UK FINANCE

COMMERCIAL MODELS OF A POTENTIAL UK RETAIL CBDC

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FOREWORD

The Bank of England (the Bank) and HM Treasury are currently considering whether the introduction of a UK retail central bank digital currency (CBDC) would be beneficial for the UK economy and the continued integrity of pound sterling in light of increasing use of digital money. This decision could have significant impact on the way that the UK's financial markets operate and the ways in which consumers and businesses make payments on a day to day basis.

While the Bank has not yet made a decision on whether to introduce a UK retail CBDC, it has proposed that the launch of a UK retail CBDC would be done in collaboration with the private sector. In light of this, UK Finance and its members considered how the private sector might be mobilised to contribute to the collective challenge that is faced by industry and regulators in considering this important and strategic decision for the UK's financial ecosystem. As a result of this, we have worked with members throughout the first half of 2022 to understand how some of the key technical hurdles could be overcome by the market. Our members identified with us three areas that required particular investigation:

- The level of interoperability between a CBDC and other forms of money
- The potential commercial considerations of private firms offering CBDC services
- The impact of CBDC implementation on credit creation for the UK economy

This paper is one of three reports developed with UK Finance members that helps to discuss these potential impacts of the issuance of a UK CBDC and reflects a synthesis of thought from our members, associates and other stakeholders. We encourage you to read the other reports in this series as they cover complementary implications of CBDC issuance for the UK economy.

UK Finance and its members remain in full support of the consideration by the Bank and HM Treasury of all work investigating the potential development of a CBDC for the UK market. The Bank and HM Treasury are currently considering the practical challenges of implementing and operating a UK retail CBDC, including the roles of the public and private sectors ahead of the proposed consultation in 2022 to help assess the case for a UK retail CBDC.

We firmly believe that this development process is an epochal opportunity to cement the ability for public and private bodies to work collaboratively and openly to understand the technical concerns, operational benefits and public policy objectives that are all essential to answer through the development of a UK CBDC proposal. A CBDC could deliver to the UK a step change in the way that businesses and consumers use financial services and break off the boundaries imposed by legacy infrastructure while ushering in a new generation of innovation for the ecosystem. It is essential that both public and private bodies work together to ensure the potential of a CBDC can deliver these benefits.

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EXECUTIVE SUMMARY

As the Bank of England (the Bank) investigates whether to launch a UK retail central bank digital currency (CBDC), other central banks around the world are also investigating the opportunities presented by a CBDC for their economies. This gives valuable insight into what a private/public collaboration could look like. Recently, the European Central Bank, in an Occasional Paper, raised the question of what a business model for a CBDC might look like[1]. This paper sets out initial thoughts on how sustainable business models might function for Payment Interface Providers (PIPs).[2]

The Bank of England suggest that PIPs, private and commercial organisations will provide customer-facing CBDC services.[3] Potential costs for PIPs providing these services could include those associated with build, implementation and maintenance, carrying out KYC and AML, ensuring cyber and operational resilience, providing in life customer servicing and customer protections. The provision of these services would create costs for a PIP that it would need to recoup.

A useful example of a cost that will need to be funded if a CBDC is launched is consumer protection. Consumers may well choose whether they use a CBDC for payments depending on whether there is an equivalent level of protection in place as for card payments and faster payments – so this goes to the potential use case and uptake of a CBDC. While CBDCs may be seen as an evolutionary replacement for physical cash, our expectation is that consumers would expect a similar level of protection as with other forms of digital payment.

Our analysis assesses the current cost distribution of payments between different parties within a payment chain before investigating the mechanisms that PIPs may use to recoup costs or to make a profit. We presume that, from a policy perspective, as private companies PIPs will expect both to cover their costs and to generate a return.

We consider how, in the UK, commercial bank deposits currently enable the bank to make loans and earn interest, and how that return can offset the cost of providing the account and associated payment services. Given that a CBDC will be a liability of the central bank, we presume that this business model will not function for providers of CBDC services.

It has been suggested that perhaps end user customers could be charged for making payments in CBDCs. Customers may not want to be charged for spending via CBDC in the UK unless the quality of the payment service being provided is improved through providing some increased functionality or opportunity (such as programmability) or the customer is making a payment they would currently also be charged for (e.g. international payments). If customers are confronted with two apparently identical offerings, one charging higher fees than the other, it is expected that most customers will opt for the cheaper option. The use case for CBDC application is crucial to create a value proposition.

A route to a commercial model could be via a charge on merchants for accepting payment in CBDC. However, other costs could exist in any additional point of sale equipment or software needed to accept payment in a CBDC. These considerations could impact whether merchants wish to accept payment by CBDC or how quickly they proceed to accepting payment in CBDC.

Alternatively, other business models could be considered. Funding could be provided from the public sector in order to ensure firms implementing a CBDC are able to appropriately cover costs. This could be, for example, payment in consideration of AML or KYC checks being undertaken by PIPs. Perhaps seigniorage revenues could

1 https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op286-9d472374ea.en.pdf

2 For this paper, we have adopted the nomenclature of the Bank of England's March 2020 Central Bank Digital Currency: Opportunities, challenges and design discussion paper of Payment Interface Providers (PIPs) to indicate financial institutions that provide CBDC services to the consumer.

3 https://www.bankofengland.co.uk/-/media/boe/files/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design.pdf?la=en&hash=DFAD18646A77C00772AF1C5B18E63E71F68E4593

help provide this funding. Other possibilities could include cross-subsidisation of a CBDC business by another profit-making arm.

In summary, we consider that the mechanisms by which both a central CBDC ledger and the technical implementation of PIP services to the market are funded are important to understand when considering the potential implementation of a CBDC. UK Finance and its members remain supportive of a partnership between public and private bodies in order to make a success of any CBDC implementation. Further investigation of the potential mechanisms by which parties in this partnership will achieve both their policy and economic goals is required.

POTENTIAL COSTS FOR A CBDC ENVIRONMENT

The Bank of England 2020 CBDC Discussion Paper introduces the concept of a Payment Interface Provider (PIP) that would provide customer-facing CBDC payment services. In this paper, we assume that the PIP does not hold the CBDC and is not able to lend it out and so cannot make money from net interest income as commercial banks do.

It is assumed that PIPs take on the activities suggested in the Bank's March 2020 Discussion Paper on Central Bank Digital Currency at paragraph 4.2(b):

a) Provide a user-friendly interface, such as a mobile application or website, to allow the user to initiate payments and manage their CBDC

b) Apply know your customer (KYC) checks to verify the identity of users (or commission a third-party service to do this)

c) Register one or more accounts for the user in the core ledger

d) Authenticate the user when they initiate payments, to protect them against fraud (e.g. if the user's phone has been stolen), protect their personal data and ensure cyberresilience

e) Apply antimoney laundering and sanctions checks to relevant payments (or commission a thirdparty service to do this)

f) Develop overlay services to provide additional functionality

g) Some PIPs might also want to provide 'merchant services' to enable retailers and businesses to take CBDC payments from consumers.

There are a number of costs associated with these activities:

a) Build, implementation and maintenance costs

b) Onboarding costs: KYC/AML Controls

c) Ongoing transaction monitoring

d) Running of a technology stack for the customer CBDC interface

e) Integration with merchants (and associated onboarding costs, KYC/AML controls and checks of credit-worthiness)

f) Integration with and any fees for the CBDC core ledger

g) Cyber and operational resilience controls

h) In life customer servicing (e.g. issue of statements of account to customers)

i) Customer protections.

These costs present a central challenge to PIPs engaging in a CBDC ecosystem that we believe must be considered from a policy level:

1. How will PIPs recuperate costs incurred in the process of undertaking the business of providing CBDC services to consumers?

2. To what extent will PIPs be able to achieve a degree of profitability to provide a return on investment for any upfront costs, dividends to shareholders and/or further investment and innovation?

Consumer protections

One of the costs listed above is consumer protection. They are a useful example of the importance of a commercial model for a UK retail CBDC. Recent innovations driving a greater proportion of retail payments to the interbank rails have demonstrated the need for consumer protections to follow innovative businesses and new payment practices. Indeed, a UK Finance review of how the benefits of Open Banking payments can be accelerated to the market comments extensively on the need for consumer protections to be put in place for these innovative businesses.[4]

Innovation is essential to support a competitive and innovative payments market and there is a need to ensure that the interests of end users form a key pillar of any payment system development. This means ensuring adequate safeguards are in place to manage what happens when something goes wrong with a payment. The Bank will need to consider the best way to ensure consumers are adequately protected when making payment through a CBDC and critically, how revenues are generated to fund this protection.

This will include assessing whether customers are protected when there is:

a) an unauthorised payment (e.g. if a CBDC payment instrument, or a digital token, is stolen or lost)

b) a fraudulent act that causes customer harm

c) a fault in the service provided by the private sector PIP

d) a fault with goods or services purchased.

We have set out in the table below a high-level overview of the current protections afforded to different types of digital payment. We appreciate that there are no equivalent protections in place for cash. However, consumers may well choose whether to use a CBDC for payments depending on whether there is an equivalent level of consumer protection in place as for other digital payment mechanisms; this may be driven by the use cases that a CBDC fulfils for the UK economy.

4 https://www.ukfinance.org.uk/system/files/2022-05/The%20future%20development%20of%20Open%20Banking%20Payments.pdf

	Credit card	Debit card	Faster payments	Cash
Payment protection (the protection that is available through the use of a particular payment system)	Chargeback (A rule card-issuing banks subscribe to that lets customers ask their card provider to reverse a disputed transaction on their card)	Chargeback	N/A	N/A
Legal protection (the protection that is provided by law)	The Consumer Credit Act 1974 (**CCA**) makes **the lender liable** for unauthorised transactions on the card. Section 75 CCA holds the lender jointly and severally liable for any breach of contract or misrepresentation by the retailer or trader for purchases between £100 and £30,000.	Payment Services Regulations 2017 (**PSRs**) set out **a right for customers to be refunded by their account provider** in the event of unauthorised transactions and a liability framework for payment actors. The payment service provider is required to refund customers within one business day of being alerted to an unauthorised transaction.	PSRs set out **a right for customers to be refunded by the payment service provider** in the event of unauthorised transactions and a liability framework for payment actors.	N/A
Retailer protection (the protection that is provided by the retailer, such as returns and exchanges policy)	Optional (whether retailers provide protection is up to the discretion of each retailer)	Optional	Optional	Optional
General consumer legislation also allows customers to bring a disputed payment to the small claims court (for example, Consumer Rights Act 2015). Customers using direct debit benefit from the direct debit guarantee.				

The use case for a payment (e.g. if it is designed to be used to pay for goods and services) has historically driven the type of consumer protections in place for existing payment methods and will impact the type of protection needed for a UK retail CBDC. This is one reason why we raise this point now ahead of the next consultation on a potential UK retail CBDC.

Customers can also rely on a payment service provider's complaints resolution procedure. Ultimately, complaints about errors covered by the PSRs can be brought to the Financial Ombudsman. If the digital transaction occurs offline, outside of the recognised networks, there needs to be an understanding of what protection is possible and reasonable.

Consideration is needed as to how consumer protections will be funded if the private sector is to provide CBDC payment services. There will be:

a) upfront costs of setting up new processes to receive, investigate and resolve claims and disputes

b) ongoing costs of running the consumer protection framework.

Current Cost Attribution

Figure 1[5] shows the main flow of fees between parties in a four-party card payment system. For the merchant, the crucial fee is the merchant service charge (MSC), which is the total amount it pays for card-acquiring services to its acquirer. The MSC comprises:

a) Interchange fees, paid by the acquirer to the issuer

b) Scheme fees, paid by the acquirer to the operator of the card payment system (such as Mastercard and Visa)

c) Acquirer net revenue, which recovers the acquirer's other costs and margin.

For Faster Payments, there are costs for both paying and receiving financial institutions. Further, infrastructure to support more retail focused payment systems, such as Paym or Open Banking, require funding to maintain the redirection database and directory central to the function of these schemes. Consumers can often make Faster Payments, Paym transactions or Open Banking payments for no cost. There is often no income model, only costs, for financial institutions which operate this model and costs associated with these payment services are often cross-subsidised through their net interest margin revenues. This also means that any customer query or issue resulting from the transaction is handled on the same cost base.

Figure 1: Main fees flowing between parties in a four-party card payment system

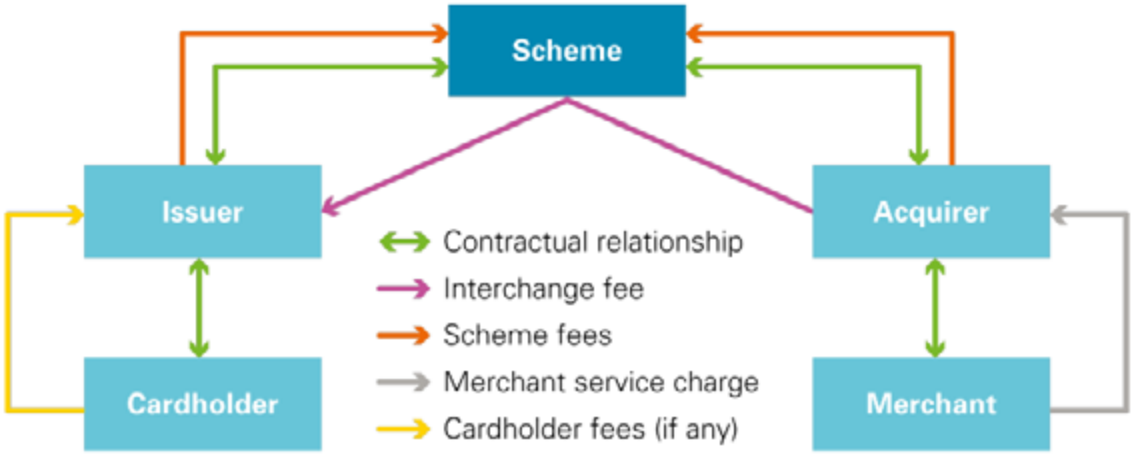

Diagram provides a simplified representation of a four-party card payment system

5 Taken from the Payment Systems Regulator's Market review into card-acquiring services, final report, November 2021, https://www.psr.org.uk/media/p1tlg0iw/psr-card-acquiring-market-review-final-report-november-2021.pdf

POTENTIAL OPPORTUNITIES FOR PIPS TO GENERATE INCOME

Net Interest Rate Margin

In the UK, commercial banks do not tend to charge customers for opening a personal deposit account[6] and for many of the associated payment services on that account. For example, customers can make Faster Payments to other accounts in the UK in GBP for free. They can also use their debit card to make purchases online and in shops in the UK in GBP for free. Customers are not charged for these services, because the customer depositing money with the commercial bank enables the financial institution to lend money and earn interest on it, and that interest is used to help fund the provision of the payment services. In terms of card payments, the four-party scheme provides for a share of interchange, which helps fund the costs of account maintenance and the consumer protection model.

However, if a customer uses their funds to purchase CBDC through a PIP, rather than depositing money with a commercial bank, we presume that the PIP will not be able to earn income from using that deposited money to provide the collateral necessary to create loans and generate revenue from the net interest margin.

End-user charges

It has been suggested that end user customers could be charged for making payment in CBDC. There are concerns that if customers are confronted with two apparently identical offerings (such as a way to store funds and pay for goods and services) one charging higher fees that the other, it is expected that most customers will opt for the cheaper option. This suggests that customers would not want to be charged for spending via CBDC in the UK, unless:

1. the quality of the payment service being provided was substantially improved
2. a customer is using CBDC to make payments they would currently be charged for (e.g. international payments) and making the payment via CBDC would be cheaper.

We note the Bank's scenario that twenty per cent of deposits might migrate from commercial bank money to a CBDC; however, we note that in the rationale for this migration a cost associated with the holding of a CBDC was not considered by the Bank in this analysis. It is unclear at this time what impact the introduction of a cost for holding a CBDC would do to the migration of commercial bank money to CBDC.

Merchant charges

Perhaps a route to a commercial model would be via a charge on merchants for accepting payment in CBDC. Merchants are used to paying fees in order to accept card payment and for depositing cash. However, the success of this approach would depend on how many merchants decide to accept payment in CBDC. For merchants to be equipped to accept CBDC, new point of sale terminals, new software or new app-based point of sale solutions may be needed; particularly if offline payment opportunities are developed through a CBDC. The level of financial investment needed by merchants in this point of sale equipment/software may drive whether and how quickly merchants decide to accept payment in CBDC. The level of income that can be generated through a charge on merchants could also depend on the limits placed on how much CBDC each customer can hold and the extent to which they therefore use CBDC to make day to day payments.

6 It is more common to see customers charged for holding a business bank account and associated payment services.

Alternative models – Public sector funding

An alternative option would be some form of funding provided by the public sector. For example, if AML and KYC checks are being outsourced to PIPs, would the Bank provide funding to do so? This could take into account seigniorage revenues.

In order to participate in a particular payment scheme, participants are frequently obliged to make a significant strategic (and often financial) investment in the infrastructure and processes of the Scheme, to leverage its full potential. To mitigate the impact of this investment and encourage the take-up of the Scheme by the customers of potential participants a Scheme may offer certain benefits to participants. Examples of these include: fee discounts and/or rebates based on transaction volumes; financial allowances to assist with any infrastructure and technology costs which may have to be incurred to use the Scheme; joint marketing programmes and support to encourage customers to use the Scheme.

What is clear, is that a route to a commercial model is important, as there are a number of costs that will need to be borne by either the public or private sector if a UK retail CBDC is launched.

Alternative models – Cross-subsidisation

It is possible that a PIP could derive a business model that is supportive of a CBDC service as a loss-making function of their business. This model would not be wholly dissimilar to the current business model operated by commercial banks in the provision of payment and account services through the use of customer deposits to provide lending services to the market. It is possible that data monetisation or cross-selling opportunities may be commercialised by innovative PIPs but it is not within the scope of this paper to consider whether such business ventures may be successful in the market.

CONCLUSION

The question of who pays for which parts of the payment chain and the role of the Bank in paying is one for further discussion and analysis to understand whether a viable eco-system under the Bank's platform model, can prevail. This paper outlines a number of potential impacts that the choice of business model to support a PIP business could have on the viability and policy outcomes of a CBDC issuance. We consider that these should be assessed in greater detail as further investigation of the benefit of a CBDC for the UK market continues.