

# NATIONAL DIGITAL CURRENCIES: WILL THEY CASH IN?<sup>1</sup>

**Central bank digital currencies (CBDCs) are seen by some as the key to widespread adoption of distributed ledger technology (DLT) and by others as a near-useless idea which can add nothing to existing methods of digital payment in commercial bank money. But DLT has evolved into a viable and scalable technology platform, and use-cases for CBDCs are being identified in wholesale markets. But a string of practical questions about the impact of CBDCs on exchange values, accessibility, eligibility, transaction screening and financial stability have yet to be resolved.**

“There is an element of, ‘It is a new technology, and we have got to find a use for it,’” says Michele Bullock, assistant governor at the Reserve Bank of Australia. “We have had crypto-currencies, so why cannot the government issue these things?’ If you look at what central banks in developed countries have said about this, they are not talking about replacing cash. They are talking about whether there might be a need for an alternative or complement to cash. That is why I am interested in what frictions these technologies are designed to address, because in many cases I just do not see what the point is. The pressure I put back on the private sector is, ‘What problem is it solving?’”

## Are CBDCs a solution looking for a problem to solve?

Jesse Lund, a vice president at IBM who leads blockchain and distributed ledger development for the firm, says the private sector cannot answer that question convincingly until a central bank digital currency (CBDC) is actually issued. Privately issued crypto-currencies, he says, are no substitute. “The conversation has been expedited by the advent of the reality of crypto-currencies,” says Lund. “There are obviously some concerns about their stability and viability. But if a central bank issued their own denomination of a fiat currency in the form of a crypto, and that became legal tender, it opens up a whole range of innovation and possibilities for the next generation of payment systems.”

It would also confer benefits on central banks, he adds. Lund thinks a CBDC could help central banks overcome their reluctance to open up their Real-time Gross Settlement Systems (RTGSs) to smaller banks, and non-banks, including FinTechs active in the payments industry. It could even enable FinTechs to export payment services to developing economies without exposing emerging market consumers to the volatility of crypto-currencies. “A CBDC could act as an extension of the RTGS to the FinTech community,” explains Lund. “Since a lot of the Fintech motivation is based on financial inclusion, central banks can also export stability to emerging economies, where billions of people do

not have access to financial services, yet they are all carrying a cell-phone.”

Tino Kam, head of cash management solutions at Nordea, agrees that a CBDC could help to solve the problem of financial inclusion in emerging markets, because it circumvents the difficulty of accessing electronic money without a bank account. He adds that a similar logic applies in developed markets whose inhabitants cease to use cash. The Swedish central bank, for example, is exploring the so-called e-Krona as a “contingency solution” against inadvertent financial exclusion in a society where cash is already used as a means of payment by companies and households in only a hundredth of all transactions by value. “Within five years, we will have a cashless society,” explains Kam. “The e-krona would act as a digital complement to cash with the state guaranteeing its value.”

## The premier use-case for CBDCs is cutting wholesale cross-border transaction costs

But it is Lewis Sun, regional head of product management for global liquidity and cash management in Asia-Pacific at HSBC, who has the clearest answer to the question of which problem a CBDC can solve. He says a CBDC issued and transferred between participants in network based on distributed ledger technology (DLT) could reduce friction in cross-border cash payments, by making settlement in central bank money available around the clock, free of correspondent and agent bank working hours, jurisdictional cut-off times, local barriers to entry for smaller banks and brokers, and the time-zone restrictions set by geography. “It might address settlement and credit risk as well,” he says.

In practice, Sun acknowledges, there are several practical issues to resolve before a CBDC could be used to settle transactions across national borders. If CBDC-DLT networks remained purely domestic, with no inter-operation between them

<sup>1</sup> National digital currencies: Will they cash in?: A panel discussion held at Sibos, Sydney, 23 October 2018. The video of the panel can be watched here: <https://www.youtube.com/watch?v=djLKd-SHaU4>

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**- Michele Bullock, assistant governor at the Reserve Bank of Australia**

across borders, it would be hard to reduce frictional costs at all. If domestic CBDC-DLT networks allowed market participants to hold the equivalent of accounts with each other, this would reduce some of the friction. But the real gains depend on the availability of a single, universal CBDC traded on all DLT networks, or even on a single global DLT network. This would eliminate all frictional costs. “Which one of these options is the most viable is still to be decided, based on the use-cases, and what proves practical,” says Sun.

### **Practical concerns include accelerated bank runs and two-tier currency markets**

One practical obstacle to rapid adoption of CBDCs is the central bank fear that digital fiat currencies could accelerate bank runs, as anxious depositors drained the liabilities of the commercial banks in real-time and forced the central bank to issue them with CBDC instead. “We saw during the great financial crisis an increase in demand for bank notes,” says Michele Bullock. “People took their money out and stuck it under their beds. That would be so much easier in a world of CBDCs. People could rush and put their money into central bank assets, taking liquidity out of the system and centralising it at the central bank. That might make the management of liquidity, and the management of monetary policy, more difficult.”

Another practical problem, in the absence of a global CBDC, is foreign exchange. “The liquidity of digital currency versus fiat currency can be slightly different,” explains Lewis Sun. “When you exchange digital currency for another currency will it follow the same exchange rate? A separate exchange rate market might be established for inter-operability between one digital currency and a different type of the same fiat currency. Will it charge a premium or discount? That might be something we need to observe. Because from an efficiency point of view holding the digital currency has better liquidity – it is useable in real-time – but from an accessibility point of view it circulates only within the network of eligible market participants.”

### **Who will set and administer the eligibility criteria for joining a CBDC network?**

This is a problem which is already apparent with private sector crypto-currencies: they are neither easily accessible nor ubiquitous. They are also unstable and opaque. “Do we really know who we are dealing with?” asks Lewis Sun. “Do we trust the value of the tokenised assets?” A CBDC, by contrast, would be stable, traceable, transparent, eligible and - potentially - ubiquitous. “If we apply the new technology in the right way, the overall running cost for new participants to join a payment clearing system directly should be lower, so the barriers to entry for new players to join the network will be lower,” adds Sun. “On the flip side, there will still need to be a gatekeeping exercise. Who are the players which are eligible to join this network? Are we going to do this on a completely bilateral basis? Or will there be a central utility to address the challenge?”

The immediate answer to that question is that members of a DLT network using a CBDC will continue to rely on the existing Know Your Customer (KYC), Anti-Money Laundering (AML) and sanctions screening services provided by correspondent banks. After all, counterparty and transaction screening services are not something any central bank will provide.

It is for this reason that Tino Kam is not convinced CBDCs can cut cross-border settlement costs significantly. “One of the big problems from a cross-border perspective is obviously KYC, AML and sanctions screening,” he says. “That problem will still exist, even with a digital currency. I have not seen a solution yet for that in the digital currency space so, from that point of view, most of our costs will continue to exist.”

Lewis Sun counters that KYC, AML and sanctions screening are less problematic than the challenge of determining who is eligible to join a DLT network - precisely because services to manage the KYC, AML and sanctions

screening problems are already in existence and can continue to operate. “You will still have the information for your transaction screening, so I am less concerned about compromised data,” he says. “The bigger challenge will be how these digital currencies impact who can participate – in other words, eligibility.”

As Michele Bullock points out, it is inconceivable for a central bank to issue a CBDC which facilitated anonymous transactions. Every central bank is bound to look to the private commercial banks to control eligibility to join the network, ensure both payers and payees are checked against KYC, AML and sanctions screening databases, and to make certain all transactions are disclosed.

Jesse Lund says the technology exists already to notify both banks and regulators when an asset changes hands on a DLT network against payment in a CBDC. “Transactions are not going to be turned into the wild, where we are going to have to chase after them,” he says. “There are transactional hooks that lead back into the issuer and the regulator that will allow them to ensure that no account can hold the CBDC unless the person who owns that account has been successfully identified. Those controls and that technology is built, and it is stable.”

Lewis Sun, who is familiar with the joint cross-border payments proof-of-concept between Project Ubin (driven by the Monetary Authority of Singapore) and Project Jasper (driven by the Bank of Canada) to exchange tokenised digital equivalents to the Singaporean and Canadian dollar between DLT platforms, adds that the exercise proved such networks can offer full “traceability and transparency.”

### **What advantages do CBDCs offer over existing commercial bank money payments?**

This means CBDCs mark an improvement on physical cash, since a problematic attraction of

bank notes and coins is that they are neither traceable nor transparent. But even if a CBDC can eliminate anonymity of that kind, argues Michele Bullock, it is hard to see how this also marks an improvement over existing digital payment services. She notes that a traceable payment in CBDC might have the central bank behind it, but it would look and feel like an electronic payment in commercial bank money of today.

“I am not sure a CBDC offers much that you do not get already with commercial bank money payments,” says Bullock. “We already have a plethora of financial instruments and more are coming. It remains for the industry to demonstrate to us why what we have got available in terms of payments systems already, and what is still coming on board in terms of payment systems, cannot actually deliver what we need. What is it that a CBDC would deliver that would make things more efficient and competitive than they are already? That is the challenge for the industry.”

Lewis Sun concedes that payment in a CBDC across a DLT network is not the only way to reduce friction and accelerate cross-border settlement. As he points out, since its launch in 2017, the SWIFT global payments innovation (gpi) initiative has raised the proportion of cross-border payments settling within 30 minutes to more than 50 per cent. A payment between a gpi-using bank in Singapore and a gpi-using bank in Australia settled recently within nine seconds – a timescale tantamount to real-time cross-border settlement. When SWIFT ran a proof-of-concept exercise involving a dozen banks across three separate chains, it still managed to settle all payments within 60 seconds.

### **DLT is now a viable technology platform for instant payment across borders**

But Jesse Lund points out that speed is no longer an advantage other technologies have over

DLT. He says DLT has evolved beyond classic Bitcoin, with its problems of non-permissioned networks, slow throughput of transactions and high energy consumption. Though it cannot yet support transaction volumes equivalent to global retail payments, DLT is also proving scalable. “Nothing is as easy as pulling out a bank note and handing it to someone,” says Lund. “It is the ultimate form of real-time settlement. But DLT has proved that digital cash can be the next best thing. It can verifiably settle in real-time just a little bit slower than handing someone a bank note. That technology is hard to ignore.”

Lewis Sun adds that the Ubin-Jasper proof-of-concept proved that DLT is a viable foundation for cross-border payments. “Technology is no longer a big problem,” he says. “We must stay vigilant because there are still challenges around cyber-security and resilience and stability, but the technology should be able to spur that kind of use-case. We need to look at what issues we have and apply the right technology to address them. But DLT is a potentially viable option to solve the problem of cross-border friction. That is why we are here – to explore the upside and the downside. If there is a downside, how are we going to address it, and will it still be a viable option?”

### **Is a CBDC issued on to a DLT network useful in retail payments?**

The consensus holds that there is one clear answer to that question: CBDCs issued on to a DLT network are not suitable for retail payments. “The cross-border issue gets mentioned a lot, and there are a lot of frictions in the cross-border space, so I am interested to hear more about how DLT and CBDCs can contribute to solving that problem,” says Michele Bullock. “But on the purely domestic side I am not convinced. The way the settlement systems work at the moment in Australia, for example, we have access not just by banks but by payment providers as well, and the system works well. You do not actually need access to direct settlement to do lots and lots

of business. So I think there is an open question about whether a CBDC solves a problem in domestic settlement. I have got an open mind, on the wholesale side, but I am not convinced, actually, that it has a use even there.”

Jesse Lund disagrees. He says all the crypto-asset and DLT-based payments solutions IBM is developing are aimed at cross-border rather than domestic transactions. Lund says Stablecoin, a hybrid of a CBDC and a crypto-currency, is gaining traction. But he agrees that the largest opportunities lie in cross-border wholesale payments. “On a domestic scale, the payments systems are pretty efficient wherever you go,” he says. “Cross-border is the killer space for this – the big use-case.”

That said, he is also less sceptical about the applicability of CBDCs to retail payments. “We know there are some uses for this in the retail market, but we cannot quite put our finger on exactly what it is yet,” says Lund. “But we ought to continue to lean in to the concept in a controlled environment, which is what the sandboxes a lot of central banks have created are for. We need the live issuance of a retail CBDC in a controlled environment, so we can see what type of innovation is born out of it. If it is nothing, then I concede that it was a solution looking for a problem. But I have this inkling entirely new use-cases are going to come alive. We are not going to know the answer to a lot of these assertions until we try it. Let us not write it off. Let us try it.”

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