



Pay.UK's response to the Bank of England's approach to innovation in money and payments

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1 Pay.UK's key messages

Pay.UK shares the Bank of England's (the Bank) view of the opportunities and challenges facing payments and banking in the UK, as set out in its discussion paper 'The Bank of England's approach to innovation in money and payments'. As the recognised operator and standards body for the UK's interbank payment systems, we believe we are uniquely well placed to help address these opportunities and challenges and we have, in this response, detailed how we can play our part in achieving the goals set out by the Bank.

We welcome the call for a shared strategic vision

Better outcomes in payments start with a clear, shared strategic direction from public authorities. In our submission to HM Treasury for the National Payments Vision (NPV) consultation, we asked that the public authorities provide a shared strategic direction in retail payments, with clear roles and responsibilities for delivery.¹ We strongly believe that agreeing a set of joint outcomes for payments, and aligning and prioritising regulatory and industry initiatives, will unlock the investment in payments infrastructure that the UK economy needs to grow. We therefore welcome the Bank's statement that it will work closely with HM Treasury, the Payment Systems Regulator (PSR), the Financial Conduct Authority (FCA) and the industry, to deliver the outcomes detailed in the NPV.

Clear roles and responsibilities for delivery are the first step, but we also need a mechanism to ensure that solutions are designed to deliver these outcomes at the right pace. We think it is therefore important to consider how to ensure a coordinated approach to the outcomes' implementation, and for HM Treasury and the regulators to align on a mechanism to oversee their delivery. Existing regulatory powers are likely to be sufficient to ensure the sector implements the vision. This would suggest that no new overall coordination body would need to be formally constituted – but a senior consultative group could be established (for example, by the Bank under its FMIC). This group could focus on agreeing priorities and periodically updating the vision, not on prescriptive solutions.

Ideally, the public authorities together would create a vision or set of outcomes for retail interbank payments which we, through our industry engagement model, would be tasked with delivering, alongside our customers and infrastructure provider. For example, we will collaborate with industry to co-create a roadmap of change, and a transparent and effective delivery model for our central infrastructure (CI) renewal². We know our role and responsibilities within the retail interbank ecosystem. We have already set out for the Bank what we see to be the current constraints on our role: i) management and enforcement of our rules; ii) adoption of market-wide change; and iii) our funding model. Removing these constraints would still be required to enable us to be effective in delivering with industry.

Pay.UK is best placed to deliver change and innovation

¹ <https://newseventsinsights.wearepay.uk/media/okonfkyj/national-payments-vision.pdf>

² While regulatory approval for the NPA has been pending, Pay.UK has sought to renew provision of its central infrastructure contracts for its Faster Payments (FPS) and Bacs systems, which will expire in the coming years.

The need for Pay.UK's central infrastructure to be kept resilient and relevant is universally accepted. Pay.UK has world-class existing technology, and (with regulatory approval) our technology strategy will maintain and improve this through a roadmap of modular upgrades³. We will remain an integral player in achieving resilient innovation and, as a neutral body with clear aims and strategic goals, are best placed to deliver this.

Both in parallel to the delivery of the new infrastructure and over the long-term, Pay.UK will engage with the ecosystem to understand what developments might need to be enabled by the central infrastructure, or where we may need to play a role enabling new propositions. Some of these may be required to meet the shared strategic direction mentioned above: We want to work with industry to propose the timing and content of solutions to meet regulatory outcomes, not to have solutions and timescales imposed externally. Other propositions and enhancements may be proposed by us or by industry, and we will work with them to identify what is needed and the body best placed to deliver them.

We welcome the focus on A2ART

The Bank highlights the development of account-to-account retail transactions (A2ART) as an alternative to card payments as one aspect of how the UK's retail payments can remain relevant and fit for purpose. The outcomes for this set out by the Bank include that A2ART should give the ability to make payments to businesses 'at the point of sale in a broad range of use cases' and that this should be 'quick, easy, secure, cost effective and widely available'. As part of our work on CI renewal for our Faster Payment System (FPS) system, we intend to deliver technology to enable 'certainty of fate' in timescales suitable for retail purchases (online or instore) for FPS payments. This enhancement looks to ensure the CI can support market innovations like A2ART. The adoption of ISO20022 will also enable richer data to be carried alongside the payment, with benefits for users.

In our NPV submission, we noted that, beyond technical capability at the centre, there is more to be done to create the conditions for interbank transactions to thrive in retail. These are well understood and include a common set of rules and standards, open access to initiation routes for all payment types, appropriate protections, widespread availability, an economic model, and a recognisable brand. As payments increasingly move onto consumer devices, there are significant 'gatekeeper' advantages for the providers of operating systems and app stores, particularly their digital wallet offerings. If we are to foster real and effective competition and choice among payment types, this will require access for all of them to gateways representing potential bottlenecks to competition.

It has been established that there is potential demand for an alternative to cards, and most of the technical pieces are in place, but it will take a collective effort and an approach that can tackle vested interests and overcome the obstacles which have prevented further progress. These 'foundational enablers' need to be unlocked. We therefore welcome this outcome in the Bank's paper and the conclusion that it will require 'clear and renewed leadership by the UK authorities', and that the Bank intends to work closely with HM Treasury, the PSR and FCA to achieve this.

We have a pathway to tokenisation

³ Pay.UK's Technology Strategy involves taking a new approach to our technology that focuses on incremental changes towards a target state, as opposed to a complete rebuild of our technology. This approach will help us to become more 'nimble' as we adapt to changes in the ecosystem.

The Bank's discussion paper states that the main retail payments innovations will likely come through the extensive possibilities enabled by tokenisation and programmability. Pay.UK is very aware of the huge impact that tokenisation could have on payments, and while its development and use in retail payments are far from imminent, our CI renewal is being undertaken in a way that ensures it can be used on our next generation systems.

Our technology strategy will make us an enabler of these propositions and the technical enhancements that support them. The strategy, through its modularity, will also make us more able to respond quickly to change. Our ubiquity with respect to bank accounts, our commercial neutrality and the modularity of our approach all mean Pay.UK should be seen as the organisation to deliver innovations such as tokenisation and programmability to the market. Our approach also means that, as further use cases and propositions emerge, their 'natural home' should be with Pay.UK.

We are also pleased to see that the Bank is considering introducing innovations such as tokenisation into wholesale central bank money, and that it is proposing to conduct experiments into the functionalities that wholesale central bank digital currency (wCBDC) might enable, including involvement in the Bank of International Settlements' Project Agorá, supporting the emergence of the 'finternet'⁴. Interoperability between wholesale and retail systems for the transfer of tokenised assets and currencies will be essential to realise fully the benefits for both systems.

We have an important role in maintaining the singleness of money

We agree with the Bank's statement that the singleness of money should be maintained – i.e. that 'all different forms of money must be exchangeable with each other at par value' and that therefore '[a]ny new retail payment systems ... must be interoperable with RTGS as the UK's core payments and settlement infrastructure'.

The UK has a strong banking sector that is well positioned for innovation. We believe that Pay.UK will have a central future role to play in providing the functionality to enable tokenised commercial bank money – for retail payments and other use cases – to interact with tokenised wholesale central bank money, bringing innovation for users and maintaining the singleness of money. Pay.UK's position as an 'on / off ramp' between central bank money and other digital assets will be a key way in which we can fulfil this role.

If the central interbank payment systems can operate with existing currency, including digital versions and tokenised assets, innovation and the accompanying benefits for users can be achieved on our retail systems, without the need for the Bank to develop its own retail central bank digital currency (rCBDC).

We welcome the Bank's call for a sustainable governance and funding model for infrastructure

We agree with the Bank that payment systems' governance frameworks should reflect the views of infrastructure users. We also agree that 'infrastructure providers must have sustainable and coherent funding and revenue models to ensure they can invest in their resilience and modernisation'. Our analysis suggests that both of these have been central to the success of the models referred to in India, Brazil and Sweden. We are currently undertaking extensive work on these issues, in collaboration with

⁴ Agustín Carstens, General Manager of the BIS, proposed the term 'finternet' to describe 'a system in which individuals and businesses could transfer any financial asset, in any amount, at any time, using any device, to anyone else, anywhere in the world'. <https://www.bis.org/speeches/sp240419.htm>

organisations in our ecosystem, and will continue to engage and share our developing thinking with the Bank.

2 Introduction

Pay.UK is the recognised and designated operator and standards body for the UK's interbank payment systems. We provide the digital networks that make payments secure, safe and simple for the UK's banks and building societies, payment providers and their customers.

Pay.UK was set up for the good of the economy as a whole. We support a vibrant UK economy enabling a globally competitive payments industry through the provision of robust, resilient, collaborative retail payment services, and rules and standards for the benefit, and evolving needs, of all users.⁵ Our role centres around three functions: designing and operating our systems to be efficient, resilient and sustainable (controlling systemic risk); ensuring fair and equitable access now and in the future; and driving enhancements to our services to deliver optimal outcomes for end users and the ecosystem as a whole.

2.1 Our next generation infrastructure

Pay.UK has plans to renew the CI for its FPS and Bacs systems. This will include both upgrades to the systems' existing functionalities and, subsequently, enhancements to those functionalities to enable us to offer new products and services. We propose to undertake this in a modular process, in accordance with our technology strategy. This approach will give Pay.UK the certainty we and our customers need about the continuing availability and resilience of our systems, and will give us the flexibility to develop and implement functionalities for the next generation of payments infrastructure and services.

These include the opportunities presented by digital currencies and assets, tokenisation and platform programmability. We have been closely tracking developments in this field, to understand the implications and possibilities, and we readily recognise the significant impact that these features could have on payments, financial products and the economy as a whole. While their introduction and general use are still some way into the future, we are undertaking the renewal of our CI in a way that ensures they can be developed and made interoperable / compatible with our next generation systems.

The future possibility of building a programmable system compatible with tokenised payments was explored in detail as part of our New Payments Infrastructure (NPA) procurement process. We are aware of our current vendor's position on this, and how they could extend the infrastructure at a later date, and there is nothing in the approach being taken to implement our next generation infrastructure that would exclude this. We therefore anticipate that the functionality to accept and programme tokenised payments is something that could be added to our central infrastructure in the future, at the appropriate time.

Many of the features and functionalities required for tokenisation dovetail with the way in which anti-fraud measures and digital ID services could be handled through additional markers and attributes in message standards in separate infrastructure elements. This is much the same as how Confirmation of Payee and Enhanced Fraud Data are (or will be) outside the payment systems themselves but under the

⁵ Pay.UK's company purpose.

Pay.UK umbrella of services. Similarly, the ability to extend the CI's functionality to handle cross-border payments is also something that would be straightforward to add at the right time.

Our technology strategy, through its modularity, as well as our ubiquity with respect to bank accounts, make Pay.UK an ideal place to deliver innovations such as tokenisation and programmability to market. Our approach also means that, as further use cases and propositions emerge, their 'natural home' should be with Pay.UK.

3 Pay.UK's responses to the paper's questions

1. Are there areas in which programmable platforms, including those enabled by DLT, might bring significant benefits and risks in payments and settlement?

Benefits

Programmable platforms involve the ability to assign conditions on the use of digital money, through smart contracts. There are many already widely accepted benefits of this, including:

- Streamlining regular payments and settlements, such as for utilities
- Arranging contract payments to trigger only once specific conditions are met, particularly in respect of the transfer of goods in global supply chains
- Supporting Industry 4.0 manufacturing models, particularly via micropayments
- Allowing users to route multiple accounts or payment methods to a single instrument (such as a card) according to a set of rules, for optimising benefits, loyalty points etc
- Reducing fraud and trust issues by automating company payments
- Facilitating financial innovation through new business models

These benefits are merely a subset of the wider potential benefits of programmable platforms. The network effects of having a connection to a large proportion of the population via their bank accounts, combined with the greatly enhanced availability of data and the ability to share this, mean that there are a lot more possibilities for these platforms beyond payments.

Another set of benefits of programmable payment platforms relates to the broader programmable transmission and sharing of data – i.e. accessing bank-verified customer attribute data for non-payment purposes. This is due to their position as a nexus for both connectivity between institutions and the general population and the collection and transmission of data to and from those people and financial (and other) institutions. Examples include:

- Confirmation of Payee services to combat fraud
- Cross-institution know-your-customer verification – e.g. verification for age-limited services
- Messaging supporting transactions in digital currencies
- Messaging supporting FX for digital currencies and other cross-border use cases
- Messaging supporting trade finance information Universal Wallets in a Commercial Bank Dual-Account System
- Smart Contract / Insurance Policy Management
- Messaging supporting Open Finance use cases such as BNPL credit line checks at point of sale.

Widespread adoption of these use cases may be some time into the future, but they are already being exploited by banks and the ID validation and verification industry, and the benefits at scale for both connected institutions (both banks and non-banks) and end users could be significant. What also becomes clear from looking at the broader possible uses of programmable platforms such as the ones

listed above, is that the platforms themselves would become more than financial market infrastructure (FMI) – they would in fact be ‘digital market infrastructures’.

As a payment system operator (PSO) in a position as set out above, Pay.UK has two significant features that could be exploited to the benefit of financial institutions, end-users and the Government:

- Pay.UK is a ‘universal connector’, providing one of the connections for global financial institutions on the ‘international multi-chain network’ – specifically a safe, regulated connection for virtually all UK bank accounts.
- Pay.UK provides access to standardised payment messaging infrastructure that enables connected financial organisations to expose and monetise their data for fraud, identity and other use cases.

While there is, understandably, nothing in the Bank’s current paper about these possibilities, we believe it is important that the potential for payment rails to be used for non-payment and even non-payment-related messages⁶ should form part of the future conversation about the position and role of the UK’s payment systems. This is especially true if the development of enhanced data capabilities required by a move towards tokenisation forms part of the UK’s future payments strategy, and the development of so-called ‘digital public infrastructures’ is enabled by ‘smart data’.

Risks

There may also be attendant risks in allowing other platforms to process data via Pay.UK’s platform, as a way of activating their own programmability:

- Anything where data may be used for non-payment purposes (e.g. digital ID services) would not be within Pay.UK’s current remit. Our company purpose (as defined in our Articles of Association) would therefore have to be altered to acknowledge any broader offering / orientation.
- Similarly, the current rulebook and customer contracts give Pay.UK a limited ability to monitor and enforce rules. This is likely to become even more important, given the greater range of activity possible on more developed platforms, and our remit would therefore need to be appropriately enhanced.
- Another more fundamental risk arises from whether the type of platform envisaged is still within the Bank for International Settlements (BIS) PFMI⁷, and whether they would be sufficient

⁶ In the era of tokenisation, ‘transactions’ will not necessarily be ‘Delivery vs Payment’ (DvP), requiring a settlement and a cash leg, and include additional categories such as:

- ‘Claim vs Authorisation’ (CvA) – verifying an attribute of an asset;
- ‘Claim vs Confirmation’ (CvP) – confirming that a claim is valid / invalid / partial / true / false etc;
- ‘Request vs Authorisation’ (RvA) – confirming that a process may proceed to the next step; and
- ‘Request vs Proxy’ (RvP) – asking for the transfer of a bearer token to a new container / wallet, where the token itself (or a refusal / error message) is the response.

Messages may facilitate ‘Claim vs Authorisation’, ‘Claim vs Confirmation’, ‘Request vs Authorisation’, where one leg may be a question and the other a simple or complex response, or even a one-leg transaction like ‘Request vs Proxy, where the transfer of the token itself (like a bearer instrument) via the message is the response. In this case, what is important are the infrastructures over which these messages travel.

⁷ The Bank for International Settlements Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) issue the Principles for Financial Market

for this type of platform, as already raised by UK Finance's Regulated Liability Network (RLN) proof of concept group. As the Bank states in its paper, 'international standards must continue to play a crucial role in building common approaches to the risks associated with new forms of digital money'. As mentioned above, the ability to monitor and enforce our own rules becomes even more important with the variety and complexity imported by programmability, smart functionality or the handling of non-payment data; if there is inadequate provision for the increased monitoring and enforcement requirements arising from programmable platforms, or if functionality associated with programmability impacts our standards, it may be necessary to revisit the PFMI.

- Another fundamental question arising from the possible developments set out here is that of potentially allowing financial activity to be disconnected from the central bank 'anchor'. For example, enabling frictionless cross-border payments could theoretically allow a connected institution to route its payment processing via a different jurisdiction (e.g. Liechtenstein) to be subsequently brought back into the UK. Thus, greater innovation and interoperability in cross-border payments might also lead to disintermediation of the UK's systems by processing in effect being transferred 'offshore' in this way. This is analogous to the complexities introduced by data being processed offshore, as is dealt with in the General Data Protection Regulation (GDPR). There could be a need to ensure that 'payment value chain activities' do not take place in any other jurisdiction or on any other system than that covered by the rules of the originating platform.

The delivery and mitigation of the significant benefits and risks from increasing the variety and connectivity of programmable platforms will depend on the roles, powers and direction given to the various organisations involved. The rules and standards of the platform will be critical to this.

2. How likely are programmable platforms, including those enabled by DLT, to be taken up at scale by wholesale financial markets?

There are significant potential efficiencies to be achieved from making payment platforms programmable, and a real potential for new, innovative products to appear and take advantage of these efficiencies and the functionality introduced. Because of this, it is reasonable to assume, given the right circumstances, there would be strong demand for programmable platforms and the services on them. It also seems reasonable to assume that any technological limitations that might currently prevent the sort of functionalities and uses put forward here being fully exploited would be addressed, and programmable platforms could therefore be taken up at scale. We also believe this would be the case with or without the platforms being based on DLT.

One aspect that could have a dampening effect on the take-up of programmable platforms, however, is the risk / regulatory framework that would have to develop around them. There would need to be regulatory confidence that the programmability of the platform, as well as the innovations being introduced as a result, would not add to the systemic risk of the everyday functioning of the platform to an unacceptable extent. This could also result in an increase in the cost of the platform itself, which

Infrastructures (PFMI). These are part of a set of 12 key standards that the international community considers essential to strengthening and preserving financial stability.

could become a consideration, and this together with any changes in the risk, would determine the appetite for this development. Programmability is likely to exacerbate the slowness and complexity of potential changes and the cost and difficulty of compliance.

Another aspect, already mentioned, that could have an important effect on the success or otherwise of a programmable platform, would be the ability of the PSO to implement, monitor and enforce appropriate rules that would enable it to ensure the platform operated in a way that gave stability and certainty to users. However, it is possible that AI could be used here, to enable the risk / regulatory framework to keep pace with the variety and scope of change likely to be necessary.

Similarly, the need for the PSO to have a 'sustainable and coherent funding and revenue models' to allow them to make improvements in both resilience and innovation would be essential in any system that might involve ongoing development to respond to innovations and opportunities, as well as any new risks to stability that these might bring.

3. What are respondents' views on the pace of innovation in private money – in particular, commercial bank money – used in retail payments?

Pay.UK agrees with the Bank that commercial bank money 'needs to keep pace with the needs of consumers and so carry functionalities to deliver safe and sustainable innovation in payments'. The commercial bank money ecosystem is complex – we operate at the centre of the interbank portion, providing reach to bank accounts and the ability to transfer funds between them in individual payments or in bulk.

We think that the pace of change in our portion of the ecosystem needs to increase: while innovations like CoP and some elements of Open Banking have been adopted, too often this has required regulatory intervention, while other initiatives, such as PayM and Request to Pay, have not been widely used. The NPA programme to replace the CI also faced challenges, which we are seeking to address in our new technology approach. Overall, there is still untapped potential to provide better outcomes to end-users.

We are an independent organisation, with a governance process that ensures that we consider the views of all our stakeholders. We do, however, often need the unanimous consent of our customers when introducing change that extends beyond protecting the robustness and resilience of our systems – even where changes have broad assent in the ecosystem. Requiring the agreement of all customers can hinder our ability to progress at pace and match the innovation seen in other interbank payment systems around the world – for example to support development of an alternative to cards. This in turn delays the realisation of end-user benefits and can result in more regulation, as the Payment Systems Regulator is required to mandate the adoption of change more often than should be necessary.

We are keen to work through the issues that give rise to delays, and to collective action failure, with the Bank and our other stakeholders. We want to move towards co-creating solutions with the ecosystem and delivering them collaboratively to meet regulatory outcomes.

One of the outcomes for commercial bank money in retail payments set out by the Bank is that A2ART functionality between banks should give the ability to make payments to businesses 'at the point of sale in a broad range of uses cases' and that this should be 'quick, easy, secure, cost effective and widely available'.

As part of our work on infrastructure renewal for our FPS system, the enhancements we are seeking will include the delivery of technology to enable ‘certainty of fate’ for FPS payments. This enhancement is intended to ensure the CI can support market innovations like A2ART.

We also believe that Pay.UK will have a central future role to play in providing the functionality to enable tokenised commercial bank money – for retail payments and other use cases – to interact with tokenised wholesale central bank money, bringing innovation for users and maintaining the singleness of money.

Pay.UK therefore welcomes the Bank’s stated outcome and the conclusion that it will require ‘clear and renewed leadership by the UK authorities’, and that the Bank will work closely with HM Treasury, the PSR and FCA to achieve it.

4. What are respondents’ views on the wholesale infrastructure that might support retail payments innovations, including to ensure that singleness of money can be maintained across stablecoins and tokenised deposits?

The main retail payments innovations will likely come through the extensive possibilities enabled by tokenisation and programmability. A wholesale infrastructure that is compatible with tokenised payments is therefore necessary to support these innovations. In addition, enabling this functionality would be a key factor in ensuring the singleness of money. As the Bank says in its paper, central bank money being unable to interact with new technologies risks settlement activity moving to private settlement assets.

Interaction is the key to maintaining settlement activity that supports the singleness of money. This suggests that ‘on / off-ramps’ – i.e. between central bank money and other digital assets – rather than ‘rails’, will increase in importance and must remain within regulatory boundaries. The concept of an ‘on / off ramp’ has become common currency, but what this might look like and what it might be used for needs to be fully considered. The synchronisation interface and, therefore, the role of the ‘Synchronisation Operator’ may consequently be pivotal in enabling messaging to move between different platforms connected by such ramps in order to send settlement instructions, with multiple ramp options adding resilience.

The Synchronisation Operator’s similarity or difference to that of a PSO in synchronising RTGS and the account movements that drive commercial bank clearing balances, must be clearly understood. Potential changes may be required to the PFMI to keep them fit for purpose or make them suitable for a Synchronisation Operator, supporting RLN-type functions, to see how far these would affect the ecosystem and its existing structure, and assess the potential impact of any changes on competition, resilience and systemic risk.

We welcome the programme of experiments proposed by the Bank to test the use cases, functionalities and prospective designs of both wCBDC and synchronisation, and emphasise that early and ongoing inclusion of the ‘last mile’ retail infrastructures in discussions influencing design, use cases and functionality will ensure our own infrastructure remains aligned to the Bank’s requirements.

5. What are the risks and benefits from the use of: a) tokenised deposits; and b) stablecoins for wholesale transactions?

The benefits of using tokenised deposits are well established:

- **System efficiency and cost savings:** A single file (a tokenised payment) can move around within an extended network, rather than being copied by each user onto their own independent network. Financial institutions interact with and trust a centralised or shared ledger, with no need to reconcile changes across multiple sources. The authenticity of a single file can also be ascertained with a good degree of confidence, reducing the need for a particular institution to vouch for or guarantee the file on its own authority.
- **Payment functionality:** Tokenised deposits, combined with a programmable platform, would bring greatly enhanced functionality for users – for example, digital tokens can carry built-in lines of code, facilitating ‘smart contracts’.

The possibilities in the second category are very broad, and so the advantages of tokenised deposits are significant. Similarly, the risks from tokenised deposits are well known:

- **Uncertainty:** Without the right regulatory regime, tokenised deposits can be of varying quality and consumers can find themselves underinformed, with their money potentially at risk.
- **Unawareness:** Another uncertainty risk relates to the lack of understanding of the extent to which the fractionalisation enabled by tokenisation is likely to result in an increase in transaction volumes of orders of magnitude, especially in terms of checks and reconciliation. This could radically increase the volumes of messages over the relevant systems, with possible knock-on effects.
- **Risk:** There can be significant risk involved with tokenised deposits, without the right measures in place – e.g. volatility in price if they aren’t fixed to a currency; under-collateralisation or lack of central-bank currency backing; the interconnectedness between the digital asset system and traditional finance risking possible contagion elsewhere in the financial system. There is also the risk for consumers that moving into stablecoin changes the protections built up around commercial bank deposits. A new type of currency, or invoice, with different protections, could thus introduce new risks for consumers.

These issues can be addressed, and the advantages of tokenised deposits gained, with a robust regulatory regime and stabilising measures such as the requirement to settle in central bank money.

Stablecoins offer the same potential advantages of efficiency and programmability, but carry a further set of potential risks:

- **Stability:** Ironically, so far, stablecoin platforms have proved unstable. This may be through poor implementation or oversight, or it may be an inherent feature due to the problems with commercialising an asset that is only as valuable as, and only obtainable in exchange for, other assets. Given the problems to-date with stablecoin stability, many regulators are now putting up high hurdles to their issuance. The Bank itself, for instance, commented that it was not aware of any current stablecoins that would meet its criteria for stablecoins that was adopted into common use when it brought in its stablecoin regulators regime.
- **Relevance:** Given that the main distinguishing feature of stablecoins was historically their unregulated nature, and that they will now be regulated in many jurisdictions if they achieve widespread use, it is questionable whether stablecoins will continue to be a meaningfully different class of tokenised asset as compared to the tokenised offering of traditional regulated

financial institutions. In other words, ‘stablecoin’ may soon be either an obsolete term or a signifier of a distinction without much difference.

- **Risks for a central bank:** There are two main risks for a central bank from stablecoins. First, the risk that, possibly due to central bank money remaining unable to interact with new technologies, settlement activity could move to private settlement assets. Second, as the bank says in its paper, enough of this disintermediation could risk the stability of the financial system. While the current amount of stablecoin activity does not represent a threat of this type or size, this risk is something a central bank will be aware of.

Tokenisation will ultimately reduce the distinction between currencies, real-world assets and digital assets. This will increase competitive risks and pressures for all FMIs, whether interbank or other payment rails and other types of infrastructures handling real-world and digital assets and information flows, increasing competition not between payment rails, but providing additional substitutability and potentially decreasing whole-system resilience.

6. Are there innovations that could support central bank money being equipped with the requisite functionality to ensure safe settlement in light of technological advances in financial markets?

We have seen important lessons emerge from BISIH⁸ projects such as Pyxtrial, Meridian, Sela, Aurum and Promissa. We have already engaged with their Projects FuSSE and Agorá, which are both likely to be key. The ‘unified global ledger’ is widely anticipated to be the next step beyond a domestic RLN, and we should expect the banks supporting the UK project (as well as UK Finance) to intensify their involvement. We are familiar with a number of additional experiments described in Box E of the Bank’s paper, particularly those involving the Banque de France, Swiss National Bank, MAS, Bank of Canada and the New York Federal Reserve.

We also consider a number of other initiatives require a watching brief. These include: additional new FMI models developed to take advantage of the Bank’s omnibus account facility; and platforms and proofs of concept such as those being developed by, for example, the UDPN Alliance, which facilitate ‘multi-chain networks’ in other ways.

7. What are respondents’ views on potential functionalities of a wCBDC and how might these inform wCBDC design?

The Bank has been careful to distinguish between retail and wholesale payments, although it could be said that this distinction is not clear enough from the paper. Substitutability of products and services is likely to increase if clear boundaries are not defined in terms of volume, value or purpose, and where in the infrastructure programmability is delivered. This in turn could raise further potential challenges to the PFMI and potentially create new systemic risks.

⁸ The Bank for International Settlements (BIS) Innovation Hub ‘develops public goods in the technology space to support central banks and improve the functioning of the financial system’.
<https://www.bis.org/about/bisih/about.htm>

Wholesale CBDCs have proven less controversial than the retail version and, in advanced economies, a wide variety of use cases have been tested that reduce inefficiencies and add value in interbank settlement, for example by facilitating atomic settlement, both in a domestic and cross-border context. While the initial focus of wholesale CBDCs was on cross-border interbank settlement, especially between regional blocs, there are an increasing number of markets where it is also being explored for domestic markets and to improve securities settlement.

A plethora of privacy-enhancing and managing technologies have been proposed that purport to provide appropriate solutions to privacy concerns. Some of these appear to have the potential to assist in managing permissions without compromising privacy, like the zero-knowledge proof solution offered by the Nuggets platform, which was recently selected to work with the Bank on a potential privacy and identity layer.

Wholesale CBDCs can also enhance the speed and efficiency of transactions between financial institutions, ultimately benefiting the overall payment ecosystem. Furthermore, organisations like Pay.UK have established networks, infrastructure, and expertise in handling retail payments and schemes which have built trust among end users over time via public stewardship. While wholesale CBDCs may introduce technological advancements, the existing infrastructure and our focus on robustness and resilience makes us capable of adapting to changing market dynamics. Nonetheless, the Bank's concept of a 'synchronisation operator' and the model used for it, as stated above, will also be pivotal for both wCBDC and rCBDC, with the 'TIPS Hash-Link' synchronisation approach potentially meriting closer consideration.

8. Will the proposed programme of experiments help to assess these potential functionalities for central bank money?

As the recognised and designated PSO for the UK's interbank payment systems, Pay.UK has a significant interest in the Bank's experiments in the interoperability of tokenised money with bank deposits, as well as how this works in multiple currencies and across borders. Furthermore, if this type of functionality and interoperability is to be the future of PSOs, Pay.UK needs to be 'in the room' for these experiments, or we will risk falling behind in understanding and addressing the implications these experiments might have for the future of the UK's main interbank systems.

As a limited liability organisation with only a small amount of reserves, Pay.UK is not in a position to conduct experiments of its own in these areas, so the way in which they are conducted and the results they yield needs to be visible to us, and the details transparent.

We therefore request that Pay.UK be sighted on / included in the Bank's proposed programme of experiments to test the use cases, functionalities, and prospective designs of both wCBDC and synchronisation, and have the opportunity to contribute our views to what these functionalities should include.

9. What are respondents' views on the outcomes that the Bank seeks in retail payments and how can they be reflected in practical questions currently facing policymakers and industry?

We welcome that the Bank is taking a broader view of retail payments and their role in economy, beyond their systemic importance. The outcomes in retail payments set out in the Bank's paper are:

1. a payments landscape that maintains the singleness of money;
2. the promotion of sustained innovation;
3. a resilient infrastructure and wider ecosystem; and
4. an infrastructure with effective governance and sustainable funding.

We agree with the Bank that ‘all different forms of money must be exchangeable with each other at par value’. Just as bank accounts and cash interoperate now, whatever comes next also needs to interoperate with them. We also agree that therefore ‘[a]ny new retail payment systems ... must be interoperable with RTGS as the UK’s core payments and settlement infrastructure’. For these reasons, we believe that Pay.UK will have a central future role to play in providing the functionality for tokenised commercial bank money – for retail payments and other use cases – to interact with tokenised central bank money, bringing innovation for users and maintaining the singleness of money.

The renewal of our FPS central infrastructure will include enhancements such as the delivery of technology to enable ‘certainty of fate’ for FPS payments, ensuring the CI can support market innovations like A2ART⁹. Enabling an interbank alternative to card payments is part of our strategic vision, and we think it will make a positive impact for both our customers and end users. We hope that the NPV and this endorsement from the Bank will provide the clarity of direction to enable collective action to deliver a viable new choice for retail payments in the UK. We have informed our thinking by undertaking research with customers and through commissioned research with consumers and businesses.

The findings from these pieces of research are informing our work on the next generation interbank infrastructure. However, some of the overarching themes and enablers identified are broader than the scope of our infrastructure, rules and standards – therefore industry (including Pay.UK and OB) and regulators will need to work together to achieve success in A2A. Some of the key messages are:

- **Consumers** told us they want protection, less fraud, and instant payments – particularly instant refunds. So once the merchant has their returned items, they can get repaid instantly, rather than the current experience with cards, which can take several working days.
- **Merchants** told us about multiple pain points that could be addressed by an A2A solution. These included card fees (85% of SMEs told us it was a concern) and account reconciliation (2022 research found that 25% of SMEs called it out as a concern) – the same concerns also raised in our SME & Payments research back in 2022.
- When we tested the **top three features for SMEs in an A2A solution**, they identified i) funds being received immediately; ii) less fraud than contactless; iii) immediate payment notification when funds are received/deducted.

⁹ Nonetheless, bearing in mind the common features of world-class experiences in India, Brazil and Sweden, explicit consideration should be given to a rethought, functionally equivalent approach to P2P and a proxy service without the drawbacks of PayM, drawing on recent research into digital wallets and the functionality offered by existing best-in-class systems including Swish, Bizum, UPI, Pix, Blik, vipps, PromptPay and Paynow. This should be accompanied by the development of the appropriate tools to address ‘single points of failure arising from concentration in service provision at critical points in the chain’, including ‘broad initiation’ capability.

- 50% of SMEs said they would encourage their customers to use A2A online. For in-person payments, this is 45%.
- When we spoke to **industry**, we found widespread consensus on issues that need to be addressed. This tells us that to build a successful proposition that delivers widespread benefits and value for end users and industry, there are **foundational issues we all need to collaborate to solve**:
 - The Open Banking commercial model. There needs to be incentives for the banks to take part, whilst also supporting third parties and their business models
 - Technology, access and interoperability, which will lower barriers to competition and increase adoption. If we are to scale Open Banking further, PoS infrastructure needs to be opened-up to enable this.
 - Interoperability is key across markets regulation and consumer protection. We need to solve what the level of consumer protection will be, and that regulation positively influences adoption existing consumer preferences and behaviours, which are a barrier as we have seen from our half-yearly payments trackers as well.
- We know that consumers tend to stick with certain payment methods – they are used to cards, whether that is plastic or their digital wallet, they enjoy the incentives (cashback, miles etc.), and they are more attuned to giving out their CVV codes rather than their bank account details.
- To shift this behaviour and get consumers to use a new payment method, merchants and consumers both need to be incentivised to offer and use it respectively. Here, marketing and branding is crucial and needs to be consistent across the industry.
- Knowing that consumer payment behaviour is ‘sticky’, we went a level deeper in our research to figure out exactly **what** can be done to influence consumers to use A2A payments. What came out on top was the need to raise awareness that appropriate consumer protection is in place; that banks endorse the use of A2A; that there are incentives to use A2A; that there is consumer education undertaken; and that branding is consistent, trusted, and easily recognisable.
- For merchants, we looked at what annual fee savings would drive them to adopt A2A instead. 49% of SMEs said an annual saving of less than £2,000 would be enough.

Looking into the future, we believe the main retail payments innovations are likely to come through the extensive possibilities enabled by tokenisation and programmability. The future possibility of building a programmable system compatible with tokenised payments was explored in detail as part of Pay.UK’s NPA procurement process. We are aware of the position of our current vendor (Vocalink) and how they could extend the infrastructure at a later date, and nothing in how our next-generation infrastructure is being implemented would exclude this. However, sustained innovation requires Pay.UK as the PSO to be able to do its job – if we are going to lead collaboration to deliver innovation via enhancement to existing services or via new services, there need to be some set principles for how we interact with and steer the ecosystem, as well certainty that can act when we need to.

Pay.UK supports a vibrant UK economy by enabling a globally competitive payments industry through the provision of robust, resilient, collaborative retail payment services, rules and standards for the benefit, and meeting the evolving needs, of all users. The renewal of our FPS CI and the modular technology strategy for further change will ensure our system’s stability and resilience meet the highest

current and future standards. We also set rules and standards for the execution of payments over our platforms which support resilience in the wider ecosystem. Our work through the Payments Industry Resilience Forum (PIRF) enables scenario-testing and knowledge sharing across the industry. In this way, we are expanding our influence and engagement with a wider set of firms, though our contractual relationships remain limited to direct customers (i.e. not indirect customers, aggregators etc.). We do not therefore have a direct ability to monitor the broader ecosystem.

We agree with the Bank that effective payment system governance involves listening to and reflecting the views of infrastructure users. At the same time, the system operators need to be able to act where they are best placed to develop, facilitate or enable a new product or solution, without having to achieve total consensus before acting (see our point above on sustained innovation). Pay.UK is in discussion with its participants about how we can work together to deliver innovation and what the right model is for transparency and accountability for decision-making to support that. We are also discussing our role, and the nature of the constraints we see on our ability to enact this, with FMID and the PSR. At the request of both regulators, we agreed to develop and share a description of our role, to help move this work forward with a common understanding, and we have already shared a draft of this with them for their comments.

We also agree that sustainable and coherent funding is essential for investment in resilience and modernisation. Pay.UK's proposed technology strategy, developed with industry and suppliers as part of Project Clifton, reduces the need for regular large-scale infrastructure transformations. The design is inherently modular, allowing for continuous improvements without disruption or large-scale funding requests. This can help with customer / investor planning, as well as opting in or out, for different elements of our infrastructure development.



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