, visit our website.

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Sögur

Central Bank Digital Currencies: Evolution, Not Revolution

About Barry Topf: Barry Topf is the Chief Economist at Sögur. He had a 33-year career at the Bank of Israel, where he served as one of the founding members of the Monetary Policy Committee and as Senior Advisor to the Governor, Stanley Fischer. He also held positions of Head of Market Operations, Head of the Foreign Currency Department, and Chief Investment Officer. In his capacity as an IMF consultant, Topf has advised over 25 countries on economic policy.

Barry Topf | Chief Economist | Sögur

*"**Barry Topf**, Chief Economist at **Sögur**, discusses the potential CBDCs hold but also the great hidden risks, especially in terms of privacy.*

Central Bank's plans to issue digital currencies (CBDCs) have generated considerable buzz recently. But while they could be a significant development, they do not necessarily herald a revolution – and certainly not as they are currently envisioned. That public institutions are looking into digital currency issuance may be reassuring to some. But, while I agree that Central Banks lend a degree of legitimacy to any digital currency solution they may offer, and could give rise to integration with faster, more agile payments systems than ever before, I am not wholly convinced that CBDCs are a true solution for the future of currency.

As currently envisioned, CBDCs are simply a digital version of a traditional fiat currency. This is another step in the evolution of the forms of money: from coins to paper money, and then to electronic payments. Some CBDCs might be 'wholesale', only available to financial institutions, or 'retail', offered to the general public. In either case, they have the same characteristics as the non-digital version of fiat currencies. And though they carry with them some possible advantages, they have drawbacks as well. Indeed, they aren't much more than 'digital banknotes'.

So, why the surge of interest in CBDCs? *The Coronavirus pandemic* has caused an enormous uptick in consumer usage of digital services and products, rooted in lockdown measures and fear of contagion. *Digital currencies eliminate many of the costs and risks involved in handling ca*sh, including printing and distribution, security, (assuming they are hacker-proof) and counterfeiting. *Their monetary implications and impact on financial stability remain unclear for now*. They could *facilitate the use of negative interest rates* - but could also *promote disintermediation of financial institutions*. For many, CBDC projects could be a *simple case of experimentation* - for innovation's sake, or for fear of being left behind by those already developing it.

CBDCs are poised to facilitate the development of faster, more efficient, and safer payment systems, and conceivably on an international scale. At present, private cryptocurrencies rely primarily on Distributed Ledger Technology (DLTs such as the Blockchain), which are slow and inefficient compared to centralised networks. CBDCs will rely on centralised platforms, which could enable faster, more secure, and less costly payments, while promoting integration and financial inclusion. →

But some central banks may have their sights set higher. *A digital version of a national currency could expand its role on the global stage* - which could be more than enough motivation for some countries. Gaining the upper hand in terms of currency clout is not the only potential benefit for a country whose CBDC is widely used; *a CBDC would be a quantum leap forward in the amount of data its issuer could obtain*.

Every financial transaction - including what one buys, where and when, would build a full picture of consumer preferences and savings behaviour - which could be recorded and used. *Access to that information, with the ability to analyse it, would give an enormous advantage to the data's owner*.

This concern breathes life into **one of CBDC's major concerns: the loss of personal privacy**. *CBDC transactions will be pseudonymous, not anonymous*. If the central bank wants to see where and how much an individual is spending, it can. Anonymity disappears when cash does. While that will make life difficult for money launderers and terrorists, it could also become a tool to punish political activism. Widespread *usage of a CBDC could equate to huge numbers of people unknowingly granting unlimited and unrestricted access to data on their economic lives to a central authority*. And there *may not be a choice of opting out or being forgotten*. There is no way of telling - or monitoring, much less limiting - how this information could then be used or manipulated. *CBDCs could be easily used to limit human rights and political freedom*. There has thus far been little clarity on how user privacy will be treated by the central authorities issuing CBDCs - and this is a sizable ask of blind trust from the many potential users. Nor will all central banks want to ensure privacy - their goals might be exactly the opposite. The risks are great, and so far, safeguards are not in place, nor will some CBDCs provide them.

Digital currencies hold enormous potential - but with these great opportunities, there could come great hidden risks. But *the same technology which generates these risks can also be used to mitigate them*. Broad and democratic governance of digital money - written into the technology which underpins it - can ensure that abuses are prevented, and that money is governed in the interests of its holders. This is what we set out to do when developing Saga (SGA), a stabilised non-private non-sovereign digital currency. And it's precisely what we did.

About Sögur: Founded in 2018, Sögur launched its Saga token (SGA) in December 2019. It is the first global, stabilised, digital currency controlled by its holders. SGA complements existing national currencies and offers a store of value outside the remit of national government and banking structures - a need accelerated by the speed of globalisation.

www.sogur.com

The Paypers

A New Bretton Woods Moment

Mirela Ciobanu | Senior Editor | The Paypers

Central banks are the main providers and distributors of money and credit used as payment mechanisms for trade and commerce. There has been a growing conversation about whether central **banks should offer a digital version of cash** (CBDC). However, the implications of digital money for monetary policy are not straightforward. If digitalisation means the replacement of cash with central bank derived digital money, then the central bank's ability to produce inflation will increase because the effective lower bound on interest rates will loosen. However, if digitalisation raises the possibility of the introduction of (private or foreign) competing currencies, the ability of central banks to inflate their currencies would be constrained by the threat of people switching to these competing currencies.

Therefore, there is **huge untapped potential with CBDC**, but also **important risks**. Many will say it will take even more **freedoms away** and in some ways it will. Now, cash allows consumers to transact **anonymously** in the physical world. As a digital payment system, **a CBDC would maintain an electronic history of transactions**. However, it also gives those disadvantaged by the lack of available capital a better chance. For instance, the FED offered **financial help** to US households and small businesses to cope with the financial effects of the pandemic. Disbursed via ACH, check, and debit card, the payments were made relatively quickly to those recipients whose bank account details were available to the government. Recipients without bank accounts had to wait much longer for their relief payments to be disbursed by checks or debit cards through the mail.

As the consumer is in direct contact with the central bank, **there will be lots of data generated based on CBDC transactions**. As such, CBDCs will push behavioural economics to the forefront based on **big data** and **real time activity data** and can create incentives directly as rewards, or punishments. They can also **affect human behaviour** in a way that is much less blunt than traditional monetary and fiscal policy.

Because central banks oversee their commercial banking system, and by contrast with commercial banks, possess a monopoly on increasing the monetary base in a financial crisis, **commercial banks will be challenged greatly**, as multi-interest rates set centrally could become the norm. As CBDCs could create a defined cost of capital to whomever they please (if they get the powers by the Governments), **banks will no longer get the chance to set interest rates based on capital availability or risks**. For example, central banks can give small business owners a direct payment for stimulus whilst, at the same time, charging negative interest rates on larger savers.

Outside of a totally revolutionary way to collect taxes, give incentives, and overhaul the entire monetary system, **CBDCs can play an important role in supporting central banks providing funds** to the non-bank private sector and, in **emerging market economie**s, towards **interventions in domestic currency asset markets**, as stressed by the unprecedented crisis caused by the Covid-19 pandemic.

Thus, in line with Deutsche Bank Research recommendations to refresh European economy, **Kristalina Georgieva, IMF Managing Director** advocates for adopting strong medium-term frameworks for monetary, fiscal and financial policies, as well as reforms to boost trade, competitiveness, and productivity to help create confidence for policy action now while building much-needed resilience for the future. →

Overall, there are arguments both in favour and against issuing a CBDC, with design choices that have the potential to be an improvement over existing modes of payment. But for sure, **there will be no 'one size fits all'** CBDC, **the Bank for International Settlements (BIS) has assured** us, and **we should expect more interesting news ahead in the coming year**. As developing CBDCs involves many parties, cooperation and coordination are essential to prevent negative international spillovers, while ensuring that much needed improvements to cross-border payments are not overlooked. We must face it: **the world is changing**, our daily life is changing (has changed a lot since the beginning of 2020), therefore it was absolutely necessary that something happened to the good old 'euro/dollar/Romanian leu' bill.

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