

Electronic payments are becoming the norm. A growing number of shop windows display 'card only' signs. And we can now pay for low-value goods with a simple tap of our card or even our phone, thanks to a range of mobile apps.

In the UK, cash still accounts for just over a third of all payments. But this is predicted to fall to a mere 16% by 2027, according to banking and finance association UK Finance.

The pace of change is faster still in some other countries. In Sweden, for example, cash has been virtually eliminated. Only 2% of economic transactions are now made in cash, according to the Swedish central bank, Riksbank.

"Money itself is changing," International Monetary Fund chief Christine Lagarde told a recent fintech event in Singapore. "In 10, 20, 30 years, who will still be exchanging pieces of paper?" she asked.

IMF research, exploring the idea of digitalised money, has suggested that demand for cash is decreasing, alongside growing awareness of virtual currencies, such as bitcoin. Its report, *Casting Light on Central Bank Digital Currencies*, says: "Digitalisation is reshaping economic activity, shrinking the role of cash, and spurring new

By **Simone Rensch**

digital forms of money. Central banks have been pondering whether and how to adapt."

Although electronic payments are on the rise, the financial system is still based on physical money, printed by central banks. Meanwhile, commercial banks and private payment systems like Visa and Mastercard enable us to make electronic payments.

Cryptocurrencies grew in popularity after the 2008 financial crash as the public lost trust in the banking system, says Mike Seiferling, director of research on cryptocurrency and government at IE Business School in Madrid and public finance lecturer at UCL. However, cryptocurrencies work more like an asset (see panel, overleaf) and cannot generally be used to purchase goods. Lack of regulation and market volatility have also proved concerns.

While governments try to figure out how to regulate virtual coins, central banks are looking into whether they should launch their own digital currencies.

Unlike cryptocurrencies, digital currencies issued by a central bank would have the same value as a cash currency – and could be spent on goods and services. Both would probably use some sort of digital ledger technology, such as blockchain.

Digital currency might soon become a reality. In her Singapore speech, Lagarde said that "we should consider the possibility" of central banks issuing digital currencies and supplying money ►

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State-backed digital currencies are the future, and cash a thing of the past. Are we ready for the transformation?

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## What's the difference?

"A digital currency is a top-level category for any kind of currency that exists primarily or exclusively in the digital world," says Claire Ingram Bogusz of the Stockholm School of Economics.

Digital currencies can be centralised and backed by the state, with value most likely set in the same way as current cash values.

By contrast, cryptocurrencies are decentralised digital assets, designed using cryptography to secure financial transactions.

Examples include bitcoin, Ethereum, Ripple and more than a thousand others. Cryptocurrencies are on a digital ledger, the blockchain, where all transactions are verified in the so-called 'mining' process and recorded.

In theory, anyone can access the ledger and mine the transactions. "[They] are not currencies," explains Mike Seiferling of IE Business School in Madrid and UCL.

"They are either some new form of financial asset, similar to monetary gold but without anything valuable backing it up, or an intangible non-financial asset, which is valued by demand from the crypto-hype."

They cannot generally be used to purchase goods and services, although Japan recently recognised bitcoin as legal tender.

substantial legacy that we are building that not all countries have," she says. "I think it will make it harder for other countries to implement in the same way."

Another issue is the potentially disruptive effects that moving to a digital currency could have on the economy, Seiferling explains. "That's a major concern, because you can't just introduce something new that is fundamental to the economy and expect that everything will just keep going smoothly unless it's incredibly well designed."

The main concern is disruption to commercial banking, which would have "implications for the entire economy", depending on how integrated and involved the banks will be in the process. "Once you push the button [and issue a digital currency] you have to make sure that everything is going to work, because you can't take it back," says Seiferling.

There will also be important implications for finance professionals, with the world of audit and accounting likely to change as cash is increasingly abandoned, Nuttall predicts. While an automatic ledger record of every transaction is "going to make auditing massively simpler", accountants are going to have to understand what ledgers are and how they work, he says.

But digital currencies and ledgers will not make the role of the auditor redundant altogether, emphasises Nuttall. The auditor will always have to "check what's recorded on the ledger with what's happening in the real world".

Although no government has officially launched a digital currency as yet or announced plans to replace cash completely, there is agreement that this is the direction the world is headed in. Change is not going to happen overnight say the experts, but – as with all technological innovation – an awful lot is going on behind the scenes. ●

government of Dubai said emCash would "soon" be available to pay, although it has not confirmed when. Russia and Estonia are also rumoured to be thinking about launching the cryptoruble and estcoin.

In the UK, the Bank of England is reportedly playing with the idea of using blockchain to underpin a British digital currency. The bank says on its website that it has no current plans to create a central bank-issued digital currency but wants to "better understand the implications".

Digital currencies have a number of downsides that should be considered. Anish Mohammed, a technologist focusing on blockchain and crypto-economics, says it might be difficult to convince a sceptical public that an open digital ledger recording all transactions is a good idea.

Widespread lack of trust in government means such an innovation would be a "scary thing" for the general public.

Another key issue is the reluctance or inability of some citizens – particularly older people – to adapt to digital society.

Jasper Verwaal, audit innovator at Deloitte, explains that not everyone would understand a digital system. "In Sweden, where everything is already digitalised, that is easier to do," he explains. But in other countries, there are issues around inclusiveness of those who are not digitally savvy, such as the elderly, he adds.

At the Stockholm School of Economics, Ingram Bogusz agrees: "Sweden is in this quite nice position of being a very small society in terms of the number of people, is already very digitalised and, by international standards, is quite rich." This means that what works for Sweden may not work for other countries, she adds.

Sweden also already makes use of a comprehensive register of all citizens, each with a unique identity number that is used when paying taxes, claiming benefits and for other services. "There is already a

**S**weden is one country that has been exploring the possibility of launching its own digital currency. The e-krona would be a purely electronic form of the krona, issued by the Riksbank.

Ingram Bogusz notes that Sweden is already "more or less cashless" and in many ways relies heavily on card transactions and private providers. Swish, a mobile payment system launched by six Swedish banks in cooperation with the central bank, is currently a popular digital payment system used in Sweden.

A digital currency would remove this dependency on the private sector and allow for something cheaper, "homegrown" and state-controlled, she says. There are, however, questions about the technology required to support a digital currency.

A Riksbank spokesperson told PF that "blockchain technology or some other form of distributed ledger technology was considered immature in the current situation" to use for the e-krona. A Riksbank report [bit.ly/2Pn3CxD] has concluded that distributed ledger technology is inefficient and unlikely to cope with the volume of transactions required or complete them at speed.

This question of scalability "makes it very difficult to use the technology in the event of large payment volumes", the report says. While the use of cash in Sweden has declined massively, the central bank says there has still been "no decision made, either from the Riksbank or any other governmental body, for the society to go cashless", and investigations into the viability of the e-krona are ongoing.

Economically troubled Venezuela took the plunge and launched a digital currency last year – the petro. The government, which controls the currency, has dubbed it a cryptocurrency and it is not accepted as legal tender. Daniele Bianchi, a professor of finance at Warwick Business School, wrote in a blog for PF in March last year that the Petro is pretty much "made out of thin air" and is a desperate measure to tackle Venezuela's economic crisis. Experts who spoke to PF agreed that the petro is not taken seriously.

Other countries are also considering digital currencies. In October last year, the

## A digital ledger, where you can see money flows in real time, would be a very fascinating thing for a government

**Gary Nuttall,**  
blockchain consultant



ledger, the central bank or government would be able to see where money is flowing to, which could help tackle corruption, according to blockchain consultant Gary Nuttall.

A digital ledger, where you can see money flows in real time, would be "a very fascinating thing for a government" because they could spot illegal transactions and financial activity, he says.

to the digital economy. Such a currency, issued by a central bank, would be a liability of the state rather than commercial banks or private payment providers – as cash is.

She added that a state-controlled digital currency would have "clear advantages" and could fix the financial system in ways the private sector can't.

"Central banks would retain a sure footing in payments," she emphasised.

Although financial institutions would still play a role, Lagarde suggested that, by introducing a digital currency managed by central banks, "your payment would be immediate, safe, cheap and potentially semi-anonymous".

Claire Ingram Bogusz, a post-doctoral researcher at the Stockholm School of Economics, says a digital currency could "cut out the middle man" – commercial banks – for citizens, making transactions faster and cheaper. She adds that down the line, it could even be possible for people to hold bank accounts with the central bank or get their mortgage from the state.

Seiferling agrees: "There are a lot of unnecessary middle men. A digital currency could potentially cut the costs of this aspect of the system."

As most digital currency transactions would be recorded on a single centralised

## Central banks would retain a sure footing in payments

**Christine Lagarde,**  
IMF managing director

