Economic considerations for a retail CBDC in Singapore

1 The future of money is an active area of inquiry for authorities globally and, arguably, holds particular relevance for emerging market economies (EMEs). New forms of digital money can potentially enable greater payment efficiency, foster financial inclusion and accelerate digitalisation. At the same time, EME authorities should seek opportunities for efficiency and welfare gains by leveraging rapid global innovations in payments and money. Trade, financial and digital interlinkages between EMEs and the global economy will continue to deepen, setting the backdrop for greater use of foreign (digital) currencies in our economies. As part of the future monetary landscape, central bank digital currencies (CBDCs) are one option that policymakers are exploring.

2 **The global monetary and payment landscape appears to be on the cusp of far-reaching change.** Today, central banks and commercial banks are at the core of the two-tier monetary system. As Singapore's central bank, the Monetary Authority of Singapore (MAS) uses its liabilities to serve as money to the general public (physical cash) and to commercial banks (digital reserves). Commercial banks, in turn, provide their liabilities as another form of money (deposits) to households and businesses. These deposits facilitate electronic payments, which are ultimately settled on MAS' balance sheet. The impact of the ongoing digital revolution in finance – characterised by the emergence of new financial and payment business models, and novel general purpose technologies that could potentially bypass central intermediaries – challenges the two-tier status quo. Large swathes of commercial activity are also migrating online, and with this shift, the need for quick, seamless and low-cost digital payments has increased.

3 **One implication of the digital revolution is that the relevance of cash as a means of payment is diminishing.** Physical cash is already a small part of the stock of money in most advanced economies, including Singapore, but its disappearance from widespread use because of its incompatibility with the digital economy would still be perceived as an unprecedented shift in monetary arrangements.

4 **A further implication is that the market structure of payments may undergo a fundamental change.** Payments may no longer be the sole preserve of banks. As software and the internet pervade all aspects of commerce, a broad range of technology firms are integrating their digital services with payments. These new business models are unbundling payments from the traditional bank business model of lending and deposit taking, to produce seamless and innovative experiences for households and merchants. In the first instance, this raises the question of how the current bank-centric payment system must be adapted to reap the benefits of this changing payment landscape. However, powerful network and scale effects in these data-driven business models pose new risks as well. They may eventually lead to excessive market power, accentuated by the creation of closed-loop ecosystems that reduce contestability and increase fragmentation in payments and related digital services.

5 **The acceleration of digitalisation globally is also uniquely marked by the emergence of new forms of digital money.** These include CBDCs issued by central banks and stablecoins from large firms, which seek to address needs unmet by the current bank-centric payment system. These monies are primarily designed for retail use and many have the potential to cross borders, riding on the strong network effects of existing vehicle currencies and global platforms. They could be made easily accessible to businesses and households in Singapore and be underpinned by convenient ecosystems and high efficiency in payments. In a small, open and highly digital economy, the Singapore dollar could be vulnerable to being displaced by a widely used foreign digital currency. Prudential regulations can be used to defend against such an outcome, but only up to a point. If domestic payment efficiency and innovation in the long term failed to keep pace with global digitalisation trends and standards, the attractiveness of other foreign money would eventually prevail.

6 **An option that the central bank community has been considering in response to these developments is the issuance of a retail CBDC.** As with many jurisdictions, the starting assumption for the assessment of a retail CBDC in Singapore is that it would be facilitated via a public-private partnership, much as how Singapore dollar cash is issued and distributed today. MAS would issue the digital Singapore dollar, while the private sector would handle distribution and customer-facing activities, including compliance and know-your-customer checks. A retail CBDC would have to be held in electronic wallets, which would primarily be provided by the private sector. Unlike existing forms of digital Singapore dollars available to members of the public, it would be a direct claim on MAS.

7 **A retail CBDC would preserve the relevance of generally accessible central bank money as the economy digitalises. As a public digital payment alternative, it would help safeguard consumer and merchant interests as commerce moves further online**. Physical cash plays a key role for in-person transactions today – individuals and firms can turn to cash issued by MAS as a means of payment if the cost, speed or other qualities of private sector payment solutions fall short of their needs. Cash still makes up a meaningful share of transactions in Singapore, which studies attribute in part to high transaction costs that merchants continue to incur when accepting digital payments. As more commercial activity shifts towards the virtual such that physical cash is no longer a practical payment option, a retail CBDC would allow a public payment instrument to continue its useful role as a basic fail-safe alternative payment method.

8 Regulation would also be a means of ensuring that electronic payments meet the desired minimum standards in end user experience. For instance, MAS could stipulate the cost of electronic payments or how transaction privacy should be protected. Interchange fee caps in other jurisdictions have set some precedent for such regulation. However, there is a trade-off with highly prescriptive regulations that constrain business models and stifle innovation, leaving consumers ultimately with fewer choices.

9 MAS' progressive implementation of FAST, PayNow and SGQR[1] in collaboration with the industry over the past few years has been important in fostering greater interoperability and leaning against the build-up of "walled gardens" in payments. MAS has also significantly enhanced new entrants' access to core payment and banking infrastructures with the opening up of FAST and PayNow to eligible non-bank financial institutions, and the awarding of four new digital bank licences in 2020.

10 **A retail CBDC would go a step further by establishing a universally accepted digital medium of exchange in Singapore.** Given the intrinsic characteristics of a digital Singapore dollar issued by MAS – safe, liquid and widely accepted – it would reduce the need for new players in payments to build up their own e-money offering and a large merchant or customer base that accepts it. Instead, new entrants could integrate with the CBDC platform and offer new digital services around it. Startups and smaller firms would likely benefit most, given the high fixed costs associated with existing models of entry into electronic payments. There could also be greater innovation in "payment-adjacent" digital services as easier integration with the CBDC system would allow more firms to tap into payment data.

11 **To be sure, a retail CBDC that is elastically supplied and universally accessible just like cash is today could impact credit creation and, more broadly, financial and monetary stability in Singapore**. As a new form of money, any retail CBDC is subject to significant uncertainty over take-up. There is the possibility that economic agents will be attracted to a retail CBDC as a store of value and switch their holdings from bank deposits to it in large amounts. A significant outflow of retail deposits, which are a key source of low-cost stable funding for banks, would mean higher funding costs and liquidity risks for the banking system. Banks might choose to cut back on lending or raise lending rates to preserve their profit margins, which would result in tighter credit conditions in the economy if non-bank sources of financing are unable to step in to fill the gap. Alternatively, banks could absorb the rise in funding costs. However, lower profitability from banks' core intermediation business could then make them more vulnerable to shocks, reducing their ability to sustain credit flow and serve as anchors for the real economy during crises, as they have done in the past.

12 In the presence of an elastically supplied retail CBDC, systemic runs on the entire banking system are more likely to occur, and at greater speeds during times of financial stress. With the friction of converting bank deposits into risk-free central bank money (ie cash) greatly reduced, depositors are more likely to do so at the first signs of trouble.

13 Singapore could face more volatile capital flows, especially if the retail CBDC was universally accessible. A retail CBDC could make the domestic currency more attractive to non-residents given its advantages over existing forms of Singapore dollar money – holding costs of a CBDC will be lower than for cash, while being similarly free of credit risks, and possibly more readily available as compared to bank deposits.

[1] FAST is Singapore's real-time retail payment system, while PayNow is a central addressing service that allows users to initiate FAST payments through various proxies, including mobile phone numbers and national identification numbers. SGQR is a single standardised QR code for e-payments and combines multiple payment schemes into a single label.

14 It is worth noting that some of these risks to domestic credit creation and financial stability could also arise as major jurisdictions issue frictionless retail CBDCs or equivalent instruments, even if Singapore does not. This could occur, for instance, if there is substitution of domestic bank deposits to these digital monies in a crisis. Digital currencies issued by foreign central banks, or stablecoins fully backed by foreign safe assets (particularly central bank reserves), could be seen as substantively safer than bank money in Singapore during times of stress, while being potentially more easily available through digital channels than foreign bank accounts are today.

15 **With appropriate regulatory safeguards, the macro-financial risks posed by retail CBDCs can likely be made manageable.** Possible measures include financial disincentives or hard limits to prevent excessive CBDC holdings, as well as restrictions on the use of CBDC by non-residents. These risks could further be tempered by innovative design and technological solutions built into a new digital currency. Such safeguards should ensure that retail CBDCs serve primarily as a medium of exchange and not a major store of value.

16 **Overall, MAS' current view is that there is no pressing need for a retail CBDC in Singapore at this point in time**. Demand for cash domestically remains some way from the "minimum threshold" where concerns regarding the negative implications from the lack of cash in circulation might arise. Retail electronic payments are generally competitive, efficient and cheap, and innovation continues to flourish. Even as pockets of frictions and high costs remain, there are other initiatives in the pipeline to address them. The fundamental soundness of the Singapore dollar and its dominance in the domestic economy will also be a bulwark against any rapid move towards substitution with foreign currencies.

17 **Nevertheless, MAS recognises the possibility that retail CBDCs may offer innovative solutions in the future.** The gains from enabling greater innovation in payments and payment-adjacent digital services will grow as businesses continue to digitalise their operations. The case for a public payment alternative to protect end user welfare in digital payments will naturally strengthen as more payments move entirely online, and could be underscored if the market structure of electronic payments grows more concentrated and rent-seeking behaviour begins to emerge, as has already occurred in some jurisdictions.

18 **There is thus value in MAS embarking on the upstream technical work pertinent to the issuance of a retail CBDC.** The development of a retail CBDC system and its ecosystem is likely to be an extended and complex undertaking. Structural trends reshaping domestic money and payments have long runways and could accelerate unexpectedly. MAS and the financial and technology industries should begin to build up the necessary expertise and capabilities to issue a CBDC if the need arises.

19 **MAS' exploration of CBDC technology, in partnership with the industry, has the potential to generate transferable know-how that could benefit payment innovation more broadly.** Retail CBDCs have uniquely high requirements, of scalability, extensibility and reliability. They are thus a useful "high-water mark" to spur innovations around this payment trilemma, which could have spillover benefits to payments even beyond CBDCs.

20 Several other important areas remain to be explored, including a retail CBDC's regulatory, legal and operational aspects. Depending on its design and technology, there are both risks relating to money laundering, terrorism financing and tax evasion and the potential for authorities to combat them through the issuance of a CBDC. There are also broader, non-economic considerations, such as the citizenry's desire for continued access to public money and payment privacy.

21 **MAS notes that the adoption of next-generation payment technology and rails is in principle a distinct consideration from the issuance of a retail CBDC using such technology** – while there are likely to be synergies from having public money on next-generation rails, the latest technology could yield significant benefits even when applied to private liabilities. As such, MAS will continue to study other emerging forms of digital money that may utilise such technology, such as privately issued Singapore dollar-denominated stablecoins and synthetic CBDCs, on their own merits. MAS remains open to a range of possibilities for the future of money and payments, in parallel to the exploratory work on a retail CBDC.

22 **Trusted money and efficient payments are core public goods.** A high degree of public intervention in their provision is crucial in ensuring that payments are able to function smoothly and meet the evolving needs of society. MAS will continue to assess the role of public money in the growing sphere of digital payments, in conjunction with the regulatory, developmental and infrastructural initiatives already under way.