HOUSE OF LORDS

Economic Affairs Committee

Corrected oral evidence: Central bank digital currencies

Tuesday 26 October 2021

4 pm

[Watch the meeting]

Members present: Lord Forsyth of Drumlean (The Chair); Lord King of Lothbury; Baroness Kramer; Lord Monks.

Evidence Session No. 6 Heard in Public Questions 56 - 62

Witnesses

I: Charlotte Hogg, CEO, Visa Europe; Richard Brown, Chief Technology Officer, R3.

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Examination of Witnesses

Charlotte Hogg and Richard Brown.

Q56 **The Chair:** Charlotte Hogg and Richard Brown, welcome to the committee. Perhaps I could begin by asking the first question, which we were discussing earlier. What problem would a central bank digital currency solve?

Richard Brown: If I separate, as is customary now, retail from wholesale, and start quickly with wholesale, it is almost like there is a question that precedes the problem. The question, to which I think the answer is yes, is: do we want more high-value transactions to be settled in central bank money where possible? If the answer is yes, what is the best way to do that?

We see things such as the Bank of England's RTGS renewal. It is pursuing one path that is focused on questions not only of who has access but of how we achieve things such as synchronising or dual movement, so that you can do delivery versus payment, or payment versus payment. How do we do that?

The wholesale CBDC question is whether that is the only way to do it or whether we can learn from how the decentralised world is doing it. Can we learn what they are doing and apply that to the mainstream world? That is the wholesale case: can we learn what is being done in other areas and apply it, rather than just going through an API approach?

In the retail case, it is really quite different, because it is not really a question about financial stability or anything like that; it is almost a social and civil liberties question. If we look at physical cash, it has some really quite unique properties. It is a bearer asset. It is censorship resistant. I could take some money out of my wallet now and hand it to any one of you, and I could do that directly, peer to peer—no pun intended there—and nobody could stop me. Nobody would even necessarily know I was doing it. It is something that I can just do directly.

That is not possible in the digital realm. We have a very successful and really quite sophisticated collection of electronic payment systems, but none of them has that property. The question, which is a political and almost a civil liberties question, is: to what extent do we want that ability to make censorship-resistant payments? If cash is going to decline, to what extent do we want the ability to do that in the digital realm, accepting that that comes with downsides and risks, but it is something that you can do today only in the physical realm, not in the digital realm?

In summary, there are two very distinct problems. One is really a financial stability question of whether we want to settle in central bank money more often, where we can, in the wholesale case and, if so, how and what the architectural options are. In the retail case, it is really a question of whether we want to replicate the properties of physical cash in the digital realm, on the assumption that physical cash will decline to irrelevance in the medium term.

The Chair: Do you have a handle on how much all of this would cost?

Richard Brown: It is probably a really annoying answer that I am about to give: "It depends; it depends; it depends". However, we could perhaps then begin to think about what it might depend on and what decisions might drive us in different directions.

The Chair: Are there perhaps a range of costs?

Richard Brown: I really could not say. To see why, we could look at the Bank of England's own materials. It has done a very nice piece of work, which it calls the platform model. It is a nice way, almost like an intellectual model, to think about different ways of delivering a CBDC, primarily in retail. It is a model, a framework for thinking, not a design. It is not yet even a candidate design, so there is nothing against which an engineer, which is how I am approaching this, could make an estimate.

That said, there are some questions that we could ask about what might drive the cost higher or lower. If I stick to the retail CBDC case and go back to that question of the bearer asset nature of physical money, is that or is that not going to be a requirement of a digital equivalent? If it is, that drives us down one path. Some existing systems that we have in place could not be piggybacked upon, and we would have to build new ones, maybe with changes to points of sale.

If the answer is no and if we do not want to replicate that, there is then a political question of how that is sold to the public, to the extent that they care. If we do not want that property to copy across, we could probably reuse or build upon the infrastructures that firms such as Visa or Mastercard have delivered already. The requirements that we are trying to engineer against completely determine how much it would cost.

The Chair: I am a simple person. I would approach this from the standpoint of what the problem is that we are trying to solve, what the market inefficiencies are, what the cost of that is and what the cost would be of putting them right, but no one seems to be able to put their finger on the answer to that very obvious, straightforward question that you would ask before you embarked on this.

Richard Brown: I would ask, "Have we embarked on it?" Some countries have, and we could ask them how much they have earmarked, how much it is costing and how close the estimates were to reality. If I look at what we are doing here, there is a lot of investigative work at the Bank of England in conjunction with the likes of the BIS, but no delivery yet.

The cost has not yet been incurred, because the design work has not yet been done. To re-emphasise, that is because we are not yet clear on precisely which requirements we are being asked to engineer against, which goes back to my first point: in the retail case, do we want it to be truly cash-like? How do you put the right limits around it? In the wholesale case, do we want more wholesale transactions to be settled in central bank money? How do we make sure it is co-ordinated to achieve full DvP and PvP?

Charlotte Hogg: Let me focus on the retail, because that is more of an area of expertise. The Bank of England has set out a task force to explore this issue. As I understand it, it is not committed. There seem to me to be some good reasons to explore it now rather than later. One is, as Richard said, the declining use of cash, which poses some really interesting questions for inclusion. I am not sure that a CBDC is the only way to solve that problem, but, if anything has become clear over the last couple of years, we live in a digital world. Inclusion is not going to be about just physical cash any more. It has to be about digital inclusion, and maybe you start at that point.

There is also an interesting point, not for me but perhaps for you, which is that cash is one of the few items we may have that carry the sovereignty on it. It is the identifiable thing, and questioning what that means as that begins to diminish is an important question for legislators.

The other reason to explore it now is that it is really hard. My favourite quote, if you can have such a thing, from the ECB report on a digital euro is that it describes the central bank role as not going beyond—this is so good—"what is needed to ensure the effectiveness of a digital euro (for example, controlling the monetary base; guaranteeing certainty of settlement and security of the infrastructure; and ensuring that providers of related services are adequately overseen and supervised) as well as its efficiency and usability (for example as regards IT services, customer support, customisation and technological innovation)". That is the limited role that seems to be encompassed by what is involved with a central bank digital currency. Thinking these things through now and getting to the crux of how expensive it is going to be feels quite important to me.

The other element is to think about payments in a digital world as being about how you spend money as well as how you have a register of money. In cash, those two things are the same. You carry what we call your acceptance with you. For me, it happens at multiple levels. How do you guarantee trust in security and in resilience, particularly in cybersecurity? In a digital world, while a central bank digital currency is national in nature, it is global because you need to use global data to protect it and to prevent against fraud. You need to ensure that it works all the time, online and offline. We target five nines and we exceed that, so that means we have complete availability for 50 million transactions a day, and we are out for less than five minutes a year. Resilience is a heck of a thing to try to build in this kind of environment.

Then you have to think about what happens when transactions go wrong in digital. One of my favourite examples recently was of somebody who bought a second-hand engine and discovered that two bits were missing. I would never have been able to figure that out, but there are rules in place for what you do when your second-hand engine is missing a bit, with things that we call scheme rules. Effectively, it is consumer protection. Consumers know, 98% of the time, what happens when a transaction goes wrong. All those things have to be worked out in a digital world in a way that we have not really pushed into them in a physical world, because you know what happens when someone takes your £20 note.

We should not let technology, however exciting and innovative, wag the legislative and regulatory dog. The same rules should apply to how you think about this as you have always thought about this. Technology is constantly evolving. I am sure you have seen the G7 principles around CBDC and they are very helpful for ensuring guardrails around how we might do a CBDC that, in a way, make it more evolutionary than revolutionary, so do no harm to the ability of central banks to fulfil their mandates for monetary and financial stability. Some of the more radical extremes of impacts to the financial system are limited if you have that as a principle.

Legal and governance frameworks and the rule of law should be the same. Data privacy is the third of the principles. I have talked about operational resilience. Competition is the fifth one that I might mention. It says that CBDCs must operate in an open, transparent and competitive environment that promotes choice. That is so important, because the one other thing that we know about the digital world is that, when you have a single point of failure, that is a bad thing. Not only does it hinder innovation and competition, but it creates targets for others.

All these factors will determine the cost. There is a more evolutionary than revolutionary route. In the end, the legislative, governance and regulatory environment is what should set the rules and requirements, not the technology. We should not invert this, just this once.

Lord King of Lothbury: Charlotte, welcome. It is good to see you here. I wanted to pick up on the last principle that you mentioned, about competition. CBDCs have become very fashionable. There are people who think that it is the answer to giving everyone in the country their own direct account at the Bank of England. It is not clear why you would then limit it to UK citizens or how you would define it. Once you have that, it is not clear that it is easy to manage competition. The question that I want to ask you is: is there adequate competition now? This is one of the motivations that people are exploring to justify the pursuit of a retail central bank digital currency. I have my Visa card here, which is very impressive.

Charlotte Hogg: I can see that.

Lord King of Lothbury: It is amazing. You just touch something and you have paid for it. It is very effective. The complaint on the other side of the till is that the charges you make are high and that you are making big profits, et cetera. What can you do to assure us that there is enough competition in the present system that excess profits or lack of competition are not a good reason for pursuing a retail CBDC?

Charlotte Hogg: There is an important point about competition. I really think that one should never create single points of failure, so let me make that point and then answer your question properly.

Lord King of Lothbury: The Bank of England would undoubtedly be one.

Charlotte Hogg: Correct, and I am sure it will enjoy the 60 million customers that it will need to deal with.

Lord King of Lothbury: That will keep the Governor busy.

Charlotte Hogg: Yes. Having run bits of a retail bank, I know that customer complaints can keep you busy—they are important things, of course.

The UK is one of the most competitive markets for payments that we see globally, and that is, if anything, enhanced over the last couple of years. As things have moved more digital and as the line between when you are physical and when you are virtual is blurred, the number of payment mechanisms that you can use has evolved. Nowadays, you can use faster payments, BACS or different schemes, and you can increasingly use all the things that are enabled by open banking.

Payments are not just about moving money from A to B but about facilitating people's lives. When you are buying a cup of coffee, you probably have a totally different set of requirements for your payment from if you are trying to get in the Tube, where you need seven milliseconds of authorisation at most, otherwise someone is going to throw something at you. Payments are more than just moving money from A to B, and you have to let competition happen in this space.

My view is that there is a Maslow's hierarchy of payments. At the bottom, where legislation and regulation should absolutely be heavily involved, is water, fire, air and security, and setting standards for availability, cybersecurity, data protection and data integrity is vital.

The next layer in Maslow is love and belonging. In payments, it is openness: how you create an environment where more participants can join more networks, offering more solutions to consumers and businesses. We have seen such wonderful innovations in the last couple of years. There is a wonderful business called ShopAppy, which is bringing entire high streets online. There are 168 high streets now online. In Spain, for example, we facilitated virtual food banks when the physical ones closed. It is about creating structures and governance that allow more participants on any system with transparent standards.

At the top are all the different things that you might want in terms of form factor. I can pay on my watch or with plastic. Increasingly, people want to pay on their phones. All of that is very rich and healthy in the UK. Pricing is coming down. The acquiring market review noted that the entrance of new acquirers into the market is driving much better solutions for small businesses and driving down costs. It is a market that is working and, if anything, the UK is as mature and innovative as anything we see around the world.

Lord King of Lothbury: Given that, which is compelling, do you see a role for a central bank digital currency at the wholesale level, and how will it interact with Visa and other payments operators?

Charlotte Hogg: The wholesale level is not, at the moment, my area of expertise, but the Bank of England has one with reserve accounts.

Lord King of Lothbury: Yes, exactly.

Charlotte Hogg: So I am not quite sure why we are talking about something that may already exist. That said, the Bank of England is also pushing towards enabling more payment systems and more parts of the financial system to join RTGS, which I do support.

In terms of what it means for us, we operate in 200 countries around the world. We settle in around 80 fiat currencies. Everything is, effectively, a numeric token. Indeed, we also have derivatives of the number that sits on your card, which gives you that extra layer of encryption and support. As long as you create an environment where it is another token that any one of the payment systems can accept and can enable people to pay and be paid, peer to peer or in any other forms, when they need to, you are creating more competition and innovation rather than less. It is just another digital token and another fiat currency.

On why we need it, it is worth exploring it now because the use of cash has diminished. While things never move as quickly as one thinks, the landscape is evolving and this is the time to explore, not the moment when you have gone below 4% or 2%, or to the levels that we see in the Nordics. Now is the time to really think about it, because it is so complex, in order to know what to do and where to focus later.

Lord King of Lothbury: In the comparison between cash and the use of a central bank digital currency, people say that cash is declining. What is interesting, of course, is that central banks are not terribly unhappy, because they are deeply worried about the use of high-denomination notes for unlawful transactions. Indeed, it is incredibly hard to understand where all these high-denomination notes have gone. With a CBDC, there is no such thing as a note of a particular denomination. It would impede the use of a CBDC account if you could use it only in blocks of £10 and so on, so the question of the illegal use of those accounts is, surely, completely linked to the question of privacy. Privacy of those accounts is going to be completely counterproductive if the Government want to have any control over illegal payments. Is this something that you have thought about?

Charlotte Hogg: It is something we think about all the time, because we are constantly monitoring our network. We are trying, 65,000 times a second, to think about whether to authorise the transaction and, for that, we have to be using all the best big data and machine learning techniques to determine how to protect the consumer and the business from fraud. We know we protect against about £25 billion of fraud a year, so it is an important issue.

That is not complete anonymity, though. I have always thought that the reason the ring of power in *The Lord of the Rings* is so evil is that it is about complete anonymity. In a payment system, you have to have trust. For that, people have to be confident that it is good money and they need to be protected.

Equally, you need very clear standards around data privacy as well as data ethics—how you use your data and for what purposes. We use it primarily to protect against fraud. Again, this is where it comes back to you all, and to legislative and regulatory bodies, to determine where the line sits between anonymity and privacy, and to set expectations for how data should be used. There is a spectrum between complete transparency and anonymity, and mostly we find our way through it.

Q57 **The Chair:** On that point about innovation, is there a danger that central bank digital currencies will crowd out innovation from private financial services and fintechs? Do you want to have a go at that, Richard?

Richard Brown: I am unconvinced that that risk would materialise, but that is perhaps because my view of the problem that a retail central bank digital currency would solve is at odds with the argument put forward by Lord King. I do not look at it as a solution to a competition problem such as a market failure, where the payment card networks have somehow failed and therefore we need to introduce something.

The way I look at it, to elaborate on my earlier point, is to start with the thing that we see, which is the decline in cash, and, in effect, do a thought experiment and say, "Let's assume that that continues. Let's imagine a point at which cash has just stopped being used, and that it has stopped being used because everybody has moved online—not because people do not like cash but because of other contextual factors".

If we assume that happens, the question that that then raises, at least in my mind, is that there are some unique properties that cash has. I enumerated one of them, which is the fact that it is the only payment mechanism I have where I do not have to wait for an authorisation from anyone. I can pay someone, for any reason, at any time, with positive and negative consequences. It is the only instrument that has that property. If cash is going to decline to nothing, does the state have an obligation to provide something equivalent or in some way equivalent in the digital realm?

Ever since humans have bartered or traded with each other, it has been possible to engage in direct commerce with each other, without permission from somebody else. The question, to which I do not know the answer but which should be at the heart of the debate, is whether we have an obligation to make that ability available in the digital realm. If the answer is yes, we then get into questions of anonymity, privacy, transaction sizes and all the rest.

I believe that the question is whether we have to make that facility available. That is probably something that the private sector alone could not offer, not least because, without regulatory cover, I suspect that it is probably not allowed to. Also, if you are not settling in central bank money and if you do not have, ultimately, a claim on the sovereign, it is not cash-like, because whoever you have a claim on could simply freeze your funds and refuse to allow the transaction. The things are all linked. It would be genuinely new; hence I do not think it would be a threat or competition, because it would be different, if it were to happen.

Charlotte Hogg: I go back to some of these principles. If you design it to enable competition and innovation, and not to take over the whole system, it will not crowd out innovation, competition and alternatives. If you design it to be the only alternative to money and payments, it will. It will also have some pretty significant consequences for financial institutions as a whole, for financial stability and probably for innovation. If you have only one mechanism of payment and one form, you will not see the richness of fintechs and others that have emerged today in the UK.

Q58 **Lord Monks:** Earlier on, Richard, you talked about the development of wholesale and retail, and rather gave me the impression that you were thinking that both should be advanced. I am just wondering whether the Bank of England should prioritise one over the other. We note that quite a lot of central banks seem to be more interested in the retail than in the wholesale. We also know that Banque de France has been looking at a wholesale model. Do you have a view on which should get the most attention and receive the most priority?

Richard Brown: I do not have a view on the relative prioritisation of them, but I do believe that they are fundamentally different and should be explored separately and in parallel. I have spoken a lot about the single question that should drive any analysis of whether we, as a country, have a retail CBDC. To expand on the slightly abbreviated answer I gave earlier on the wholesale side, the question at the heart of that is the extent to which we want more high-value transactions settled in central bank money.

We know that the existing infrastructure is not sufficient, which is why the RTGS is being renewed. Even within the RTGS renewal programme at the Bank of England, a key part of the thinking is that it is not sufficient to offer a payment system that allows you to settle in central bank funds. You need to be able to co-ordinate that settlement with activity that happens elsewhere. We already have that with CREST, which has a direct link to RTGS, as does CLS for foreign exchange trades, but they are just two examples.

The question is, if we also want to perhaps co-ordinate transfers in the Land Registry with settlement of the payment for a property, how we do that. There are lots of other transactions that currently settle across the books of commercial banks. If we believe that we want to allow many more different types of transactions to settle across the books of the Bank, and to do so in a co-ordinated fashion with other activity, the question is how we architect that. We can architect it in the way that is presently being pursued, which makes a lot of sense, which is to provide programming interfaces and the right call that you can make on a system to say, "I want you to do this, but only if that has happened" in order to co-ordinate these things.

The interesting thing is that we have a timing issue, in that the RTGS has to be renewed, and that programme is happening right now. In parallel, as you described, there are many projects happening around the world, such as Thailand and MAS, a lot of them being driven by the BIS, exploring different models for how claims against a central bank at a wholesale level could be issued on to ledgers in new and innovative ways that make it possible to co-ordinate the settlement with other things. It is not just being done in a traditional way.

The summary of that is that we have to move forward with the work we are doing, but there are alternatives that we have to explore to make sure that we do not end up having backed the wrong horse, in effect. We have to continue the analysis while pursuing that programme.

Lord Monks: Charlotte, what do you think of that particular analysis?

Charlotte Hogg: I think you were saying largely that these are two separate and distinct things, and wholesale is answering some different problems. I will refer to what I said earlier. Effectively, it does exist because the reserve accounts of the Bank of England are a wholesale CBDC. The question, therefore, for policymakers is who should have accounts and who should be members of the RTGS settlement system. Again, experience from retail says that, in the end, open networks that encourage more participants encourage more innovation and competition.

The Bank has already gone down the path of starting to open up RTGS reserve account membership to others, so it is a continuation of that path. It is in the EU's retail strategy as well to do something similar, although it is perhaps moving not quite as quickly yet.

Lord Monks: Banque de France seems to have a bit of a lead over the Bank of England at the moment. Would you agree with that?

Charlotte Hogg: It is not for me to draw comparisons between central banks.

Lord Monks: What about you, Richard?

Richard Brown: I am not close enough to what Banque de France is doing, but I do not think so. In my work, our firm is involved with many of these projects around the world. The thing I find most interesting is the collaboration that is happening between the banks. There are projects being driven by any one of a number of these banks, often in consortia, that are exploring different aspects of the problem. There are certainly cases even in the retail space. Nigeria launched its retail CBDC today.

In the wholesale space, the thing that interests me is different experiments, pilots, proofs of concept and investigations about aspects of the problems that have to be solved and then the banks coming together collaboratively to say, "We need to fix that problem. We need to understand that problem". It is the pieces coming together that helps us understand everything.

Net-net, in answer to your question, I do not see that there is a race, at least at this stage, between Banque de France and the Bank of England.

Lord Monks: You seem to present a very collaborative and co-operative approach by central banks, and we know that there are nations that are hostile, by and large, to the West and what it is doing, and they are not involved in that. Is the likely outcome that people will be co-operative and collaborative in the main, or will the temptations to establish our nation's central bank digital currency as the No. 1 in Europe, Asia or North America going to be a major undermining of the collaboration and co-operation that you, in particular, Richard, have been talking about?

Richard Brown: There is one thing that could play out. Let us imagine we go with what I call the API approach. It is an architecture where the authoritative record of all ownership of claims against the Bank of England is held in the Bank of England's ledger in the new RTGS. Let us assume we go down that path and provide the right interfaces, and you can get into it from SWIFT. We go the way we are planning to do, and let us assume that it is massively successful.

One thing that could happen—I am not saying that it will, but we have to keep our eyes open to it, which is why we are having discussions such as this—is that three or four of the banks working on a project that is happening at the moment pursue it, but rather than issuing and keeping the currency records only in their own systems, they allow their currency to be issued on to a shared ledger that then holds records of claims against multiple banks. Of course, there is a huge number of problems that they have to solve, which is why I do not think it will happen anytime soon, in terms of how that is governed and regulated, how you ensure that you get finality and so forth.

If they were to do that, perhaps it would become a more effective, attractive settlement venue for purposes that I cannot imagine, and suddenly we are on the back foot. Of course, that is a possibility, not a certainty, but it is why I say we need to participate in these as we are and not just pursue a sole approach.

Q59 **Baroness Kramer:** I have to say I was fascinated at the assertion that we have a very low-cost payment system in the UK. I am just thinking of friends of mine living in the developing world who seem to be able to do transactions at a fraction of the costs that I seem to run into all the time. I must be doing the wrong thing.

If your argument is that, from a domestic perspective, a retail central bank digital currency has nothing to offer in terms of efficiency, is there an argument that a central bank digital currency has a potential for interoperability with other central bank digital currencies that could make international transactions at the retail level a much more efficient and effective system? Is that important in the changing pattern of consumer behaviour that we see today?

Richard Brown: The conversation we just had was on the wholesale side. On the retail side, I am less sure, because there are two things happening at once. If we step away from CBDC and just look at what exists today, until recently, if you as a consumer or as an individual were to travel to another country, you would go to a foreign exchange bureau or to an ATM in that country and draw out physical currency. You would expect that transaction cost and that effort to just be part of your day-to-day life. Now, of course, with the collection of fintechs that are primarily card issuers, you can now take a card abroad and just pay using your regular chip and PIN or contactless, and that is an experience that consumers are very familiar with and clearly prefer.

Baroness Kramer: That is with huge fees, if I am correct.

Richard Brown: Going back to the competition point, I cannot speak for the card industry, but as a consumer I see competition among issuers of cards that can be used abroad with very tight spreads and very good rates. I do not know what the retailer sees on the acquiring side, but as a consumer competition seems to be doing its job.

To attempt to answer your question, if we said, as a society or as a collection of countries, that we need a retail CBDC—this goes back to my previous point—it is almost an uncomfortable topic to raise, because it is about civil liberties and freedom, and the ability to spend even on things that maybe society disapproves of. That is the thing that cash uniquely lets you do. Let us imagine that we agree we need one of those. We may not but let us assume we do, and other countries do. There will then be the problem of consumer adoption, because if it is not as easy to use as the existing system—and the gold standard right now is using your payment card abroad—will consumers adopt it? If not, is the risk that we build something and hope they will come, but they do not come?

To make a long answer short, there are multiple aspects to this: interoperability and integration with the existing system. When you look at the consumer wallet, can you see your CBDC holdings? Can you sweep it into an interest-bearing account? There is a lot of opportunity for innovation there in the user experience, but it is not sufficient to do it domestically. We have to think about how this currency would interact with other countries, where the interaction then would be a consumer from the UK trying to pay a merchant, typically in another country, so it is then the consumer-merchant interoperability. My sense is that that is probably an area where the thinking has not yet advanced sufficiently, but it has to be solved, or we risk balkanisation.

Baroness Kramer: Charlotte, do you have a view on interoperability with regard to the advantage that can be delivered?

Charlotte Hogg: On the question of cross-border payments, the real area that has been rightly focused on, including through the CPMI work, is the cost of remittances particularly, because that is an area where costs have been quite high. Interestingly, we have just done some work through the Visa Institute for Economic Empowerment looking at cross-border corridors for remittances and how close they are getting to the sustainable development goal of 3%. You can see a very strong reduction with increasing competition over the last number of years, as well as from new forms of digital remittances, with people supplying their labour in one country for activity in another, even though they have not moved themselves. That is an area of focus, but you can see the reduction.

On interoperability, I agree with Richard. It happens at multiple levels. When we talk about it, there is the technical interoperability and a lot of focus on messaging standards in that, and the question of the importance of ISO 20022. I am not convinced that that is necessarily the issue. For example, we operate a cross-border system called Visa Direct, which, over the course of last year, used 16 different card-based networks, 65 domestic ACH schemes, seven faster payments schemes and five payment gateways, all with very different messaging standards. Messaging standards alone do not create interoperability.

Then there is regulatory interoperability—the fact that there are different rules for things such as AML and KYC in different parts of the world—and that creates friction in the process, because you have to be doing those checks at multiple levels. Then there is network interoperability, where networks talk to each other and how effectively they are plugged in.

For me, the most important one is the regulatory one, because technology has already solved the other two. Then the question is whether you create a national instrument to solve an international problem. Again, I find that less of a driver towards exploring CBDC right now on the retail side than, for example, the decline in cash in-country.

Baroness Kramer: Are you saying that you would have to have international standards and an international framework to be able to make this function as efficiently as one would hope?

Charlotte Hogg: There is further to go, as the CPMI work indicates, to increase the effectiveness and efficiency of all forms of cross-border payments. Wholesale is pretty efficient right now. In retail, there are aspects such as remittances that, as I said, still need some work, but I also see the markets working in that space, and some of this would be accelerated by more regulatory interoperability on some of these topics as well.

Q60 **Lord King of Lothbury:** I have two or three questions to bring together some of the issues that you have both raised. There are two statements that we have seen and that have been made. One is that technical innovation is the route to cheaper, more efficient and safer payment systems. The second statement is that the best way to achieve that is via a central bank digital currency. It is not obvious that those two statements have to go together, but could you just comment on that first?

Richard Brown: I would not say that that was my position. You are right that there are a lot of technologists—and I am a technologist—who would make exactly the point that you made: "We could do so much better if we did something different. This is different and, therefore, we must do it". There is that kind of argument. Clearly, that is not the right way to think about it.

The way that I try to come at it goes back to the question that Lord Forsyth asked at the very beginning: what problem are we trying to solve? In the retail case, many people may not even agree that this is a problem, but it is a political question—the one I mentioned earlier. If physical cash declines to irrelevance, should we still have the ability to make payments that are not observable or censorable by the state? It is a deep political question, and we need to decide what the answer is and what box to put around it. Once we know the answer to that, bring in the engineers and technologists to figure out what the right solution is. We may call it a CBDC but the technical implementation should follow from the requirements.

In the wholesale case, this is one where maybe we are at risk of the technologists getting ahead of themselves, because we are thinking about problems that do not yet exist but might do. It is all about that question of trying to co-ordinate activity and the DvP and PvP problem. How do you do that when there are lots of different types of asset that people might want to settle? Do you do it "the old way" through programming interfaces or in "a new way", inspired by what is happening over in the unregulated, speculative, decentralised cryptocurrency world? Is there anything that we can learn from that? Clearly, there are a lot of people who are advocating to use that technology for whatever reason, but it should be driven the other way round.

It is a very different question. On the wholesale side, how do we do PvP and DvP when we have lots of different organisations and asset classes all trying to access that facility? I would not come at it saying, "Hey, we should do a CBDC". I would ask, "Do we have either of these problems? If so, let's pursue this, but if we don't, then let's not".

Charlotte Hogg: As I said at the beginning, I am not sure that technical innovation should wag the legislative and regulatory dog. Let us understand what we want to happen and how you want to create competition, innovation and, most importantly, resilience, and recognise that payments and money are not just about money transfer, but about the way people want to live their lives. By definition, that is changing. Anything that you then straitjacket into one solution is a risk not only from a security point of view but from an innovation point of view.

People want different things, and who are we to not create a world where that can be changed and evolved? Throughout history, we have had "Aha!" moments. We have created really cool pieces of technology, but it is rare that we say, "This is the answer for ever and, therefore, we should go with it". Mostly, we go back to the thing that we have always done well in a democracy, which is to think through what the need is and then how you all work towards it. Start with the beginning, not the end.

Lord King of Lothbury: Can I follow up with a question on something you touched on earlier, Charlotte, which was financial inclusion? One of the arguments put forward for a central bank digital currency is financial inclusion. The slight oddity about it is that inclusion, if it means what it says, should mean that you do not have to be computer literate to make a transaction or a payment. I find it hard to see why, in the name of either inclusion or, indeed, resilience, the demand for cash will literally go to zero.

I am sure we have all had the experience of trying to use our new technical methods of making payments in a taxi when you get to the end of the journey, only to discover that the machine or the wi-fi connection is not working, and it is quite useful to have a little bit of cash to hand to get out of the cab in those circumstances. Can you just comment on what you think is the merit of the argument that financial inclusion would be enhanced by a retail central bank digital currency?

Charlotte Hogg: I start from the fact that we do live in an increasingly digital world, and the question is how we include as much of society in that digital world as possible. Longer term, if you are living your entire life outside of it, that will be exclusion. Historically, we have made financial inclusion synonymous with cash, and those things are not synonymous. While access to cash is really important—and I know that the Lords has been a good advocate of creating digital means to provide more access to cash—it does not take you far enough. I am excited about all the new forms of digital innovation that help include people.

One of my favourites is that, over the pandemic, we have had a number of vulnerable people who have been shielding and wanting to send someone out to shop for them. There are now tools with which they can set the rules and say, "I am going to send someone who is helping me out to shop. I am going to set rules on where they can spend that money and how much they can spend". That seems to me to be a great example of digital innovation to support inclusion.

We should avoid the shorthand in this space and the elision of financial inclusion, cash and digital inclusion, separate those things out and decide what kind of society we want to create. I do not think that it can be one without digital.

The Chair: That sounds great but I am just thinking of an elderly person perhaps trapped in their home. What equipment and skills do you need in order to operate that?

Charlotte Hogg: The really good thing is that, because you can do it remotely, you can call up somebody in your family and say, "Set the rules for me".

The Chair: A lot of the people who are excluded do not have the latest iPhone or the ability to use the technology, and they may not even have anyone they can call up.

Charlotte Hogg: No, I completely understand that situation, but there are other situations where this begins to solve problems that are not solved today. I am not saying that it is the only answer, but I am saying that it is exciting that we are seeing more of these answers and more solutions, rather than, "All you need is cash". Cash is really important, as Lord King has said, although I no longer carry any, but digital inclusion is the bigger point.

The Chair: Apologies, Lord King, I interrupted your train of thought.

Lord King of Lothbury: We talked about security, and this is clearly of fundamental importance to any method of making payments. We are seeing that there is a trade-off between that and ease of use. It is by no means easy to open a bank account now. In fact, it is incredibly hard. One of the hardest things to do in this country is to open a bank account. There are good reasons for that, but nevertheless it is a trade-off between regulation that has been chosen and the ease of creating a method of making payments. Do you see a central bank digital currency as having any role to play in making that trade-off less difficult?

Charlotte Hogg: To be honest, I have not thought about it deeply. When I think about resilience, I think about constantly being on: the ability to authorise, clear and settle transactions in milliseconds, every day, all the time. At that point, the tokens are available, and that feels to me like a really important aspect. The question of how easy or difficult it is to open a bank account and the rules around that is perhaps more your remit than ours.

Lord King of Lothbury: It is just that your card is extremely easy to use, except when something kicks in and the retailer says, "I've got that nice Ms Hogg on the phone and she wants to speak to you to see whether, in fact, you really do want to validate this transaction". There are impediments put in the way of making transactions, in the name of security. Is this just inherent in any system or would a central bank digital currency make that easier?

Charlotte Hogg: It is where you set the gauge on what you want in terms of consumer protection. Yes, you may get called up, but that is because we all have our fraud systems to try to prevent you being defrauded. We are geared towards you never suffering loss 98% of the time. It is where you set the gauge. If you want to open up the aperture—in some cases, maybe that is right—you can remove some of those frictions. For example, we have just raised the contactless limit to £100. We still have the buffer where, after a certain number of transactions, you will be asked for a PIN. From a fraud perspective, I am not sure it is necessary. Contactless fraud in this country is among the lowest in the world. It is less than a tenth of 1%. That might be a friction that perhaps we do not need, but that is not a CBDC question. That is where you set the gauge.

Lord King of Lothbury: But your feeling is that a decentralised system with a lot of competition is a good way to ensure resilience, because people are, in a sense, competing for reputation as a safe means of making payments.

Charlotte Hogg: I do not think I would say that. I would say that the topic of resilience is absolutely one that Governments and regulators should be involved in and set expectations. The worst thing would be to end up in a world where consumers did not know what the expectations were around resilience. We have lived through two years where we relied on digital payments, and it has worked and it has been fabulous for many people, although not all, I understand. To have any question in people's mind as to whether things fundamentally work would be so damaging.

Lord King of Lothbury: Richard, do you want to comment on that issue, because there are technical aspects to it?

Richard Brown: On your question of the trade-off between security and accessibility or availability, again we are putting the cart before the horse. I would not say that a CBDC is the solution to that, not least because, if I were to poll the people in this room on what they think a CBDC is, every single one of us would give a different answer. If I were to narrow it down to how I conceptualise it in perhaps a reductive fashion on the retail side, I think of a digital analogue of cash. Is there anything there that could help from an availability perspective, and how does security play into that?

You see this outside of the financial domain, just on your iPhone, with the way that apps are rolled out. When anybody is trying to get somebody to use their service, the last thing they want to do—which I guess the banks have to do—is make them answer 100 questions and go through 20 hoops, because they will give up and do something else. The technique they have learned is to ask as little as possible to give somebody access to a very restricted version of the solution, and then, as they start to use it and become more comfortable with it, to progressively turn up the temperature.

The read-across to a retail CBDC is that, if wallets were to be issued that required very little identity verification, just sufficient to ensure that you did not have 1,000 of them, but were of very low value in how much they could store and very limited in how many transactions they could do, you could massively reduce the security requirement and the barriers. If people then wanted to do higher-value transactions, they would need to reveal more about their identity. If they wanted to do more transactions, maybe they would have to reveal more about why they were doing them. You would build it up that way.

Of course, there is no reason why the banks could not do that with bank accounts, so it is a policy, product management and regulatory question. The technology is the servant of the requirement.

Q61 **The Chair:** Richard, you asked what I thought was a key question, which was to what extent people still want to have cash. What is your own answer to that question?

Richard Brown: My sense is potentially no. It is always dangerous to read across from one's own experiences, and this is maybe the danger. Electronic payments in the UK work really well. It is very easy to pay. It is harder to be paid. Something we often miss about the architecture of the payment card networks is that there is an asymmetry between those who are paying and those being paid. It is easy to tap your card but it is more effort to become a merchant. There are some things that cash is better at, because paying and being paid are symmetric.

I can see, absent any intervention by the people in this room or elsewhere, that cash could just wither, because it is just less convenient than everything else. That is also the danger, because cash is the only thing that has the properties I mentioned earlier, and it is possible that people will miss it only when it is gone. Going back to my original question, do we have to anticipate that it will decline to irrelevance and make sure that we have put in place an equivalent for when people, in effect, realise that they did wish to have that balance between the individual and the state?

The Chair: My answer to that question would be rather like your answer to a number of questions we have asked you, which is that it depends very much on whom you ask. HMRC would say, "Absolutely, we do not want to have cash". A law-abiding person such as me likes to have cash. When I go into a restaurant, I pay with my card but I like to leave a tip in cash, because I am not exactly sure that the service charge is going to go to the persons who have done the work. This is not a simple issue.

Richard Brown: I totally agree, hence why I framed this as a thought experiment. The other danger I foresee—again, I could be wrong—is that, when its usage drops to such a small amount that it is below a certain percentage, very few retailers will accept it. Is there a tipping point below which it is just not that useful and then we really regret losing that unique property that cash, and no other payment method, gave us?

The Chair: On the excluded point, perhaps this is something that will die out as people age, but I can remember that my late mother-in-law somehow managed to get through her entire life without having a credit card. Many people do not have access or want access to this technology. How do you see that being dealt with?

Richard Brown: I can believe that. I hope it has come across that I am trying, going back to my previous point, to imagine if cash got to such a low prevalence that it was no longer possible for your relative to make payments easily. How do we make sure that we have something ready for that moment?

Back to the inclusion question, if I turn it around, I ask myself, “People are excluded, but excluded from what?” The obvious thing is being excluded from having a bank account, but there are certain types of merchants that engage in lawful activity but at the margins of society and are excluded from having a merchant account from certain acquirers. There are different types of exclusion that we should think about, and not just the obvious ones.

The Chair: I was just thinking of the politics.

Q62 **Lord Monks:** This is just a quickie. Central banks are not the only ones talking about digital currencies. The private sector is fairly active in certain ways. Bitcoin is quite well established, as are others. Facebook is showing a big interest in this area. How do you see the role that they can play in making transfer payments? Would you like to stop it and reserve a monopoly for the central bank, or would your liberal instincts, which you have displayed in several answers so far today, conquer that?

Richard Brown: If I understand your question, you are almost asking how much agency the Government or the Bank have, because there are forces beyond anyone’s control in this room. There are the mega-corporations on the US west coast, an example being Facebook with Diem, and the decentralised networks, of which Bitcoin was the first. On the Facebook side, let us see how that plays out. That project is progressing. It has been troubled but it is back on track now.

With respect to the unregulated, anarchic cryptocurrencies, Bitcoin and things such as that, my sense is that it is an amazing experiment to observe. I made a point earlier about the unique properties of cash, and many of them are replicated by those currencies. There is a collection of amazing experiments to observe. I see no real ability for us to stop them, so the question is what we can learn from them.

The thing that may have surprised many of the early proponents of those technologies is that they are being used perhaps for speculative reasons and, in many cases, entirely new financial markets are being built, but they are not, at least to any large extent, being used for payments. The question, to which I do not know the answer but it would be useful to find out, is whether it is because consumers do not value the things that I listed as the unique properties of cash or because the value of the coin is not stable. Why is it that they have not gained adoption? I do not have the answer to that, but if we could find out it would give us quite a large insight into which direction we should take, I would suggest.

Charlotte Hogg: It is worth categorising, as Richard has done, three very different things. It is probably not helpful that these things have been called cryptocurrencies, because they could properly be called crypto-assets. They are not the combined things that make money. They are not units of account, means of exchange or a store of value, and so they are more akin, as Richard said, to investments, in a way, and we should perhaps think about them in that light and the implications of that.

The next category is stablecoins, which is similar to where Facebook is trying to head, where you put an underlying reserve currency to create the stability that you do not have with crypto-assets. There are some really important questions there too of how stable it is, what really sits underneath those stablecoins, what use cases they work for, and whether they operate more effectively in, for example, countries where they have dollarised because of the volatility of their own currency, perhaps. It is a different category and set of questions, alongside retail CBDC and then wholesale.

Having those different categories and thinking about them a little differently, because they raise different questions for consumers, businesses and regulators, is probably quite helpful. Calling everything a cryptocurrency probably has not been helpful in the discussion.

The Chair: On that note, that concludes this session. Thank you, Charlotte Hogg and Richard Brown. It has been very interesting and informative.