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# Shaping the future of payments

*Technology is transforming payment systems. The pace of change and potential for disruption to incumbent service providers have propelled payment systems to the top of policymakers' agenda. The BIS and central banks have a leading role in shaping the response.*

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Technology is transforming payments. Digital innovation is disrupting the instruments (eg cash) and institutions (eg banks) that have historically dominated payments. New players are developing innovative payment solutions that compete with traditional means of payment provided by banks. Incumbents are also redesigning payment systems to make them faster, cheaper and easier to use. And consumers have come to expect continuous improvements in the convenience and safety of payment services.

This special issue of the BIS Quarterly Review examines the fast-changing world of payments. The five articles explain the strengths and shortcomings of existing payment systems, describe how these systems are changing and assess emerging solutions.[1]

## Innovations are shaking up payment systems

Payment systems are vital to the functioning of the economy. A payment system is a set of instruments, procedures and rules for the transfer of funds between participants. Safe and efficient transfers underpin the purchase and sale of goods, services and financial instruments. Indeed, a pre-condition for engaging in transactions is trust that payments will be executed.

Established payment systems have evolved to become safer, faster and cheaper. As Bech and Hancock (2020, in this issue) explain, wholesale payment systems – for large-value transfers, mainly between banks – have experienced successive waves of innovation over the past few decades. Retail payment systems – for low-value but high-volume transfers between consumers and businesses – initially lagged behind but are now changing rapidly. Changes to payment systems require coordination among many participants. Wholesale systems typically have a small number of

1 The views expressed in the articles are those of the authors and do not necessarily reflect those of the Bank for International Settlements.

Key takeaways

- The pace of change and potential for disruption have propelled payment systems to the top of policymakers' agenda.
- The BIS and central banks have a leading role in shaping policymakers' response to these changes.

participants and include the central bank in a leading role, which helps to align incentives to change. As a result, innovations are simpler to develop and implement in wholesale systems.

Retail payment systems are becoming increasingly convenient, instantaneous and available 24/7. Nevertheless, payment systems still suffer from shortcomings in two areas: access and cross-border payments. Large numbers of people have limited or no access to a bank or other type of account for making payments, especially in emerging market and developing economies. Obstacles to opening a payment account include high costs and a lack of documentation or trust. Furthermore, cross-border payments remain slow, expensive and cumbersome. As Bech, Faruqui and Shirakami (2020, in this issue) explain, the coordination problem among participants is especially acute for cross-border payments because changes involve multiple systems, currencies, and legal and regulatory regimes. Furthermore, risks associated with money laundering and terrorist financing can be more difficult to manage across borders.

A high share of cross-border payments flows through correspondent banks. Correspondent banking is an arrangement whereby one bank holds deposits owned by other banks and provides those banks with payment and other services. The number of correspondent banks fell by about 20% between 2011 and 2018. Rice, von Peter and Boar (2020, in this issue) find that all regions experienced a decline, not only those jurisdictions with a blemished record for corruption or inadequate cross-border information-sharing. The retreat of correspondent banks is a potential concern because it might result in higher costs for cross-border payments, less diversity in available products or services, or even a loss of access to the global banking system, all of which in turn could lead to greater use of informal, unregulated payment networks.

Technology is expanding the options for cross-border payments. Fintech and big tech companies are increasingly offering cross-border payment services. Other initiatives aim to improve the infrastructure that links payment service providers in different countries. Bech, Faruqui and Shirakami (2020, in this issue) review initiatives to build payment systems designed to operate across borders, link domestic payment systems or establish procedures for payment service providers to access systems remotely. While there are currently a small number of functioning examples, including in Mexico, South Africa and Switzerland, more such initiatives are being implemented or planned. If successful, these initiatives could help bank-based payment systems remain competitive with alternative arrangements.

The most transformative option for improving payments is a peer-to-peer arrangement that links payers and payees directly and minimises the number of intermediaries. Many peer-to-peer arrangements use distributed ledger technology (DLT). Whereas account-based systems record transactions in a central ledger, DLT systems record transactions in multiple places at the same time, resulting in a decentralised, synchronised ledger. Examples that have garnered attention in recent years include Bitcoin and so-called "stablecoin" initiatives like Libra.

Central banks are increasingly exploring the desirability and feasibility of establishing their own peer-to-peer systems through digital currencies. Auer and Böhme (2020, in this issue) identify features that a central bank digital currency (CBDC) needs to become a trusted and widely usable medium for retail payments. These include scalability, accessibility, convenience, resilience and privacy. Various technical designs differ in how well they support these features; the challenge is to design a CBDC that combines the virtues of a direct claim on the central bank with the convenience offered by intermediaries.

Auer, Cornelli and Frost (2020, in this issue) find that the results of past CBDC pilot projects are mixed, with some projects determining that the costs exceed the benefits but others advancing towards implementation. Central banks in emerging market economies in particular are moving from conceptual research to practical development (Boar, Holden and Wadsworth (2020)).

Peer-to-peer arrangements also have the potential to transform wholesale payments. Bech, Hancock, Rice and Wadsworth (2020, in this issue) analyse how tokenisation – or the digital rendition of assets – could improve the clearing and settlement of securities. They conclude that tokenisation might reduce costs and complexity but does not eliminate the risks associated with one party failing to settle transactions. The success of token-based settlement systems could depend on how well they interact with traditional account-based systems.

## BIS and central banks have a leading role

The pace of change and potential for disruption have propelled payment systems to the top of policymakers' agenda. Indeed, as president of the G20 in 2020, Saudi Arabia has made improving cross-border payments one of the G20's priorities (G20 FMCBG (2020)). The BIS is taking a leading role in these efforts.

The G20's efforts are led by two bodies hosted by the BIS: the Financial Stability Board (FSB) and the Committee on Payments and Market Infrastructures (CPMI). The FSB, in coordination with the CPMI and other relevant international bodies, is developing a roadmap to enhance cross-border payments (FSB (2019)). The roadmap will include practical steps and indicative time frames and will be published before the G20 Leaders' Summit in November 2020. As part of this work, the CPMI is identifying the building blocks for an improved system of cross-border payments. In particular, it is investigating the current cost structure, frictions and risks of cross-border payments and identifying potential private and public sector actions to address them.

Central banks have a core role in payment systems, and the changes under way require them to step up and play a more significant part in improving the safety and efficiency of these systems. Money and payment systems are founded on trust in the currency – whether cash or digital – and this trust is something that only the central bank can ensure. It is a "central bank public good": the trust underpinned by the central bank establishes a solid foundation on which innovative payment solutions can be built (Carstens (2019a)).

The BIS has established its Innovation Hub to spearhead central banks' response to digital innovation. The Hub's mission is to foster international collaboration on innovative financial technology within the central banking community. Its mandate is threefold. First, it will identify and develop in-depth insights into critical trends in financial technology of relevance to central banks. Second, it will explore the development of public goods to enhance the functioning of the global financial system. And third, it will serve as a focal point for a network of central bank experts on innovation.

Digital innovation knows no borders, and thus the BIS is setting up its Innovation Hub in multiple locations in partnership with central banks. The first Hub centres were launched in late 2019 in Hong Kong SAR, Singapore and Switzerland. Initially, the Hub will build on the efforts of central banks that have made significant advances in digital innovation (Carstens (2019b)). In doing so, the Hub will catalyse collaborative efforts among central banks, and cooperate, when appropriate, with academia, financial service providers and the broader private sector to develop public goods for the benefit of the global financial system. As the Hub gathers experience, a home-grown agenda will quickly be developed. A key question informing the BIS Innovation Hub's work is whether money itself needs to be reinvented for a changing environment, or whether the emphasis should be on improving the way it is provided and used.

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