House of Commons

Treasury Committee

Oral evidence: Crypto-asset industry - HC 615

Tuesday 28 February 2023

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Watch the meeting

Members present: Harriett Baldwin (Chair); Rushanara Ali; Anthony Browne; Dame Angela Eagle; Emma Hardy; Danny Kruger; Dame Andrea Leadsom; Siobhain McDonagh; Anne Marie Morris.

Questions 282-361

Witnesses

I: Sarah Breeden, Executive Director, Financial Stability Strategy and Risk at Bank of England, Sir Jon Cunliffe, Deputy Governor for Financial Stability at Bank of England and Sasha Mills, Executive Director, Financial Market Infrastructure at Bank of England.

Examination of Witnesses

Witnesses: Sarah Breeden, Sir Jon Cunliffe and Sasha Mills.

Q282 **Chair:** Good morning. Good to see you. For the benefit of our viewers, will you start by introducing yourselves, please?

Sir Jon Cunliffe: I am Sir Jon Cunliffe, the Deputy Governor for Financial Stability at the Bank of England.

Sarah Breeden: I am Sarah Breeden, Executive Director for Financial Stability, Strategy and Risk at the Bank of England.

Sasha Mills: I am Sasha Mills, Executive Director for Financial Market Infrastructure at the Bank of England.

Q283 **Chair:** Thank you. We know that you have been cogitating and mulling over a central bank digital currency for the UK for quite a while. We were expecting to see the consultation that you have just launched last year. Clearly, there have been delays and discussions between you and the Treasury. Can you elaborate for our benefit what has caused the delays at the Bank end?

Sir Jon Cunliffe: It was not a question of differences of opinion with the Treasury or within the Bank; it was simply practical. To be honest, September and October, when we were planning to take this through governance processes, turned out to be very busy for the Bank and there was just not the time to devote to this at the senior levels of the Bank. Also, business was a bit disrupted in the Treasury. That cost us a couple of months.

Q284 **Chair:** We were then told that we would get it in January, but that did not happen either.

Sir Jon Cunliffe: Well, it needed to go through its normal processes and Cabinet write-round. We thought it better to get it right. This is a long-term, forward-looking assessment, so better to get it right than to rush it out. It was just pressure of other business.

Q285 **Chair:** Are there areas of disagreement between you and the Treasury? What held things up?

Sir Jon Cunliffe: There were no disagreements that held things up.

Q286 **Chair:** So there were no changes—

Sir Jon Cunliffe: As we discussed this with the Treasury over the past year, there were discussions around policy, but actually I don't think there were any major disagreements, and certainly in the final process of authorisation and getting the thing ready for publication, there were no disagreements at all.

Q287 **Chair:** You did not make any changes to it between January and February, when it was released.

Sir Jon Cunliffe: There are some drafting changes and some points came out, I think. As you know, Chair, on the Treasury side a document like that has to go through a Whitehall write-round. There were some comments to clarify, or we had to take out some ambiguities—pretty minor stuff.

Q288 **Chair:** So the Cabinet write-round did lead to changes in the consultation.

Sir Jon Cunliffe: I think it led to some minor drafting changes, but nothing of substance.

Q289 **Chair:** Okay. The consultation paper's tone could, I think, basically be characterised as somewhat ambivalent. You say on the one hand that you think a central bank digital currency is likely to be needed, and on the other hand that a decision has not yet been taken to have one. It comes across as a bit ambivalent and half-hearted.

Sir Jon Cunliffe: In some ways, I thought the statement that it was likely to be needed was quite forward-leaning compared with where we were before, which was saying, "We don't know whether it will be needed," so we have kind of moved on the probability spectrum from, "It may or may not," to thinking, "It's more likely than not."

Q290 **Chair:** When? When is it likely to be needed?

Sir Jon Cunliffe: Well, that's the question. The reason we could not—it would have been wrong to—take a decision to implement at the moment is that the consultation and the work we have done are forward looking. What we are trying to do is to see how trends in the economy, in payments, in society and in technology will play out. We have learnt a lot more over the past two or three years about the direction they are going, which is what brought us to the "likely to" from the "maybe yes, maybe no," but we don't know enough about those trends to say, "Yes, let's implement a major public infrastructure project."

Q291 **Chair:** On a scale of one to 10, how likely are we to need to have a central bank digital currency?

Sir Jon Cunliffe: I am not sure it is helpful to put a number on it—

Anthony Browne: Go on!

Sir Jon Cunliffe: I will just say that it is more likely than not.

Chair: Are we talking six out of 10?

Sir Jon Cunliffe: We are talking more than five.

Chair: Do Sasha and Sarah agree with that number?

Sasha Mills: This is forward looking, so—

Q292 **Chair:** Your job in the Bank is to be forward looking. You are the ones who are looking over the horizon.

Sir Jon Cunliffe: It is, I very much agree. Our difficulty with this is that if we wait until it is nine out of 10, we are five years away at least. These are big projects. It may be that in the crypto world you can run up a payment system very quickly, but this would be a very serious thing that would have to be resilient, fraud-proof and secure. If we wait until we can say, "Okay, now we think it is needed," we would be five years behind.

Q293 **Chair:** Arguably you have been very slow so far, haven't you? You have lost quite a lot of time getting to where we are now.

Sir Jon Cunliffe: We have tried to make where we are going commensurate with the trends that have been appearing. Some countries have moved faster, some more slowly. In terms of advanced economies, I do not think we are behind in where we are on this. The next stage of work we are committing to do will actually reduce the time to implement, but without getting to the point where we have to pull the trigger and say, "Let's go ahead." You could look at this as a way of retaining optionality against something we think is probable but do not know is certain.

Q294 **Chair:** So you can still see circumstances in which you decide not to introduce a digital pound?

Sir Jon Cunliffe: I think it is possible, but "likely to" does not mean certainty.

Q295 **Chair:** We took evidence earlier this month from the banks because they are very reluctant to pass on the increase in base rate to our constituents. I know you are not putting it in the proposals, but there is the potential for you to pay base rate on this digital pound. Can you talk us through your thinking on why you have decided not to do that and why it would be non-interest-bearing?

Sir Jon Cunliffe: There are lots of different motivations for having a digital pound; the way you would structure a digital pound is different, and there are trade-offs to be made. Our basic motivation, and the reason we think it is likely to be needed, is to provide digital cash—the digital equivalent of Bank of England notes—for general payment purposes. We do not want a system in which there are two forms of Bank of England money circulating, one remunerated and one unremunerated. We also do not want a system where we would be producing something that had the characteristics of a savings product. The motivation is about payments and only payments. If we want to use it to transmit monetary policy through remuneration, either positive or negative—a number of academics have said that this will enable you to escape the effective lower bound, because you could charge negative interest on cash, though I am not sure how popular that would be—we cut across some of the other objectives. Our objectives are monetary and financial stability.

When we look at it, the impact of paying interest on the transmission mechanism of monetary policy is not clearcut; it is ambiguous. There are some things that suggest it might reinforce the transmission mechanism and make monetary policy more effective, and other things that suggest it might go the other way. A good example would be when you put interest rates up to be contractionary: you pay interest on savings, which might encourage people to save more, so that is contractionary; but of course, their income will go up because the savings are now paying more, which might be expansionary. The academic evidence on whether you would strengthen the transmission mechanism in this way is pretty mixed. We have set some of this out in the paper.

On escaping the effective lower bound, as long as cash is there, people will always have the opportunity to move to cash if interest rates for retail savers go negative. We looked at how much of a difference having a CBDC might make, in terms of the impact on the economy, if the MPC went to negative interest rates. What difference that would make to the economy? That answer is that it would be pretty modest.

Q296 **Chair:** You have said, rather reluctantly, that you think there is probably a six out of 10 chance—you said it was more than a 50% chance—that we will need a central bank digital currency. Let's assume that at the end of this consultation a "go" decision is taken. Does the bank have the technical skills to develop a CBDC, or is it something that would then take five years to acquire and deliver?

Sir Jon Cunliffe: The answer is: we do not at the moment. We would hope by the end of this next phase to have the skills to move with private sector partners to the next stages, which would be to build a working prototype to test in a simulated environment, then testing in a live environment, and then implementation. The next phase is designed to put us in a position to do that.

Chair: Thank you, Sir John.

Q297 **Anthony Browne:** You are all wise and intelligent people, and I am in need of enlightenment. I have struggled to understand from a consumer's perspective the point of a central bank digital currency—a digital pound—and failed, and I am not the only one. CryptoUK wrote to us: "we note that there is no obvious current market failure that warrants a retail CBDC". Your boss, Andrew Bailey, told us: "I am not convinced about some of the problems that we might be trying to solve." We have one of the most advanced—arguably the most advanced—payment system in the world for making instantaneous payments. We largely do it for free. Very conveniently you can pay with your phone, your watch, contactless or a ring. Why do we need a digital pound?

Sir Jon Cunliffe: First of all, I am not sure that we have one of the most advanced payment systems in the world. I have just come back from India. There is a lot happening in India and emerging market economies that have gone much further. You can't, by the way, use peer-to-peer payments in shops as you can in other countries. We have a system that meets today's needs. Whether it is one of the most advanced in the world we could talk about.

The issue comes back to "likely to" and the amount of time it would take to do this. If you do a static thing, what is it that I can't do now that I know I want to do? What hole in the current payment landscape would it fill? I don't think you get to an answer that you would need to do a CBDC now.

Q298 **Anthony Browne:** There is no specific problem at the moment for a CBDC to try to solve.

Sir Jon Cunliffe: Let me turn it round. This is a forward-looking assessment. A lot of these new technologies emerged in the crypto world, but not just in the crypto world. They offer the prospect—I say it is the prospect, which is why we are in "likely to" and development of trends—of a much deeper integration of the transfer of the value, the settlement, the movement of a payment asset, into software that automates decisions, but also that integrates payment into other non-payment functions. At the moment, as you know well, we do electronic transfers on commercial bank ledgers through payment systems, but there are reasons why those systems will not enable the same programmability, the same automaticity, that you would get using some of the techniques that have been developed elsewhere.

I am not a technologist. When we talk to technologists, there are different views about how quickly and to what extent those new technologies can be brought to bear. It would be complacent to assume that those new technologies will not develop and that people will not find ways to integrate the payment operation much more deeply into digital platforms and digital operations. That is what this assessment turns on. We see the prospect of a very different form of payments emerging. We can see it works in some areas already. To assume that people will not use those technologies to develop new forms of payment and new functionalities would be to ignore some of the evidence we have seen in the digital revolution. We need to be ready if that happens.

Last, this is not the threat of new technologies and innovation just finding new functionality for payments. A third of people are now using contactless, whereas 2% were five years ago. It is not that we are worried by this; it could have huge benefits for the economy and for society, but we need to deal with some of the questions it poses around the uniformity of money and around competition and innovation. That is what this is designed to do.

Anthony Browne: Thank you for your answer.

Sir Jon Cunliffe: Sorry, it was a long answer.

Q299 **Anthony Browne:** Do the others—Sasha or Sarah—have anything to add at this point?

Sasha Mills: Not on this point.

Q300 **Anthony Browne:** I am going to ask one more very specific question and then a more general one. My specific one is this. You talk about the new technologies and embedding contracts, I think, within payments and so on. From a consumer point of view, what benefit could this bring? To our constituents who use payment systems at the moment, what might it bring that they cannot do at the moment?

Sir Jon Cunliffe: I understand the problem, and we ran a number of consultations with consumers, and the like, so I can give you some examples, which I will do in a moment, but maybe first I can give you a comparison. The iPhone launched with 15 apps, and those apps were things that you could do already: a camera, email, a calendar, the iPod—music. By the time they launched the App Store a year or two later, they had 8,000 apps, and I think now there are several million.

This is not about, "Here is a particular thing we think needs to be done." It is about opening a new frontier for people to improve payments and the way money is used in how we transact. Examples include micropayments. It would be much, much easier for you to make very, very small payments, so if you wanted to read an article in a newspaper, you wouldn't have to subscribe to the newspaper; you could pay tiny fractions to do that. It might be about automated delivery versus payment systems. Rather than you paying for something on the internet and then, when it doesn't arrive, trying to get your money back, a barcode is scanned when it is delivered to your door. The funds get locked in advance, and the merchant knows that there will be automaticity—automatic settlement of payments, which we cannot do at the moment.

It might be about allowing users to programme their money, so that it is used in certain ways and cannot be used in other ways. A good example might be how, at the moment, if I want to do an automatic payment, I do a direct debit, which is effectively a blank cheque—it allows somebody access to my account—or a standing order, which I have to know; so we can configure payments to an extent now, but it is quite clunky and they are quite blunt instruments. Programmable money would enable much more differentiation and variation in that.

Could we do those things with developments of the existing system? As I say, I am not a technologist. I think theoretically it's possible. But the way the current system is constructed—the multiple ledgers, the technology used, the lack of uniformity and the restrictions on speed—all suggests that it is unlikely that it would match using some of these new technologies. Will they be developed? I don't know. Technologies sometimes look very promising but fall by the wayside, and sometimes they combine in ways you could not imagine. Think about ride hailing, or carrying your health records on your smartphone. What we want to do is open up that frontier so that there could be a public settlement asset, and public rails available if that happens. I'm sorry: that was another long answer.

Q301 **Anthony Browne:** No, it was a very good answer. I like your real-world examples; I was impressed by them.

Obviously, a lot of those things you offer are often mooted by other people—cryptocurrency firms. Lots of them cite similar examples and they are trying to develop that technology. How much is your interest in a CBDC because you think you can bring a consumer benefit that cannot be brought by other people—firms—or is it really a defensive play, in that there are lots of other currency-like things and payment-like systems out there, developing? This isn't a bad reason, but that will marginalise the role of the central bank, marginalise your control over the payment systems, marginalise the effect of monetary policy, and so on. Is your interest here about the integrity of the monetary system?

Sir Jon Cunliffe: I would say it is both. Were this world and these things to develop—as I say, we are looking at trends—they would pose two big questions, and raise some other issues as well. One is that if we have new players coming in, they won't necessarily be banks; they could well be big techs. The first proposal we had for a retail stablecoin came from Facebook. If they moved quickly and got to scale, we would have the issue of how we ensure the uniformity and integrity of money in the UK. One argument is that we could do that with regulation, but at the moment cash plays a role in tying the system together, because all commercial bank deposits are exchangeable for Bank of England cash on demand, in fiat. One of our reasons, and a strong motivation for the central bank, is to allow the innovation to happen but ensure that we have a digitally native central bank asset that could tie the system together. So you would always be able to go into Bank of England money, either physical or digital, on demand, no matter who was providing the private money and the technology being used.

The other reason is about the opportunities here. The question is if we are better depending on the private sector to develop these new forms of money and new forms of payment, does it make sense to have a public settlement asset and public transfer machinery and payment systems that any payment system operator can develop?

What we have found—the Furman report that was done for the Treasury a couple of years back is a good explanation of this—is that digital platforms tend to towards concentration quite quickly, because of data advantages and economies of scope and scale. What one doesn't want is one or two private new monies, if I can put it that way, developing on big tech platforms, or it could be a new platform that becomes very popular. People who want to develop payment services around that, for the things I was talking about earlier, have to operate on that platform. Think about apps on the App Store and the control, or about some of the things that the competition authorities have done with having to use a particular platform's money—I forget which one it is—to buy points in the games that are played on that platform.

The question is whether there a role for the public sector to provide a settlement asset, otherwise known as money, for this and the central core infrastructure, and then to make that open to private sector developers to say, "Okay, I can use that to develop payment services." We think there is value in that and that it will help competition and innovation if we provide that alterative. We are not saying it is the only way, but if we provide that alternative and we require all the other forms of money to be exchangeable into that alternative in fiat, on demand, people will have confidence in the security of their money.

Q302 **Anthony Browne:** May I ask one quick question as a follow-up to that, with a very quick answer? You said that the probability that you will want to do this is more than 50% now. What are you looking for to make the decision that you actually now need it? How will you know that you need it, which you don't know now?

Sir Jon Cunliffe: There are two important things here. One, we need to see what continues to happen to these trends. Since we started this work, we have had covid and a real shift in digital living, but we need to see how trends develop further over the next two or three years. It will still be a probability-based decision but there will be more evidence in that area.

Secondly, we need to see whether it is technically feasible and what it would involve. We set out a model. One of the problems with going to the next stage is that you cannot keep all your options open. Had we wanted to keep remuneration open or to have a monetary policy purpose, you would build it in a different way. You have to say, "These are the trade-offs; this is the design; now let's have a very intensive conversation with the technology side, public and private. Can it be built? Where are the trade-offs? What are the problems in doing this? What is the cost?" Rightly, if we take a decision, people will ask us for a cost-benefit analysis.

So the next stage is one, technical feasibility for the design we have put out to consultation; and two, how are these things developing in the outside world, both wholesale and retail.

Q303 **Dame Angela Eagle:** You set out some of the potential benefits, and I was wondering about some of the potential risks to financial stability of developing a digital pound. One is the potential mass withdrawal of deposits because this is much faster, and with the retail element, money flows can be instantaneous. How have you decided to mitigate that risk, to the extent that you can plan for it now? You talked about the proposed £10,000 to £20,000 cap on deposits during a transition. Can you say a bit about how you think that will mitigate risk?

Sir Jon Cunliffe: Perhaps I can give an overview, and then I might turn to Sarah on some of the details—the modelling and the numbers. The first point is that actually CBDC has financial stability benefits, in terms of resilience, because it provides another payment system. It also means that if we ever have to deal with failed banks again, there is another asset that people can go into. We had to bail out the banks in the dreadful passage back in 2008 not because of the supply of credit to the economy, but simply because, had they failed, 60% of people's money would have been locked up because their money was commercial bank deposits.

There are financial stability benefits in this area too, but there are clearly risks. There are risks about damage to the banking system. Over time, one would want the banking system to adjust to a new reality. It has done that throughout its life. I came across a great speech from the 1890s about why banks should not lend against any property. It was to do with the New South Wales banking collapse, and a very senior British banker said, "This is because some colonials allowed banks to lend against property." Views about what banks do have changed over time, but we have to be alive to that risk.

I will make two other points. We live with the prospect of instantaneous bank runs at the moment. We had a recent example a few years ago when we had an internet run on the bank. People can run to another bank very, very quickly, so this is not a new problem, although it may be an intensification of a problem that we already have.

Secondly, if we assume that there is a loss of confidence in a bank or the banking system, your point is that people could run to the safest asset. Instead of having to queue up to take cash, the frictions would go and they could take it out instantaneously. There is in my mind a long-term question about whether the best way to deal with that is to stop people going to a safe place by restricting their access and not giving them any safe places to go to, or by dealing with outflows at the failing institution.

Q304 **Dame Angela Eagle:** That is an interesting philosophical point. It might lead to people putting actual money under their pillow, rather than in the bank.

Sir Jon Cunliffe: Yes, but it is an interesting question. Is the best way to deal with this to say, "We're going to take away the safe place so you can't go there," or is it a better way to resolve the problems in the institution itself, which is what resolution framework is designed to do? Sarah, do you want to talk about that?

Sarah Breeden: When we think about this from a financial stability perspective, we have two FS risks in mind. The first is, as you said, outflows in a stress, and the second is the impact on the cost of lending of there being a steady state shift in where deposits are held. As you said, limits are going to limit the first risk of outflows in stress. The £10,000 to £20,000 limit that we propose in the paper will mean that a 20% maximum outflow from the banking system would be likely.

Q305 **Dame Angela Eagle:** I understand that, but would that limit be just in a transition, or would it be permanent? Presumably it would be under constant review. If it was a rip-roaring success and everybody wanted to use it, and it became the dominant thing that people wished to use, presumably you would start looking at moving those limits.

Sarah Breeden: That is where the analysis that we did in our digital money discussion paper in mid-2021 is interesting. What we tried to do there was understand bottom-up what the demand for central bank digital currency would be. It is not remunerated. It is mainly transactional, and it might give you greater functionality. That analysis too suggested that about 20% of deposits that are currently held in the banking system might go. From two different perspectives we end up at roughly the same answer. Around about 20% of deposits are non-interest bearing at the moment. If you think about deposits in the banking system as supporting payments, 20% seems to us to be a reasonable maximum.

The other thing I would say is that in terms of outflows, that is very much the worst case. It assumes that balances go from zero to the maximum in one go. Obviously, that is an extreme assumption. The other thing is that it assumes that even insured deposits leave the banking system. Of course, the FSCS is there to insure £85,000, which covers an awful lot. If it was only the uninsured that were to leave, the amounts would be a fraction of that 20%.

Q306 **Dame Angela Eagle:** So that is steady state now, but we know about technology—Sir Jon you intimated it with some of your examples of iPhone innovation—and that things might change very rapidly if digital currencies became a reality and were widely accepted and widely used, which I think is likely. Might one of the effects of this actually be complete disintermediation? For those that are watching, that means in financial terms that you cut out the middle people. That can be banks or brokers or people that are charging you for doing things. Might that not change the entire financial structure to such an extent that it would render quite a lot of the systems we use at the moment old hat and irrelevant and lead to something quite new that none of us can actually anticipate at the moment, like with the creation of Amazon shopping?

Sir Jon Cunliffe: First, it is very difficult to know what the behavioural response of people to this new form of money will be. We have tried, but it is quite difficult. If you had asked people in 2003 if they need a smartphone, the majority would not think so. I certainly did not think I needed one until 2010.

Q307 **Dame Angela Eagle:** Perhaps we should put someone younger in charge of the forward-look of what is happening in the banks then?

Sir Jon Cunliffe: I think that is entirely right, and I think that is being looked at after November. It is in hand. But that is one of the reasons we have limits. We do say in the paper that those limits might need to last for several years, because these things grow, and you do not want to assume that just because it is not being used very much in the first year that it will not be used very much thereafter. There are two other things. First, this is the trade-off with remuneration that Sarah just mentioned. If we do not remunerate it, then the banking system always has the ability to compete for these deposits.

Q308 **Dame Angela Eagle:** I presume you want a banking system to remain in place? The potential for some of this is to abolish most of the banking system and to have direct peer-to-peer lending.

Sir Jon Cunliffe: To a point, but the banking system also creates money. The money creation mechanism in modern economies is twofold. It can be the central bank making money, but actually most of the money we use is created in the form of commercial bank lending. When a bank makes a loan, it creates a deposit. That is the money creation principle. That will not change. We will still need and want banks to make loans—in other words to increase the money, and the Bank of England will control inflation through the price of money, and maybe QE if we have to do that again. That function will still be there. There will still be a demand for credit in the economy, and banks will need to meet that. The question is: having created the money, if it leaves the banking system and goes into a CBDC or a stablecoin—this could happen with a stablecoin as well—how do banks then attract that money back again to ensure that their balance sheets are in balance?

Q309 **Dame Angela Eagle:** And you may have to increase their liquidity requirements.

Sir Jon Cunliffe: We may have to. We may have to increase the supply of Bank of England reserves—there is an annex at the back of the consultation paper that looks at the impacts on the Bank's balance sheet—but we have to do that at the moment. The other point is that, if there is not a CBDC, it does not mean that these technologies go away.

Q310 **Dame Angela Eagle:** That is right. I think your comment about having a public asset, and one that is accountable—politically, in the largest sense of the word, and democratically—is really important. Rather than having some excessively libertarian tech gazillionaire doing it, I think it is important that central banks do it.

To what extent are you also talking to other central banks? Clearly, this has all got to be globally integrated, otherwise we get to a very strange, probably pre-19th century kind of situation with banking systems across the world. So, I mean, it has to be globally interactive, surely?

Sir Jon Cunliffe: The answer is that we are talking an awful lot. I chair the International Settlements Committee on Payments and Market

Infrastructures, so we have work going on there. As part of this whole G20 initiative to improve cross-border payments, one element is looking at the role that CBDCs could play. We also have another group, with the G7 central banks, plus Switzerland and Sweden, which has been looking for the last two years at some of these issues. We have published all of the reports of that. Then, there is work going on in the IMF and elsewhere, so there is a lot.

I would say though, that we were focused on a domestic retail CBDC. Because international co-ordination is difficult and takes time, the way in which I would characterise the international aspect of this is that, because we have a clean slate, by communicating and trying to develop global standards, it should be possible to avoid putting frictions in unnecessarily.

That does not necessarily mean that we would want full interoperability and a bringing together of the systems—you might not want that—but the opportunity that we have is to avoid unintended friction, and the like, and there is a lot of work going on in that area. But this consultation document is primarily about the UK motivations for doing it.

Q311 **Siobhan McDonagh:** I want to look at the issues of fraud, because, like any new form of payment technology, a digital pound could create new ways for criminals to carry out fraud. How will the design of the digital pound be able to mitigate the risk?

Sir Jon Cunliffe: The honest answer is that I don't know the how. That is what the next stage is designed to explore. If you look at the technological working paper that we put out, we laid out six key areas where we need to explore the technology. One of them was about security, which is exactly about this question of preventing fraud.

At the moment, we have seen that push-payment fraud has, I think, got to more than £350 million in the first half of last year. That is another fraud, but the moment you introduce a new technology, you create an opportunity for fraud. So, it is not a new problem, but what we can do in the technological sphere to prevent it, minimise it or mitigate it, I think, is for the next stage of development.

In the paper, we set out some of the techniques that we can see—thinking about identity fraud—to protect identity. There are also privacy-enhancing technologies. So, there are things out there, and new technologies being developed, to help with this, but I couldn't say now what that will be. I think that that is part of the blueprint.

There is a tension, to some extent, between preventing fraud and privacy. That is why we allow the authorities access to people's bank accounts under controlled circumstances. There are also tensions with speed and performance, and the design will have to balance those things.

I am not suggesting that people read the technical paper, but security, resilience and privacy are three areas where we will need to see what is technologically possible, and to what extent we can do those things without compromising performance, because any digital currency needs to be instant in the way it works, and extensibility—the way it can be used. But I don't have the technological answer at the moment. If my successor is back here in three years' time, I hope they will be able to talk more, but we need to explore that.

Q312 **Siobhain McDonagh:** Don't you think that will be a major barrier to most people wanting to become involved in any way in cryptocurrency?

Sir Jon Cunliffe: I distinguish this from cryptocurrency. You make a really good point. Because some of these technologies have been pioneered in the crypto world, if I can call it that, anything using them is somehow identified with it. However, what matters is not the technology but the purpose to which you put it and the controls and regulations around it. Bitcoin and some of the scams in the crypto world have become emblematic of the new technology, but this would be a very different thing.

We would have to explain to people that this is a digital banknote, with all the security that that has, rather than a speculative asset. Certainly, from some of the research we have done, people do confuse those things, and understandably so; what you hear all the time about crypto is about the wild west ecosystem out there. But just the fact that we have to explain is not a reason not to do it. I think it is a challenge for us and, as this progresses, we'll have to take that on.

I do think some of these technologies will come in regardless with private-sector actors. That is why we need to regulate stablecoin or whatever—I know this is later on in the hearing—and give people confidence that there is a regulated space that they can operate in, rather than a completely unregulated space. This is not to trivialise it, but we at the Bank have been dealing with this issue for several hundred years, now. Think about counterfeiting, counterfeit fraud and the way in which we have had to deal with crime and financial crime. These are not new challenges, but every—

Siobhain McDonagh: Most people think that the way we deal with fraud and financial crime is entirely inadequate right now.

Sir Jon Cunliffe: I agree with that. I don't agree that it is inadequate, but I agree that people worry and that it is a huge concern. I am not saying we have got to the right place now, but each wave of technology brings these issues. The milled edge around coins was introduced about 400 years ago to stop people clipping the edge off coins. Counterfeit protections were introduced on banknotes and they have become more and more sophisticated; it is one of the reasons we moved to polymer. The banking system has been working on dealing with some of the frauds, particularly push-payment fraud. It is not just about technology but about a liability framework. So, who is responsible? Where do you go for compensation if you have been defrauded?

Siobhain McDonagh: That is actually my next question.

Sir Jon Cunliffe: Okay, I will stop there.

Q313 **Siobhain McDonagh:** Your consultation notes that a "liability and compensation framework for instances of fraud in the digital pound system would be needed." Can you tell us more about what the framework might look like, and who would be responsible for compensating victims of digital pound fraud?

Sir Jon Cunliffe: The way we have configured the system, which is for consultation, is that all the contact with the customer is done by the private sector, by these payment interface service providers. We would put the kind of regulations around money laundering, fraud and so on in the hands of those providers, as we have done in the hands of the banks. That is where the liability framework would settle—on the people who are accepting instructions for payment and passing instructions for payment through, and the like.

One part of the next phase will be to work with various private sector firms. We have started that a little bit. We have a project at the moment with the BIS looking at some of the use cases—some of the apps—that might be developed for this. I think that will give us some idea of the role these interface providers will play within the chain. It may be that you want to extend the liability framework beyond them to others in the chain, such as the pass-through wallets. In a way, we cannot determine the liability framework until we have got to the prototype and how it works. That is part of the thing that we have to do. We have said that the next stage is technology and policy; that is part of the policy work we will have to do.

Q314 **Emma Hardy:** What financial inclusion benefits could there be from a digital pound?

Sir Jon Cunliffe: Looking at the UK, I think it is very different in different jurisdictions. We have made a lot of progress on financial inclusion over the last few years. I was at the Treasury when basic bank accounts were thought up; there are now 7 million or 8 million basic bank accounts, which enable people to have access—

Q315 **Emma Hardy:** They are hidden on banks' websites, but we will leave that for the moment.

Sir Jon Cunliffe: But there are still 7 million accounts that give people access to the banking system. It has been an issue for quite some time that if you do not have access to the banking system then you do not have access to digital payments, and life becomes much more difficult. We are building on a strong base.

I think there are 1.1 million or 1.2 million people without a bank account—it is in the document. The question is whether they would be more attracted to a CBDC wallet than going to a bank. It is interesting that when we did our engagement group, Citizens Advice and other charities said that would be a very strong thing, and some of the banks said that there was nothing there that they could not do already. The dialogue was then, "Why aren't you doing it?"

I do not know whether people would find a CBDC wallet more attractive than a basic bank account. It is not a primary motivation, because in the UK we have opened up access to the banking system. You can imagine that it could be useful in a number of respects. One is that there is the opportunity for what we call tiered wallets. That is where, if you are not going to hold a large balance, and money is always coming from one source of income—your pay or whatever—then the identity information and the compliance checks you need to go through to open a wallet with a provider will be less. When you are holding more CBDC, and having more diverse flows, then the identity checks increase. They have done that already in some of the CBDCs that have been experimented with. That might make it easier for people to just open a wallet, whereas opening a bank account—even a basic bank account—requires quite a lot of information and compliance, which people find difficult.

The other area, I should say, is offline. We are going to explore that, but it is a real technological challenge how you do offline—when there is no connectivity, can you use this? I think there will be people who do not have connectivity, and find the internet difficult to engage with, and that might be another area where it could help inclusion.

Q316 **Emma Hardy:** We have 4.7 million UK adults already digitally excluded—unable to access the internet. Is there a potential for the digital pound to make exclusion greater because people are having to rely on power, connectivity and the technology to be able to access it?

Sir Jon Cunliffe: At the moment, if you do not have internet access or you are digitally excluded, then much of the world of digital payments and digital commerce is closed to you. Of course, you have credit cards and other cards that you can use, which do not require you to use the internet yourself. We will try in doing this to develop an offline card solution, which is why the offline thing is so important to us. We talk in the paper about different devices; one of the devices will be a kind of card that will either be prepaid to load or easy to use and would connect to the internet by itself when necessary and adjust balances.

The last thing I will say is, we have thought quite hard about whether we should have a system in which everything is stored on the card or the phone and there is no central ledger. You can think about that as a kind of digital purse in which you would keep your coins, and you would transfer them between devices without needing any record kept. That is the closest analogy to cash—what you would call a bearer instrument. You own the thing because it's on your phone. Creating frictionless bearer instruments like that cuts across other social objectives around fraud, financial crime etc.

At the moment, we are testing, and have gone out to consultation on, a system whereby there would be a central ledger; there would be a record in the same way there is for your bank account and your privacy would be controlled under current privacy legislation. There would not be complete anonymity, with a kind of bearer instrument that would be stored on your phone, but it might be possible to have some element of a bearer instrument—some storage on a card or whatever—for people who don't have, basically, the digital skills to connect in other ways. That is one of the things we will try and explore. There are some tensions there.

Q317 **Emma Hardy:** Do you see this resulting in a decline in cash use if more people started to use digital?

Sir Jon Cunliffe: We are talking about something that we could not do until the second half of this decade. The drivers of the decline in cash use will be that cash is no longer fully functional money in the economy—you cannot use it on the internet or in certain retail outlets. If you go to Sweden and try to pay with cash in Stockholm, it is very difficult now. That is what will drive the decline in cash—it cannot be used in the way that people live and transact now. This would add another digital option, but I think cash will decline not because digital options will be created but because it is not useable, and then digital options will be created.

Q318 **Emma Hardy:** When you say that it is not useable, are you anticipating that more businesses will not accept cash as a payment?

Sir Jon Cunliffe: Yes. This is one of the trends. We have talked about why I am just saying a CBDC is "likely". I can see it in my private view, but—

Q319 **Chair:** Go on. That's why you are here.

Sir Jon Cunliffe: I think we are in the sevens, and maybe higher, but—

Q320 **Chair:** Officially just above five, and privately seven?

Sir Jon Cunliffe: Privately, but these are judgments. This is about judging the future, and people have very different views. Some people would put it at three. That is why we should not take a decision now on the basis of that sort of forecast.

Q321 **Emma Hardy:** Am I right in saying that you anticipate, partly because of this digital currency, fewer people using cash, and fewer businesses accepting cash?

Sir Jon Cunliffe: I maybe did not explain it well. I think there will be fewer people using cash because it does not work in a highly digitalised society. So for businesses, the cost of using credit cards has been reduced, basically, part of which was legislated for—the control on interchange fees.

I can remember when you had to have three carbons, you had to sign your name, and somebody had to roll a machine over your card. Now you can tap a card, a watch or a phone. Just the speed means that you clear a queue much quicker in a retail food outlet. They do not have to handle money. They do not have to deal with the storage of cash. Those costs for businesses have changed, and now by using digital they do not have fraud issues and the like. Those issues changed the balance of whether a business wants to accept cash. That is what is driving this. People want to pay in a way that suits the way they live, and businesses want to take payment in a way that is most convenient for them. That is what drives the decline and what stimulates the creation of these new forms of money.

Q322 **Emma Hardy:** Is there a risk that more people will be financially excluded, because there are always going to be some people who need to rely on cash and do not have access to a digital pound, do not have the technological access, do not have the connectivity? What will happen to that group? Do you anticipate that number of people increasing?

Sir Jon Cunliffe: We will make cash available as long as anybody wants it, and I imagine there will be a very long tail of cash use. When we did our research, a lot of people said they did not use it very much, and 20% said it was still their preferred payment method. It is about 15% of transactions in the economy now, but I think there will be a very long tail of cash use. I expect cash to be around for quite a long time—decades, probably—and action is being taken in the Financial Services and Markets Bill that is now in front of Parliament to ensure that we can maintain cash distribution and give the Bank some oversight powers over the cash distribution mechanism.

I think the supply of cash is guaranteed, but there is no way we can make physical cash usable on the internet, and internet shopping is now up to about a third of commerce. I expect that to grow, and I do not think there is anything you can do to restrict the growth of internet commerce because some people who only use cash do not have access to it. So this problem of there not being a safe digital asset that is easy for people to use is going to grow—I think that is your point—as cash becomes less usable. That is one of the reasons why we are thinking about this.

Q323 **Emma Hardy:** My focus is how we can ensure that those people who are already financially excluded have the same access to this as everybody else, especially when cash is declining.

Sir Jon Cunliffe: I think there are actions for Government around digital exclusion. It is a bigger issue, and it is a bit outside the Bank of England's objectives, but ensuring digital literacy and digital inclusion by providing places for people to connect is hugely important. We saw during covid that people lost access to health services and all sorts of things because they did not have digital connectivity, so it is a big societal issue that needs to be tackled. I do not think we can stop these changes, because, as I say, the way we transact with each other, the way we shop and the things people expect to do are just becoming more digital, and physical cash does not work in those situations.

Chair: Siobhain, do you want to ask one more question on this?

Q324 **Siobhain McDonagh:** Given that the digital pound is to be like a digital banknote, should there not be a requirement on the Bank to put in place systems to ensure that digital pounds can be turned into physical pounds easily?

Sir Jon Cunliffe: The objective of this is exactly that. We have not set out in the consultation document how, but you should always be able to change a digital pound of the Bank of England for a digital pound in a bank deposit, for physical cash or, if we have stablecoins within regulation, for a stablecoin. To us, uniformity of money means that you can go from one form of money to another on demand and without loss of value, so yes.

Q325 **Siobhain McDonagh:** Does that not lead us to ask what we do about bank branch closures in our towns and city centres, and about access to cash machines, particularly free cash machines?

Sir Jon Cunliffe: As I say, I think the supply of cash, the cash distribution network and where you can access cash are things that are being addressed in the Financial Services and Markets Bill.

Q326 **Siobhain McDonagh:** Only they are not. There is no guarantee you can have access to free cash—your own free cash, not somebody else's.

Sir Jon Cunliffe: I think the FCA is going to get powers about cash distribution and the like, but that is outside the digital pound, if I can put it that way. What we will ensure is that you will be able to exchange it. The digital pound, in terms of value and interoperability, will be there—the amount of cash transmission we need in the economy.

Q327 **Siobhain McDonagh:** But these are all issues that you are drawn into by giving a commitment for it to be able to become actual cash.

Sir Jon Cunliffe: Yes, although that commitment to ensure that people can exchange commercial bank money for cash—the ATM—exists at the moment, and the Bill is the Government's response to it.

Q328 **Siobhain McDonagh:** So will the Bank of England be opening branches in town centres?

Sir Jon Cunliffe: No. There was a big debate in the 1820s and we did it. It is a really interesting debate for students of history, but our bank branches are now more about intelligence gathering. We provide the cash, the distribution is done by the private sector, and the controls and requirements are set by Government.

Q329 **Dame Andrea Leadsom:** Good morning. Sir Jon, you have just given a personal opinion on the likelihood of a central bank digital currency. Will all three of you please give a personal opinion, ideally by saying yes or no? Do you think that the sovereignty over the supply and price of money in the UK is essential to be retained at central bank level?

Sasha Mills: Yes.

Sarah Breeden: Absolutely.

Sir Jon Cunliffe: Yes.

Q330 **Dame Andrea Leadsom:** Good. That is really helpful, because obviously the essential risk of crypto and all the rest of it is that we are just creating loads of buckets of money that will create private fiefdoms, which is very concerning. Those were really helpful answers. Thank you.

I am really interested to get into the subject of financial inclusion. Sir

Jon, you said that the Bank might look into getting some younger people involved to look at the forward overview, but it seems to me that a great weakness in policy making generally, whether in the central bank or in the civil service, is a failure to user-test, by which I mean to look at it from the perspective of the user. Having spent a long time in Treasury roles, it seems to me—having been involved at the time basic bank accounts were approved and so on, as you were, Sir Jon—that we don't necessarily look at things from the point of view of the user.

In particular, one of the problems that has remained intractable is those who are perhaps on benefits and are perhaps not just digitally excluded but have a very limited understanding of budgeting and financing, and therefore don't make their rent payments or their energy payments because they have not kept enough money back because they've spent it on something else, etc. Could a central bank digital pound potentially be a solution to that? Or are you going to say to me, "No, that's where the Government come in; the Bank just deals with the money and the Government have to deal with the rest"? Isn't there a risk that you end up losing an opportunity to solve some very intractable problems?

Sir Jon Cunliffe: The first point to make is that we have tried to engage with users. There is a report about the work we did with focus groups and the like to try to understand users' attitudes to money. This goes back to my earlier answer: we could not say, "Do you want these particular things?" any more than you could have done for the iPhone, but we did talk about some of the possibilities, how people thought about money and where they saw the advantages.

Some of the things that came back were around budgeting and control. In particular—this comes back to the questions that were asked about physical cash—people find physical cash a good way of having budgetary control, because you have to take it out of your personal wallet to spend it, whereas it is too easy to spend when it is just on your phone and the like. Are there things you could do in the way this money is provided?

Dame Andrea Leadsom: Like jam jar accounts, for example.

Sir Jon Cunliffe: Exactly. We had a long discussion in the engagement group about jam jar accounts. One of the examples that we give in the paper is about automatic savings—programmability. You can do some of that at the moment, and with open banking and some of the PIPs you can set some rules, but we are just putting layers and layers on the current system, whereas programmable money would allow you to put that into the money itself rather than depending on layers of intermediaries to do that for you.

The next stage will involve much more intense consultation with people about how they use money and the like. I think there is a danger—I hope we can avoid it—that we design something that works for us but does not work for other people. We also want to engage, as I say, with the private sector. The experiments we have done so far with the BIS have engaged big payment service firms, some banks, some technology firms and another central bank in trying to develop some use cases to see how we can make this API layer really work. But we will need to engage with people about how they use money.

We also need to engage with developers about how they might help with jam jar accounts or create some substitute for the physical control of money that you have when you deal with cash. It is not just for Government or the Bank; we need to see what is possible with the technology. Again, there will be trade-offs in that. There is a possibility here to solve some of these problems in ways they have not been solved before, because you are opening up more ways of configuring the money you have.

My last point, and we are very clear on this in the document—it is a policy choice—is that neither we nor the Government want to do the programming, because the other side of this is people's fear that the Government will programme you getting money that you cannot spend on certain things, or money that you can only spend on certain things, and that goes to state control of the way you use your money. Sitting in the Bank of England or whatever, the Government could decide that people should not buy alcohol or link their—

Dame Andrea Leadsom: But that is theoretical only, isn't it? We live in a western democracy; that would not last very long.

Sir Jon Cunliffe: I would say that the protection against that is not in the technology; the protection is in your institutions of Government. In this case, the Government and the Bank have said that we will not do any programming of money. So if you want jam jar accounts, or to come up with services that help people to manage their money better, that would be for private sector developers to do. We have to provide the functionality for them to do it.

Q331 **Dame Andrea Leadsom:** Understood. Could we move on? I am really keen to understand the issue of siloed thinking between Government and the Bank, and where the role of the Bank in providing the functionality hits the role of the Government in providing solutions to financial exclusion. Perhaps I could ask both your colleagues whether they think there is that sort of siloed thinking, or whether there is both a threat and an opportunity. The threat is that you lose sovereignty over money, and the opportunity is that you develop a solution that really works to improve financial exclusion. Do you have any thoughts on that, Sasha and Sarah?

Sarah Breeden: I will be brief. I was involved in the CBDC taskforce, which had the Bank of England on it, and the Treasury and other Government Departments as appropriate. It led to the discussion of a paper that was released. There was good discussion of these issues in that forum. As we have discussed, there are a number of challenges. In part, it is about the decline of cash. In part, it is about whether different people are digitally excluded. It appears to be a complex, multidimensional issue. To answer your question, I think there is good engagement across the

Bank and the various bits of Government that are involved, based on my experience of being involved in the group that produced this paper.

Dame Andrea Leadsom: Thank you. Sasha, have you had any involvement in discussions? Do you think there is the risk of losing an opportunity?

Sasha Mills: I haven't directly had those kinds of engagements, but what I understand from colleagues is that it is a very fulsome discussion, and user shared with a common objective.

Q332 **Dame Andrea Leadsom:** So you can all assure us that the user end of things—the user testing—is being considered at the same time as considering new functionality.

Sir Jon Cunliffe: Yes—will be considered, if I could put it that way.

Dame Andrea Leadsom: Will be considered.

Sarah Breeden: It is an important part of the next phase.

Sir Jon Cunliffe: We have done some, but it is an important part of the next phase.

Q333 **Dame Andrea Leadsom:** My other question is again a bit detailed. You talk about the problem of lack of connectivity, and you made a point, Sir Jon, about not being able to do internet shopping if you have no digital access at all. But with AirDrop, Bluetooth signals and various other things, there is a world in which you can actually pay for things if you have some sort of card, which in effect is just cash, but it is a card that you can tap or whatever. I wonder about the extent to which there are two things here: one is the digital connectivity that allows you to shop on the internet; the other is being able to convert your 10 quid into a card with 10 quid on it, which you can then go and spend as 10 quid via tap technology or Bluetooth technology. Aren't those two things slightly different? Are you looking at both of them?

Sir Jon Cunliffe: Yes. First, they are different because you cannot tap a card over the internet, if I can put it that way. They are discussed under the user experience in the consultation document. We want to explore cards, and I think there will be a need to provide something offline. Whether the individual has the ability to connect or whether you are just in a remote area where there is no signal, the question is how one deals with that. You have a problem at the moment when a merchant cannot make a telephone connection to the internet—we have all sat in retail outlets waiting for the terminal to finally connect to the internet. We want to look at ways in which the card itself could hold the money and transfer it.

I come back to the point I made earlier: the system we have gone for is similar to the way in which commercial bank money is provided, where transactions are recorded on a ledger. We would not know what the transactions are, but the wallet provider would see them in the same way that a bank sees your transactions now. To go to a complete bearer instrument, like cash, where everything is held on the devices and there is no record, opens up such possibilities for fraud, financial crime and the like as to make it the wrong choice. That is why we have not chosen it. It is in the consultation, and we may get people who say they want to go to a system in which, effectively, you can do everything anonymously, but at the moment that is not the system we have. Even the use of cash is not anonymous once you get into large amounts.

Dame Andrea Leadsom: Okay, so you are not pursuing the idea—

Sir Jon Cunliffe: We are pursuing the idea of some limited use of cards, not stored on a central ledger. To go into the technology, the question is whether you could do it in such a way that, if you are in an area without phone signal, when connectivity is restored and the transactions have been done they are subsequently uploaded in an automatic way, and there is a limit on the transactions and the like, so as to contain some of the risks that I was talking about. That is what we will explore. Technologically, it is one of the big challenges.

Dame Andrea Leadsom: Thank you.

Chair: To explain to our viewers, the bell will go at 11.30 for Prayers and then again after Prayers, but we will carry right on through.

Q334 **Anne Marie Morris:** Sir Jon, could I move on to wholesale, as opposed to retail, on which most of questions so far have been focused? Your consultation paper is, interestingly, predominantly about retail and not wholesale. In the early days of the debate between the Treasury and the Bank, there seemed to be a lot more appetite for dealing with the wholesale issue. I am surprised—perhaps you can explain it to me—that wholesale has been put on the back burner, and retail front and centre, when in wholesale you do not come across the real risks of retail, which we have been discussing. There is an imperative and urgency to deal with the wholesale issue given the international systems that are now coming online, and given what is happening with the Chinese yuan and so on. Is there not an imperative that we give much more speed and urgency to this wholesale area?

Sir Jon Cunliffe: I would debate that wholesale has been put on the back burner; I do not recognise that, to be honest. The Bank of England has a huge project at the moment to replace the RTGS system. I could talk about that, and how that could move to the use of digital representation of central bank money in wholesale transactions. We are just about to start a sandbox, when the legislation goes through, on the use of some of these technologies in clearing, settlement and trading, which will require a settlement asset. So I think the characterisation that we have put wholesale on the back burner is wrong, bluntly. What we have done—

Anne Marie Morris: I am delighted!

Sir Jon Cunliffe: That is the answer. At the moment, we see them as separate. We see the needs of wholesale and retail as very separate.

Retail is a much bigger change, both societal and economic, than wholesale. We provide electronic central bank money on the wholesale side at the moment through the RTGS system. The challenge is in acceptance. Issues such as privacy, which we have just talked about, competition or whatever, are just very different. The idea of the central bank providing digital money to consumers is just a different and more complex subject than the Bank of England providing digital money in the wholesale system. In the wholesale system, the question is not, "Should we do it?"; the question is, "Are we taking advantage of some of the technological changes that I was talking about earlier?" Because it is the same atomic settlement programme ability—there are huge things there.

We have kind of set this out, and some of it is also set out in the consultation that the Bank did on stage 4 of the RTGS project—we responded to that just a week ago, and now we will engage with the private sector on it—and we think there may be ways to deliver to wholesale in a faster way the benefits in retail that I was talking about earlier, more quickly and effectively than building a complete system from scratch. We have got involved in some of the experiments that central banks are involved with worldwide through the BIS Innovation Hub: the central bank will build the rails for wholesale CBDC to move; we will do the tokenisation of the assets and manage the system.

In other possibilities, a central bank ledger that is on the current database—the new one—*[Interruption.]*

Chair: I did warn you about the bell.

Sir Jon Cunliffe: You did. The new RTGS system will be able to allow the private sector to tokenise that central bank asset, to move it around and to interact back with the central bank ledger to ensure that we have synchronisation, and that the two things are adjusted in real time. There are a number of proposals out there to do that, and we have engaged with a number of them.

In an announcement that we made about omnibus accounts a couple of years back, we said we would allow a group of private sector wholesale actors to manage the transfer of the central bank asset between themselves, tokenised on a distributed ledger, only settling the net with us, and whatever. I do not want to go into names, but there are some ideas there. There are also ideas about creating networks of liabilities, involving not just Bank money but commercial bank money and stablecoin, which could operate in that field. We have engaged with that.

The question is not, "Should we try to exploit the benefits of new technology for wholesale?" We should, and we are looking at how to do that. The sandbox will be important here, because it will allow people to explore the collapse in clearing settlement trading of a settlement asset. The question is, "How?" or, "What is the quickest way?" We have done a lot of consultation with the industry on that. It might be that the answer is that the quickest way is to build a complete new one, but at the moment the functionality of the RTGS system and its ability to link to DLT systems and the like, given where we are—other countries are in a different position because they are not bringing a completely new RTGS system into being in the next year—look to us to be a better way of doing it. As I say, however, an awful lot of work is going on in the Bank, and it is a huge project that is looking at this.

Q335 **Anne Marie Morris:** For wholesale, it is not 60% but 100%, in terms of "It will happen."

Sir Jon Cunliffe: Yes.

Anne Marie Morris: That is great to hear. I am delighted, Sir Jon.

Sir Jon Cunliffe: Well, it's happening already.

Q336 **Anne Marie Morris:** Good. My next question is on speed. You are absolutely right, and I entirely understand that linking this to the RTGS renewal if possible is a good way of doing things. We know that the distributed ledger technology has now been proved—Samson 1, an international project, has I think demonstrated that—but my concern is that because RTGS is now being pushed to '28, that gives you quite a long delay. Are we therefore going to lose out to our competitors in Europe and Asia by insisting—though I understand why—on this link with RTGS directly, or on your exploration of whether the link is appropriate?

Sir Jon Cunliffe: Let me say two things. I do not think anything has been proved. The distributed ledger technology suffers from some real challenges on scalability. I could go into the trilemma of trying to ensure security, scalability and speed, but it is difficult.

On the retail side, I think we put in 30,000 transactions per second as a base case, going to 100,000, and I don't think we could find any distributed ledger technology that gets remotely close to that. I am not saying it can't, but there are very many projects out there who say they have proved things, but there is proving things for a project developer and proving things for a central bank. The Bank has to ensure 100% reliability, particularly at wholesale and when thinking about the flows.

If we are seen as being cautious, it is because we need to be sure. We are not a crypto firm. If we put in place wholesale CBDC in one form or with synchronisation, we have to know it works from day one and with a very high degree of reliability. On the retail side, we put out that we will go for 99.5% reliability, as we do with RTGS, but we are exploring much higher numbers in that area, like four nines or five nines.

I would not accept that we are behind others. I think you will hear an awful lot from people in the industry about what is ready to go and proven. We have done lots of experiments with lots of people. What a crypto firm or new payment firm has demonstrated in a proof of concept is a very different thing to scaling up or using economy-wide or cross-border. Some of these require cross-border, where the challenges are not just technological but about governance and how you bring these things together.

I am not sure I would agree that we are falling behind. The Chinese CBDC is retailed in the main and seems to have not grown so much, in recent years anyway. But we do have to balance speed against getting it right. There are some big things at stake here.

Q337 **Anne Marie Morris:** That is absolutely right. What are the different things you are looking at? Is Samsung something you are going to get involved with, for example? What for you is the criteria?

Sir Jon Cunliffe: I think it would be wrong to get involved in a discussion about a number of proprietary projects that we are engaged with. We have talked to people about regulated liability networks, if that is what you mean. We have talked to people about omnibus accounts and tokenisation. We actually have one firm that has applied for authorisation. The Bank of England will be recognised by the Treasury on that side. We are running projects with the BIS Innovation Hub about a synchronisation agent who would be able to synchronise not just with the financial sector but with things like the land registry and other tokenised assets, so that you could do a house purchase without having to have solicitors in escrow. There is a lot of experimentation going on, but I don't think I want to give you a list of all the people. With some of them it is confidential.

Q338 **Anne Marie Morris:** Entirely understood. What then will be your criteria in terms of selecting from all of these options, if you like, that you are looking at that and deciding what you will ultimately go for? Clearly scalability, as you have already mentioned, is one of the criteria. What might the others be?

Sir Jon Cunliffe: It is not about wholesale, but if you look at the technical working paper that we have just done for retail, we talk about security, which is about fraud and fraud prevention, and we talk about resilience, which is cyber-attacks and whether the system can be brought back up again. We also talk about privacy, which is maybe less of an issue in the wholesale world when you are dealing with that extensibility, which is the ability to add functions to this. They are the same criteria that we look at. I am not sure I would agree that we are going to pick one solution for this. The idea of synchronisation with our ledger is that we allow lots of solutions to develop, but they all have to be able to integrate and synchronise ledgers. As I say, we may discover that that is too difficult and then we have to build one system for wholesale. But I think wholesale is so much more advanced than retail that there should be better paths to getting there.

Q339 **Anne Marie Morris:** I am delighted. I have just one final question—otherwise the Chairman will be cross with me—and that is on stablecoin. The argument has been put that stablecoin is actually the answer for wholesale. My concern is that the mechanism is completely different. It involves your private sector banks, and they can go bankrupt. Therefore, it seems to me that stablecoin is not really the solution, if you like, and that CBDC is the solution. Do you have any comment on that?

Sir Jon Cunliffe: Yes. The Committee might want to explore stablecoin more generally. We should not assume that by stablecoin we mean what is out there at the moment in the crypto world. The reason the Government are legislating to give the Bank of England powers over stablecoin used in systemic payments systems, which will include wholesale as well as retail—this is not a wholesale-retail distinction—is that if we saw stablecoins being used for that purpose, we would want to regulate them. We would want to regulate the backing asset, we would want to regulate the claim and we would want to ensure—the Financial Policy Committee said this a few years ago—that the money element of that has the same protection as commercial bank money. So I go back to how you can exchange it for fiat on demand and at par, without loss of value.

Also, we would want to ensure that the payment mechanism—not just the money that is moving through the pipes but the payment pipes themselves—had the same end-to-end risk management that we ask of other payment systems, both wholesale and retail. Could stablecoins operate in wholesale transfers? Yes, and in a way, that example I gave you of an omnibus account with tokenised central bank money moving between that is a stablecoin. Would it have to be regulated? Yes. Are any of the stablecoins currently out there fit for that purpose, wholesale or retail? I very much doubt it.

Anne Marie Morris: Thank you. That is very helpful, Sir John.

Q340 **Danny Kruger:** I am encouraged by what I have heard about the plans for wholesale CBDC; I really see the value of that. I am afraid that I am still unsure about the value of retail and I am afraid that I have not heard today a convincing case for it on the basis of the innovations that it might yet induce.

I do not see why any of the advantages that a digital pound would bring cannot be delivered through commercial banks or fintech firms, which, as you say, are innovating frantically all the time. I am not sure why we think a nationalised system would be more innovative than the private sector. I think that the real reason we are doing this—this was intimated by the Minister, Andrew Griffith, when he came in a while ago—is that other countries are doing it and we are very concerned about losing competitive advantage with other financial centres. We are doing this to maintain the primacy of the City in financial services.

I worry a lot about the implications of it on two grounds, which I want to put to you, Sir Jon. The first is if we get this wrong, it is catastrophic. There are obviously advantages to being ahead of the pack, but there is enormous disadvantage and danger if we get this wrong. I would be interested in your assessment of the risk. Do you accept that if, through technological mistakes, which we are not immune in this country, the credibility of the Bank were severely harmed, but more profoundly, if it all went wrong, it could effectively cause the financial system to fall over?

I want to put this scenario to you, which was raised by Mervyn King a few weeks ago. What if there were a financial crisis of some sort and everybody instantly switched their deposits into the digital pound for reasons of safety? We would effectively have a run on the commercial banks, with everybody scurrying into the Bank of England. As in 2008, your natural impulse at the Bank would be to try and capitalise the banks, which had suddenly lost all their deposits. You would not be able to do that if it were all open and transparent and everybody had put their money into the central bank. The commercial banks would fall over immediately, wouldn't they? In 2008, you were able to, as it were, covertly transfer some funding to the commercial banks. You would not be able to do that under this system.

Sir Jon Cunliffe: First of all, do you want me to go back on the motivations? If it is helpful—if I wasn't convincing the first time, I might not be convincing the second time.

Q341 **Danny Kruger:** I have heard a bit about it—we have heard some of the explanations on why you think it is necessary. Sorry to be doubtful of it. If you want to respond, do.

Sir Jon Cunliffe: To your question about why this could not be done by the private sector, my answer would be two-fold. I do not think the current technology in the private sector will be able to do this to the extent that some of the new technologies will. I don't know that that is the case—we can talk about the trends—but the prospect of payments using those technologies is enough to make you want to be ready, should it happen.

If the question is, "Well, okay, but the private sector can develop those technologies—stablecoins and so on—so why does the public sector have to do it?", the answer for us is that we don't want to stop the private sector doing it. We talk in the paper about a mixed ecosystem in which stablecoins and new forms of money from non-banks could exist, but tying that whole system together just by regulation might be quite difficult. Having a public sector digital asset, into which all things must translate, might make it easier to assure the uniformity of money. Those are the two reasons.

Q342 **Danny Kruger:** Okay, but that raises the second point, doesn't it?

Sir Jon Cunliffe: On the second point, at the moment we are dealing with transitional limits, which may or may not become permanent. Let us assume that there are no limits, and that people can go instantly in a complete financial crisis in which they lost confidence in the banking system. I would make a number of points. If people lose complete confidence in the banking system—not just in bank A, which would mean that they might run to bank B, or now they might run a little faster to digital cash, which is what we were close to, and I went through 2008, in government—and I am not sure telling people that there is no exit from the banking system is the way to restore confidence.

You are asking me what we would do if confidence were lost in the system. We would get very long lines at ATMs, which would stimulate further panic. Let's assume that we shut off physical cash and there is no digital cash, so the public have no access to a central bank asset and they lose confidence in the banking system, which starts to spread. All they can do is transfer their money from one part of the banking system to another part of the banking system. I’m not sure that restores confidence either. My guess is that what the Government would have to do at that point is come in and basically underwrite the banking system.

We are not saying that we have an optimal way of dealing with that problem at the moment, but a CBDC would make it suboptimal. Once you get to a loss of confidence in the banking system, you are in trouble, and the public sector, in one way or another, has to underpin it. It is possible using resolution, which we did not have in 2008. That is why we had to buy some of the banks, rather than take them into resolution and restructure them using things like MREL or loss-absorbing capital in resolution. We have those options now. My guess is that if that sort of thing started—this is the point I was trying to make before—the issue would be whether we could use resolution to stabilise the banking system. It may be that at that point, we would lock the money in banks, apart from the insured deposits. The uninsured deposits would be locked in. That is what we can do now.

It is an interesting theoretical exercise, but I don’t know what the counterfactuals are. It is a pretty horrendous problem. We faced it once before. There is an argument that the dynamics might be faster or different with a CBDC—I accept that—but the dynamics of runs out of one bank into another bank, and internet runs, have already got pretty fast. I just think the answer to that problem is not to say, “Okay, if there’s a complete loss of confidence in the banking system, we’ll just close the exits.”

Q343 **Danny Kruger:** So you’re suggesting that it is potentially an advantage to have this route for people to put their money in a safe place?

Sir Jon Cunliffe: I am suggesting that it is not a black and white thing. It is not that one is good and one is bad. This is a problem that will have to be dealt with. The ability to recapitalise banks through resolution and public support will be very important in that case, as well as a CBDC.

Q344 **Danny Kruger:** Understood. My second point is the obvious one. It is even greater if, as you suggest, the digital pound might be a very attractive place for people to put their money, not just when there is risk but because of the convenience involved. It is about the challenge around privacy. I recognise that you don’t think the Bank itself should have programming power, but you think there should be programming power. You think there should be a central ledger; we have clarified that today.

Ultimately, not only would the Bank have the ability to peer into people’s transactions—only under certain circumstances around fraud and so on but, still, it would have that power—the currency would be programmable, meaning that people could be influenced or coerced into making certain sorts of payments and not other sorts. The fact that this is to be done by the intermediaries, rather than by the Bank, feels to me to be a fairly thin Chinese wall when who knows what things will happen.

My colleague, Dame Andrea Leadsom, raised the prospects of using this to solve people's problems with budgeting and so on; she suggested that it was a theoretical risk only that the Government would start getting involved in that. I regard that as a very real risk. We have seen it. We say we live in a democracy; the Canadian truckers lived in a democracy until the Canadian Government decided to cut their bank accounts off because they did not like what they were doing in terms of protesting against the covid lockdowns. So the thought that Governments would not potentially use powers that are technologically available for social goods, as the Government see them, feels to me a very big gamble with our liberties. By all means defend the Government and the Bank, if you can, on this threat, but I would be interested in your perspective on the extent to which this threat is technologically real. How would you impose a restriction on the programmability of the currency such that individual liberty could be protected once we have introduced this technology?

Sir Jon Cunliffe: I would like to make a couple of points of clarification. First, the Bank would have no powers to look into people's bank accounts. The police, the tax authorities, financial crime, fraud—they would in the same way that they have the powers to look into my bank account today. Parliament has set the constraints under which that happens. I do not wish to throw the question back but actually whether you can trust the Government to observe the constraints that Parliament sets, or whether you can trust Parliament to set the right constraints, is a question that is not for central banks.

Q345 **Danny Kruger:** Once you have introduced the technology, it does then become a question.

Sir Jon Cunliffe: I do not think it is a question of technology. You gave the example of the Canadian truckers. We have seen sanctions being applied on cross-border transactions. I would argue that, in a society in which 95% of money is through commercial banks, the Government have all sorts of possibilities to interfere with the technology and the way in which people use money. The reasons it does not is to do with the strength of democratic institutions and the choices that we make.

If your argument to me is, "Well, the technology will make it easier to do that", I think that, if this technology arrives—and this is a question, and that is one of the reasons why I say that it is likely to, I cannot forecast it—it will arrive in the private or the public sector. It would be possible to have those controls in the private sector as well as in the public. Unfortunately, I do not think this is a technological question; it is a question of democracy and institutions.

On the issue of programmability and the model we have set out, that is why we are consulting on it. Other countries have done this in different ways, but we wanted to put this out there for consultation before we start working up a system. That is why the consultation around the futures of the model is really important for us. The model does not give the Bank the ability to programme. I do not want to get into programmable primitives and the language of the technical paper, but we would provide some basic functionality but the private sector would have to actually do the programming and it would require user consent. You said, "Well, what is to stop people being coerced into giving their consent." We had this discussion around financial fraud and coercion and push-pay, and we would need to regulate the interface—the wallets or whatever—and then we come to the liability and how you avoid coercion and new forms of technology being exploited for that purpose. But I do not think we are dealing with a fundamentally new issue here. We are dealing with a challenge that we have at the moment. We can argue about how well the authorities are rising to that challenge.

We could have gone for a model in which the programmability was on our ledger. If you think in crypto terms, it would be a sort of Ethereum within the Bank of England, and we have deliberately decided not to do that, so that we would not be able to programme. Could a future Bank of England under a future Government, with a change in the responsibilities between the Bank and the Government, change all of that? Yes. But, as I say, the protections are not technological. They are much more fundamental.

Sorry, that was more as a citizen than as a Bank of England official.

Chair: Thank you. I am going to bring in Rushanara Ali.

Q346 **Rushanara Ali:** I have questions on the monetary stability implications of the digital pound and also on the regulation of crypto-assets. Picking up on what Danny talked about in relation to risk and so on, can you talk us through some of the recent announcements that the Chancellor has made in relation to the banking sector at the moment and senior managers regimes and ringfencing? We had evidence from Sir John Vickers recently. On the interplay between those reforms in the banking sector and this question of a digital pound when it is introduced in the coming years, what might the implications be for monetary policy?

Sir Jon Cunliffe: We envisage the commercial banking system remaining—to go back to the earlier question—the credit engine of the economy in the way it is at the moment. The governance and bank balance sheets are very different from CBDC because banks issue a very liquid claim—money and the deposit account—which they back with long-term lending and all sorts of assets. The reforms in the Edinburgh reform package are about supervision. Well, it is more than that, but on the things you mentioned—ringfencing and the senior managers regime—it is about how to ensure that the risks inherent in that model of maturity and liquidity transformation are dealt with.

Q347 **Rushanara Ali:** I just want to understand the interplay. How will those reforms affect the banking system, post financial crisis and given all the changes that were made to protect us from having to bail out banks in the future? Are the reforms likely to lead to higher risk? In that context, if there are more risks than there were, and if we are then introducing another innovation—the digital pound—does that create less risk or more risk to our financial system and stability? I would particularly like you to take the whole thing in the round. New innovations can be an opportunity, but we need to put it into context.

Sir Jon Cunliffe: I did not come back on the failure point, which I should have done. If we introduced one of these and it failed, the impact would be very large. But if we do not introduce it and it happens in the private sector and fails, the impact is also very large, so one also has to keep the counterfactual in mind. My own view is—this is how I got to a reluctant seven—that these technologies will not go away simply because we do not use a CBDC.

Going back to the question of the Edinburgh reforms, there were some things in the package that are to be explored. The changes to the ringfencing and senior managers regimes are still to be determined, so I cannot tell you what impact they would have. I did not see anything in the overall reform package that instantly said, from a financial stability point of view, this was a red flag that would increase risk.

Q348 **Rushanara Ali:** Presumably it would depend on what the ultimate reform package was.

Sir Jon Cunliffe: It would depend on what the ultimate reform package was. The senior managers regime, which, by the way, was designed, developed and stimulated by Parliament—not the Bank of England or the Government, as I recall—plays a very useful role, although there are arguments about it. Indeed, the Bill that you are now looking at would extend it to financial market infrastructure, so there is value there. On ringfencing, the question is whether resolution has replaced the need for ringfencing. I think the answer is no, not entirely. We need to see where changes to that regime would come out. But there was nothing in the Edinburgh reforms that said this was a proximate financial stability risk. We will have to see how it develops. On how the two things link up, clearly, if banks become riskier—at the moment they issue 95% of the money that people use—and we get closer to the sorts of things we saw in the financial crisis, which saw not the total but a very large part of the banking system collapse, then we are into the questions that we were just discussing: how we deal with runs, how we deal with failed banks, to what extent public finance would be necessary to support the banking system.

In that case, the fact that there is a CBDC does not change the equation because people could run to cash as before, but I made a point about dynamics; they might be different. In particular, where there is an issue, the speed might be even faster.

I remember the queues outside Northern Rock as I drove into work back in 2008. You might expect much more of this nowadays to happen on the internet.

Rushanara Ali: Digital queues—well, not really queues.

Sir Jon Cunliffe: Well, actually, what happens—as we saw a few years back with one particular bank—is that the website goes down and that is the kind of digital doors locked, and that stimulates more panic. The dynamics might be faster and more severe and we would need to think about that and how we go forward. But I very much hope that the

Edinburgh reforms will not lead to an aggregate loss of resilience in the banking system and those dynamics will not play out.

Rushanara Ali: Presumably, the central bank will have a very active role in shaping—

Sir Jon Cunliffe: It is being led by the Treasury. Obviously, we work closely with them. We will be consulted. The Financial Policy Committee will obviously look at this and say what it thinks. There may be different views in the financial sector—

Rushanara Ali: I very much hope you will be sharing those with us.

Sir Jon Cunliffe: —and society, but we have a responsibility for financial stability, for which we have to account.

Q349 **Rushanara Ali:** What impact could the reduction in bank deposits brought about by widespread adoption of the digital pound have on the cost and quantity of bank lending?

Sarah Breeden: Do you want me to take that, Jon? Rushanara, we did some analysis of that in the digital money discussion paper that we released in the middle of ’21, I think it was. There is obviously a huge amount of uncertainty about what will happen, as Sir Jon has said; trying to get people to articulate how much they are going to use CBDC in advance is hard.

We did an illustrative scenario where we sought to analyse from the bottom up what sorts of flows out of the banking system we might see into CBDC because better functionality would potentially be available there. We came up with an estimate that 20% of deposits might leave the banking system.

As I say, that was built bottom up. That is roughly the same amount as non-interest-bearing deposits in the banking system at the moment. What we sought to do was work out what that meant for the cost of credit. It depends on what happens on wholesale funding costs and how banks price their loans, but our estimate was that it might increase the cost of lending by about 20 basis points—so not a huge number.

Interestingly, UK Finance has done some similar analysis. It has used a broadly similar framework. There are slightly different assumptions in the work that they have done and slightly higher impacts on costs as a result, but they are not enormous impacts; they are 20 or 60 basis points.

Sir Jon Cunliffe: I would imagine that this will be an area where we will get quite a few consultation responses about how we have estimated the costs, the risks, whether the limits that we would propose if we had a CBDC of £10,000 to £20,000 are too high or too low and so on. I think where this settles will be an outcome of the consultation.

Q350 **Rushanara Ali:** Turning to regulation of crypto-assets, what are your views on the Government’s planned approach that were set out in the consultation paper of 1 February?

Sir Jon Cunliffe: If I could talk about the Bill and the consultation paper, because the Bank is more directly involved in the first than the second, then I might ask Sasha to come in on some of that.

At the moment, there are two pieces of Government action on so-called crypto. One is regulation of stablecoins, either systemically or non-systemically, which is now quite advanced. There was a consultation; there are now powers for the Bank of England and the FCA to regulate stablecoins. We would do systemic—or we are likely to do systemic. The second is the crypto paper that the Treasury has just released, which we were involved with through the crypto-asset taskforce. Sarah can talk a little bit about that.

Both of those things are governed by two very important expectations that the Financial Policy Committee put out a few years back. Where there is a financial services activity, we want to ensure that the same risks are being managed to the same level of resilience—same risk, same regulatory outcome. It may not be the same regulation, because we might not be able to apply the regulation practically if the service is being provided in a very different way, if you think about crypto, but we should deal with the same level of resilience.

When we talked about stablecoins and the private money produced by stablecoins, they have to have the same protection as commercial bank money and other private monies that exist at the moment. If we talk about what is in the consultation document, which is the sale, promotion, trading and custody of crypto-assets and the way in which you manage platforms that bundle a number of things together, again the guiding principle is that if there is the same risk, then we will aim for the same regulatory outcome. That is what the Treasury's consultation paper aims to do. We support it and we are involved in it.

Q351 **Rushanara Ali:** Is there anything, as yet, in the proposals that is of concern to you from a financial stability perspective?

Sir Jon Cunliffe: I would put it the other way, actually. Both the stablecoin legislation that Parliament is now considering and the crypto paper that the Treasury has put out, and the next phase it has talked about, help financial stability.

Q352 **Rushanara Ali:** That is really helpful. Final question: the consultation notes that "whilst it is not the government's intention for Financial Services Compensation Scheme (FSCS) protections to apply to investor losses arising from cryptoasset exposures, it is the responsibility of the PRA and FCA…to set the limits of FSCS protection in respect of regulated activities carried out by authorised firms." Do you think the FSCS protections should be applied to any types of crypto-asset exposures?

Sir Jon Cunliffe: No. There is technology and there are the uses to which it is put. If technology has been put to the use of creating investment products—bonds, shares or even very speculative ones such as crypto-assets or funds that trade in volatile commodities—that is investment risk. People should expect to lose money. If you invest in something that has no intrinsic value, you should expect it to be very volatile. You can lose all your money. I do not see why there should be public protection or mutual industry protection of that.

On the other hand, if you are dealing with the provision of money in bank accounts, then I think deposit protection becomes more important. That goes not so much to crypto-assets such as Bitcoin and Ether; nobody would use them as money—well, some people would, but they are probably outside criminal law as well as financial regulation—because their value is so volatile. Stablecoins are a big issue. I don't think we could extend compensation to stablecoin holders because there is no industry to mutualise it across, in the way there is with banks.

To get to that "same risk, same regulatory outcome" we would have to find other protections for stablecoins to get us to that level of resilience. The Financial Policy Committee looked at that, and we published some stuff. Again, Sasha can talk about what we are looking at, if that would be useful.

Rushanara Ali: I have run out of time, I'm afraid, but please update us in writing if there is more you can tell us on that.

Q353 **Chair:** I will just ask Sasha a final question. At the moment, you pay Bank rate to banks for the money that they hold with you. We have heard evidence from the banking sector that they are just not passing on those good savings rates to our constituents. Yet, in your consultation here about a central bank digital currency, you have made an explicit decision that that will not pay Bank rate. But you could have done that. Sasha, can you talk me through the thinking and why you decided not to? Were you effectively allowing the banks to continue to rip off our constituents?

Sasha Mills: No, we are not allowing the banks to continue to do that. I think that Sir Jon has already explained how we set up that thinking and the reasons for not paying interest rates, so I don't think that I have any more to add on that.

Q354 **Chair:** You could have made the decision that our constituents could have benefited from the base rate, and effectively disintermediated this net interest margin that the banks are all earning.

Sir Jon Cunliffe: Can I just add something? I think that Sasha has been more involved on the stablecoin side than the CBDC side. There is a tension here. Our objectives are not to make banks pass on interest; competition should do that, and if competition is insufficient, again, Governments need to think about how they deal with that. We are responsible for monetary and financial stability.

I talked about why we do not think, from a transmission mechanism point of view, that it would help us very much to do that. Then, the tension is that if we remunerate—so, basically, what you are saying, that we should compete with banks to provide competition that, if you like, the sector is not providing—and we compete with banks in this area, then some of the financial stability issues around outflows from banks become more difficult.

Q355 **Chair:** Yes, you disintermediate the whole sector—

Sir Jon Cunliffe:—we disintermediate the banking system—

Chair:—and I guess you have taken the view that that's not good for financial stability—

Sir Jon Cunliffe: We have taken the view that that's not good—yes—

Chair:—rather than that the banks have got to you, which some people might think.

Sir Jon Cunliffe: Yes. And, also, we would then wind up with two forms of Bank of England money—one, not remunerated cash, and one remunerated—and then we go into questions about how we keep all of the money uniform. People just recognise—"I understand cash; I understand digital cash". Our motivation was payments and holding money together, not this particular objective. We could have designed it in a different way, but that is where we put the trade-off, and that is why we will put it out to consultation.

Q356 **Chair:** We have asked you a lot of questions, but there are lots of questions that we have not had time to ask. We will follow up, with further questions, by letter. One of the areas that we have not really explored is the technology risk—the risk of the whole internet being attacked, and so on—and I am sure we will want to go into more detail on a number of privacy-related questions. But we have had a good opportunity to give you some initial questions today, and we look forward to following up, with further questions, in writing.

Sir Jon Cunliffe: We will help in any way that you think is helpful.

Chair: Thank you.