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Crypto-assets

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to the report*

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The Treasury Committee

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Introduction

1. The Treasury Committee launched its *Digital Currencies* inquiry on 22 February 2018 in order to:

- Examine the role of digital currencies in the UK, including the opportunities and risks digital currencies may bring to consumers, businesses and the Government (and associated bodies);
- Consider the potential impact of distributed ledger technology (also known as blockchain) on financial institutions and financial infrastructure; and
- Evaluate the regulatory response to digital currencies from the Government, the Financial Conduct Authority (FCA) and the Bank of England, and how regulation could be balanced to provide adequate protection for consumers and businesses without stifling innovation.

2. The Committee held the following oral evidence sessions

- **1 May 2018: the application of blockchain.** Ryan Zagone, Director of Regulatory Relations, Ripple; Martin Walker, Director, Centre for Evidence Based Management; Dr Grammateia Kotsialou, Researcher, King's College London; and Chris Taylor, Chief Operating Officer, Everledger.
- **20 June 2018: the development of crypto-assets and the current crypto-asset landscape.** Marco Santori, President and Chief Legal Officer, Blockchain; Iqbal Gandham, Managing Director, eToro and Chairman, Crypto UK; Obi Nwosu, Chief Executive Officer, Coinfloor; and Izabella Kaminska, Editor, The Financial Times Alphaville.
- **4 July 2018: the regulation of crypto-assets.** David Geale, Director of Policy, FCA; Martin Etheridge, Head of Notes Operations, Bank of England; and David Raw, Deputy Director of Banking and Credit, HM Treasury.

3. The Committee also received 53 submissions of written evidence to the inquiry. The Committee thanks all those who provided evidence.

1 The crypto-asset landscape

Definition and terminology

4. The Committee’s inquiry examined the growing phenomenon of cryptocurrencies. Like traditional currencies, cryptocurrencies are intended to function as a means of payment for goods and services. They differ from traditional currencies in that they are not issued by central banks, and in that they can be transferred electronically between users without the involvement of intermediaries (i.e. private banks) or the oversight of a central authority (i.e. a central bank). Instead, holdings of cryptocurrency are typically stored on a publicly-visible, decentralised electronic ledger (known as blockchain), and transactions (changes to the ledger) are verified through consensus among users.¹

5. However, despite the widespread use of the term, the Committee heard that there are no “cryptocurrencies” that perform the functions that are generally understood to define the term “currency”. Martin Etheridge, Head of Note Operations at the Bank of England, told the Committee that:

They [so-called cryptocurrencies] are not acting as a medium of exchange; they are not particularly good as a store of value, given the volatility; and they are certainly not being used as a unit of account. Although about 500 independent shops might say they accept bitcoin, you do not see many people pricing or receiving their wages in Bitcoin.²

Mr Etheridge said that the term “crypto-assets” was therefore more accurate. Izabella Kaminska, Editor at The Financial Times Alphaville, agreed with Mr Etheridge, adding that:

In the current environment, it looks like [cryptocurrencies] are mostly being used for speculation and as vehicles for potentially relatively quick gains or losses. They are definitely [on] the asset side.³

6. For the purposes of this report, the term ‘crypto-assets’ will be used in place of ‘crypto-currencies’.

7. As noted above, an electronic ledger underpins the transactions of crypto-assets. This ledger is known as blockchain. Blockchain is a means of storing data and crypto-assets use blockchain to record and verify transactions. A blockchain can be managed centrally or it can be decentralised.

8. Some refer to blockchain as ‘distributed ledger technology (DLT)’. These terms and definitions are fluid. However, for the purposes of this report, DLT is a decentralised and distributed ledger that is shared amongst its users.

1 Most digital currencies are ‘cryptocurrencies’, in that they seek consensus through means of techniques from the field of cryptography

2 Q168

3 Q97

Emergence of crypto-assets and the current crypto-asset landscape

9. In written evidence to the Committee, Izabella Kaminska, and Martin Walker, a Director at the Centre for Evidence-Based Management, explained that the “origins [...] and the enthusiasm” for crypto assets and blockchain came from a paper published in October 2008 under the pseudonym Satoshi Nakamoto, entitled “Bitcoin: A Peer-to-Peer Electronic Cash System”.⁴ Ms Kaminska and Mr Walker wrote that “the objective of the paper was to create a peer-to-peer payments system i.e. a system that did not involve the current financial sector, much like the use of physical cash.”⁵ The currency proposed in the paper—Bitcoin—“took the basic concept of a private currency but decentralised the processing and storage of transactions, [and] the creation of the currency.”⁶ Ms Kaminska and Mr Walker note that private currencies—whether decentralised or not—“are not generally considered of any value and the creator of the currency would generally find [...] problems in having them accepted as having value”.⁷ They went on to describe how Bitcoin came to have more widespread acceptability and value:

For the first two years of its existence, Bitcoin faced all the problems of acceptability for a private currency. Enthusiasts creating and accepting Bitcoins for any commercial venture faced the problems that they needed to cover their costs in conventional currencies. [...] 2011–13 saw the formation of the closest thing to a crypto-economy, where websites such as Silk Road,⁸ made Bitcoin the currency of choice for criminals that wanted to buy and sell drugs, guns, stolen credit card details etc. online, as well as for the illicit gambling industry. This period also saw Bitcoin come to the attention of the press and alternative/libertarian groups such as WikiLeaks and the Electronic Frontier Foundation.

The use for Bitcoin in criminal enterprises and greater publicity fed the first spectacular price rises that brought the attention of cryptocurrencies as a form of speculation. [...] Subsequent price rises were related to speculation driven by views on the future utility of Bitcoin and technologies [...]⁹

10. The development of the crypto-asset market is emphasised by the rise of its market capitalisation. As shown in the chart below, in January 2017, the market capitalisation was \$17 billion and grew significantly from July 2017 onwards, reaching a peak in January 2018 at \$830 billion. Following the peak, market capitalisation has fallen and fluctuated. As of end August 2018, the total market capitalisation of the crypto-asset market was \$191 billion.¹⁰

4 Izabella Kaminska and Martin Walker ([DGC0034](#))

5 Izabella Kaminska and Martin Walker ([DGC0034](#))

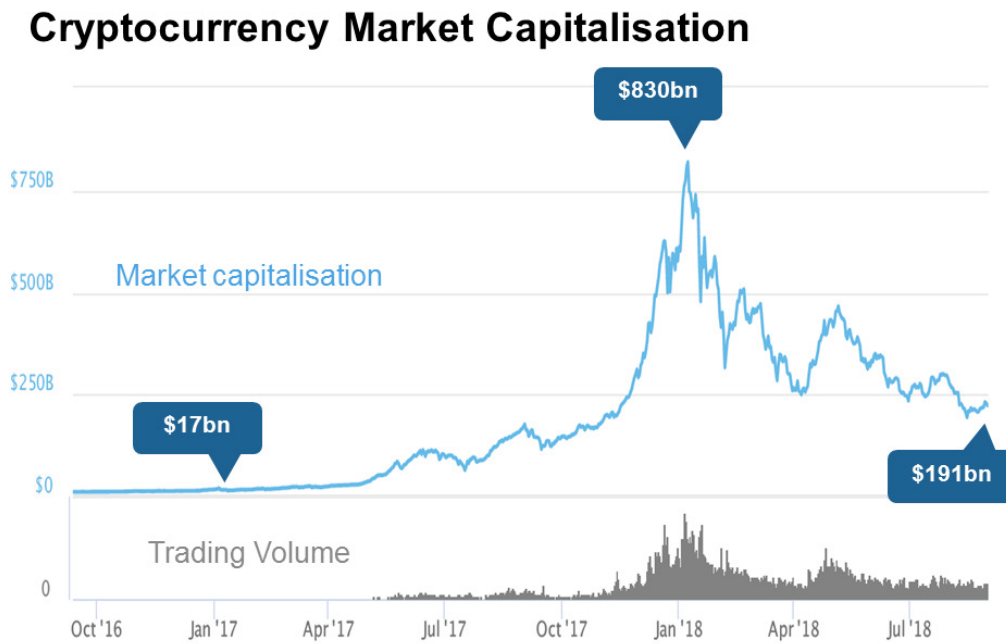
6 Izabella Kaminska and Martin Walker ([DGC0034](#))

7 Izabella Kaminska and Martin Walker ([DGC0034](#))

8 An online black market operating on the ‘dark web’, used for buying and selling illegal goods and services.

9 Izabella Kaminska and Martin Walker ([DGC0034](#))

10 CoinMarketCap.com



Source: CoinMarketCap.¹¹ This chart was adapted from data from CoinMarketCap, a website that tracks the market capitalisation of crypto-assets.

11. Despite the rise in the value of crypto-assets, their overall market capitalisation remains small. The Bank of England's written submission stated that:

The total stock of crypto-assets is small relative to the global financial system. Even at their recent peak, the combined global market capitalisation of crypto-assets was less than 0.3 per cent of global financial assets [...] [and] the total value of crypto-assets worldwide was less than 1 per cent of global GDP, at \$830 billion [...] by comparison, at the peak of the dot-com bubble in March 2000, the combined market capitalisation of US technology stocks was close to a third of world GDP. [...] Prior to the global financial crisis, the notional value of credit default swaps was 100 per cent of world GDP.¹²

12. A characteristic of crypto-assets to date has been considerable volatility in their prices. Ms Kaminska and Mr Walker argued that “the main drivers of the value of crypto-[assets] (particularly Bitcoin) [are] seen to be based on the facilitation of criminal activity, speculation and a strong probability of systematic market manipulation.”¹³ These issues will be explored later in the report.

13. **Functioning currencies are generally understood to serve as a store of value, a medium of exchange and a unit of account. As yet, there are no so-called “cryptocurrencies” that serve all these functions. Well-functioning cryptocurrencies currently exist only as a theoretical concept, and the term “crypto-assets” is more helpful and meaningful in describing Bitcoin, and the many hundreds of other ‘altcoins’ that have emerged over the past decade.**

¹¹ [CoinMarketCap.com](https://coinmarketcap.com)

¹² Bank of England ([DGC0055](#)) para 12

¹³ Izabella Kaminska and Martin Walker ([DGC0034](#))

2 Blockchain and crypto-assets: advantages and limitations

Blockchain (distributed ledger technology) as a means of storing data

14. Blockchain is an electronic ledger that records and verifies transactions made using crypto-assets. In its written evidence to the Committee, the Bank of England explained how blockchain emerged with crypto-assets:

The [...] innovations behind [blockchain] emerged from the initial crypto-asset, Bitcoin, which was introduced in January 2009. Bitcoin was an attempt to build a payment system that did not rely on a trusted authority (such as a commercial or central bank) to maintain the record of payments and balances (the ‘ledger’). Importantly, anyone can participate in the validation of Bitcoin transactions—the network is ‘permissionless’ and its underlying blockchain (the database or ledger of transactions) is public. The Bitcoin network relies on multiple participants maintaining identical copies of the ledger and employs a process to come to consensus on the contents of, and updates to, this ledger.¹⁴

15. Moving away from its origins with Bitcoin, the Digital Currency Foundation explained that the term blockchain is now used to describe any database that is distributed amongst its users that, when it is updated, all users in the system can see the new information and verify it:

[Blockchain] is a database [...] that works as a decentralised [...] way of storing large amounts of data. [...] transactions are recorded on a ledger which are validated and recorded in blocks (hence ‘blockchain’) forming one timestamped ledger which is distributed and updated over the network in real time. The validation of blocks is reached through this consensus of participants in the network [...] All blocks timestamped and all transactions [and information on the blockchain] are accessible to participants.¹⁵

16. The uses of blockchain can be extended beyond payments. The following section of this report considers the advantages and limitations of managing data in this way.

Advantages

17. Ryan Zagone, Director of Regulatory Relations at Ripple,¹⁶ explained the advantages and efficiencies of a database or ledger that participants share and verify:

Blockchain, as a technology, allows us to validate, store and synchronise information across many different parties more securely and more efficiently than we have been before. We are looking at reviewing information for

14 Bank of England ([DGC0055](#)) para 20

15 Digital Currency Foundation ([DGC0046](#)) para 3.1

16 Ripple is a company that uses its private blockchain to connect banks, payment providers, digital asset exchanges and corporates to its own system, RippleNet. Participants of RippleNet are able to send money globally with instant, on-demand settlement. Ripple also has its own crypto-asset, XRP, that is used as a bridging currency underlying money transfers between different currencies on RippleNet.

its accuracy and authenticity. We are storing it in a way that cannot be tampered with. We are synchronising it across many different parties, even globally. Validating, storing and synchronising information has many different use cases. There is a lot of hype around the technology right now. People recognise that this type of capability allows us to be much more efficient in how businesses or commerce can be conducted. There are lots of use cases for that. It is very general tech.¹⁷

18. In its written evidence, the Bank of England also noted that blockchain could “increase the efficiency of managing data, by reducing data replication and associated reconciliation processes.”¹⁸ Similarly, the FCA’s evidence stated that blockchain could lead to “cost and time reductions arising from the removal of intermediaries required for processing a transaction.”¹⁹

19. Chris Taylor, Chief Operating Officer of Everledger,²⁰ argued that a key advantage of storing data in a blockchain form, [over conventional databases], is that it becomes “immutable” (i.e. it cannot be changed retroactively, except by consensus among users):

In a traditional database, records can be edited quite easily, either by an administrator or by other people who have access to the database. In a blockchain, information cannot be edited. It can be appended to, but the original information remains as a form of record. That makes it a useful tool when trying to trace back the history of transactions related to that database, whether that is related to assets or whether that is related to currencies and other kinds of transactions.²¹

Similarly, the Bank of England states that “through the creation of instant, permanent and immutable records of transactions [blockchain] enhances transparency and auditability.”²²

20. Dr Kotsialou, a researcher of blockchain at King’s College London, argued that a further advantage of blockchain is the resilience and security it can offer:

[Blockchain] is more difficult to hack because the data is replicated to every node of the network.²³ [...] [If the data] are replicated in all the nodes of the network then it is harder to change. It is also the data validation. The rules that the nodes follow in order to validate votes, or any other transaction, are all public. Everyone can check what these rules are and everyone can check that the transactions in a block have been validated in the correct way. In general, the more decentralised we make a system, the more trusted it will be.²⁴

17 Q2

18 Bank of England ([DGC0055](#)) para 23

19 Financial Conduct Authority ([DGC0028](#)) para 8

20 Everledger is a firm that uses its private blockchain to track the provenance of high-valued assets in supply chains, such as diamonds.

21 Q2

22 Bank of England ([DGC0055](#)) para 23

23 Q2

24 Q34

Limitations

21. Despite the potential advantages of blockchain, the Committee also received evidence describing a number of limitations.

22. In written evidence, the Bank of England noted that scalability and reliability of blockchain was a significant challenge, and that such technology “will need to prove it can reach the performance standards of more conventional technologies.”²⁵ Mr Taylor from Everledger told the Committee that blockchain is not automatically more reliable than other databases, and “is the same as any system. It is garbage in, garbage out. You have to make sure that the participants that you are allowing to contribute on to the network are trustworthy.”²⁶

23. The Bank of England also noted that further “consideration will be needed around how a distributed system is controlled and governed.”²⁷ Martin Walker, a Director at the Centre for Evidence Based Management, shared this view, arguing that a decentralised blockchain may raise risks that no one is accountable for:

The difference when people talk about decentralised, which is where the big regulatory red flag comes up, is no one is accountable. That is a very serious problem, in terms of consumer protection and law enforcement, but also if you are linking the existing world financial system into something that is generally decentralised, where no one is in control.²⁸

Jorge Stolfi, Professor of Computer Science at the State University of Campinas in Brazil, noted in written evidence that the absence of a central authority can mean blockchain users remain anonymous, as there is no-one to confirm their identities. This “relative anonymity”, he argued, made blockchain useful as a means of facilitating illegal activity.²⁹

Blockchain as a payments system, and crypto assets as a medium of exchange

24. The original purpose of blockchain and Bitcoin was to create an alternative system of payment. Satoshi Nakamoto, the founder of Bitcoin, intended it to be “a purely peer-to-peer version of electronic cash [that] would allow online payments to be sent directly from one party to another without going through a financial institution.”³⁰

Advantages

25. In his speech on *The Future of Money*, the Governor of the Bank of England, explained that “in the depths of the global financial crisis, the coincidence of technological developments and collapsing confidence in some banking systems sparked the cryptocurrency revolution.”³¹ The peer-to-peer nature of blockchain enables individuals to transact without going through a financial intermediary in the traditional financial

25 Bank of England ([DGC0055](#)) para 25

26 Q24

27 Bank of England ([DGC0055](#)) para 25

28 Q78

29 Professor George Stolfi ([DGC0054](#))

30 Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, October 2008

31 Speech by Dr Mark Carney, Governor of the Bank of England, [The Future of Money](#), 2 March 2018

system. Transacting with crypto-assets also means that there is no reliance on a central bank issued fiat currency.³² Advocates claim that transacting through crypto-assets is more trustworthy than centralised fiat money as crypto-assets are “immune from [...] debasement [and] its use is free from risky private banks.”³³ Marco Santori, Chief Legal Officer and President of Blockchain,³⁴ explained that for some people blockchain represents an alternative way of transacting and living:

People do not come to Blockchain just to speculate, or to try to buy something for a dollar and sell it for two. They come to Blockchain so they can live and so they can escape Governments that have been irresponsible with their currencies. They can prevent their hard-earned savings from being nationalised. They do it so they can transact in a way that does not rely on an intermediary that charges them a hefty fee.³⁵

26. Obi Nwosu, Chief Executive Officer of Coinfloor,³⁶ explained to the Committee that payments using crypto-assets rather than traditional currency could further financial inclusion for individuals who do not have a bank account:

With cryptocurrency, maybe it is not as good as a depository bank account but it is better than nothing at all if they want to buy something online.³⁷ [...] Governments around the world, and especially the western world, have policies around improving financial inclusion. Cryptocurrency could be an alternative or a mechanism in achieving that.³⁸

27. While crypto-assets may provide a potential payment service solution for people without bank accounts, users would still have to acquire crypto-assets with conventional currency, which generally requires access to banking services. When asked how this problem could be overcome, Mr Nwosu told the Committee:

Instead of asking for payment [of wages] in a fiat currency, I ask for payment in cryptocurrency. That is the simplest way.³⁹ [...] In places where people are unbanked, instead of accepting currency in cash, they may say, ‘I want to buy something online; I will accept currency in crypto for whatever task I do’, whether it is giving you some water, washing your car or whatever it may be. They use that cryptocurrency to purchase something online.⁴⁰

28. Izabella Kaminska, Editor of the Financial Times Alphaville, was sceptical of crypto-assets being a “panacea”⁴¹ for financial exclusion. She said “we should not confuse financial inclusion as a technical problem. It is very much a socioeconomic problem.”⁴²

32 Fiat currency is currency that a Government has declared as money, and is typically backed by the central bank and not backed by a physical commodity. Examples of fiat currency include Pound Sterling, Euro and US dollar.

33 Speech by Dr Mark Carney, Governor of the Bank of England, [The Future of Money](#), 2 March 2018

34 Blockchain is a company that provides a software platform for crypto-assets. Blockchain provides its customers with digital wallets, which enables customers to own crypto-assets.

35 Q97

36 Coinfloor is a crypto-asset exchange which enables its customers to buy crypto-assets.

37 Q156

38 Q132

39 Q160

40 Q161

41 Q165

42 Q165

29. Finally, some argue that crypto-assets could be more efficient than centralised fiat money because “the underlying [blockchain] cuts out intermediaries like central banks and financial institutions and allows payments to be made directly between payer and payee.”⁴³ However, the efficiency of blockchain and crypto-assets is disputed, as set out below.

Limitations

30. As discussed in Chapter 1, blockchain is not being widely used as a payments system, and crypto-assets are not being used as a medium of exchange, because they are currently failing to perform the three key functions of money: as a store of value, a means of payment and a unit of account.

31. In its written evidence to the Committee, the Bank of England noted that crypto-assets are too volatile to be a credible store of value:

Measured against the US dollar, Bitcoin is ten times more volatile than sterling, and other cryptocurrencies are even more volatile. If contracts were specified in cryptocurrencies, the value received in payment may be significantly less (or more) than the value at the time of the agreement. Retailers accepting payment in crypto-assets would have to take significant exchange rate risk whilst holding the crypto-asset.⁴⁴

32. In the Bank of England’s Quarterly Bulletin article titled *The economics of digital currencies*, the Bank of England explained that “most existing [crypto-assets] incorporate strict rules that govern their creation, following a pre-determined path to a fixed eventual total supply.”⁴⁵ For example for Bitcoin, the “system’s protocol dictates that there will be an eventual total of 21 million, which should be largely reached by around 2040.”⁴⁶ David Gerrard, author of *Attack of the 50 Foot Blockchain*, argued that the limitation on the supply of Bitcoins meant that deflation was an explicit design feature.⁴⁷ He noted that “Nakamoto [the pseudonymous creator of Bitcoin] put forward as a positive for Bitcoin that it would go up in price, with greater demand and use.”⁴⁸ However, he argued that this “disincentivis[ed] its use of a currency; if your money is worth more tomorrow, you won’t spend it today.”⁴⁹

33. The Bank of England argued that crypto-assets and blockchain “do not function well as a means of payment.”⁵⁰ Firstly, crypto-assets and the underlying blockchain face capacity constraints:

[Blockchain] cannot handle the payment volumes required. Every day in the UK, more than 30 million electronic payments are made through Bacs and Faster Payments [payment systems]. In contrast, Bitcoin’s global peak capacity is around 0.6 million transactions per day.⁵¹

43 Speech by Dr Mark Carney, Governor of the Bank of England, *The Future of Money*, 2 March 2018

44 Bank of England (DGC0055) para 6

45 Bank of England Quarterly Bulletin article, *The economics of digital currencies*, Q3 2014

46 Bank of England Quarterly Bulletin article, *The economics of digital currencies*, Q3 2014

47 David Gerrard (DGC0052) para 8

48 David Gerrard (DGC0052) para 8

49 David Gerrard (DGC0052) para 8

50 Bank of England (DGC0055) para 7

51 Bank of England (DGC0055) para 7

34. The Bank of England also explained that capacity constraints lead to higher costs for transactions made through blockchain crypto-assets:

When demand for crypto-asset payments exceeds the capacity of the network, users must offer fees to ensure that their transaction is at the front of the queue of payments. In December 2017, when demand for the Bitcoin was highest, average fees peaked at nearly \$60 per transaction whilst tens of thousands of lower-fee transactions sat pending for hours at a time.⁵²

35. A blockchain's fundamental requirement for transactions to be verified by participants also limits the speed at which transactions can be verified:

Cash and contactless card payments can be confirmed instantly. In contrast, transactions on crypto-asset platforms are only "confirmed" when they have been included in a block of transactions that is written to the ledger. For Bitcoin, it takes an average of 10 minutes to receive the first confirmation. As good practice and for higher value sales, sellers are advised to wait for six confirmations (around 60 minutes) before considering the payment to be irreversible. This is impractical for most physical retailers.⁵³

36. The verification required of blockchain transactions requires large amounts of computer power and, correspondingly, energy. Mr Gerrard argued that:

The problem is that decentralised systems are vastly less efficient than centrally controlled ones. This is reflected in the [...] waste of power involved in Bitcoin's "proof-of-work" [...] system, where it uses 0.1 per cent of the world's total electricity consumption, or an amount comparable to the entire Republic of Ireland.⁵⁴

Such energy costs need to be paid for, and the Bank of England explained that these high energy costs will lead to higher transactions costs:

If crypto-assets were to replace traditional currencies, the use of proof-of-work would make crypto-assets inherently more energy intensive per transaction than conventional payment systems and imply a higher cost per transaction.⁵⁵

Application of blockchain to financial services and other industries

37. Throughout the course of the inquiry, the Committee received evidence on how the blockchain has been adapted to serve a wider range of purposes. The Bank of England stated that:

It is useful draw a clear distinction between [...] the underlying technology powering the majority of crypto-assets on the form of public or 'permission-less' distributed ledgers, and the significantly adapted versions of [blockchain] that are being developed for use in financial services on private or "permissioned" distributed ledgers.⁵⁶

52 Bank of England ([DGC0055](#)) para 7

53 Bank of England ([DGC0055](#)) para 7

54 David Gerrard ([DGC0052](#)) para 6

55 Bank of England ([DGC0055](#)) para 7

56 Bank of England ([DGC0055](#)) para 2

Financial services

38. The Bank of England explained that the “distributed ledger technology arrangements being explored in financial services are generally ‘permissioned’ i.e. participants require permission to participate in the network, and its underlying distributed ledger is private.”⁵⁷ For example, R3, an enterprise software firm working within the financial services sector, is developing a platform called Corda “[to enable selected] institutions to transact directly [with each other] using smart contracts”⁵⁸.⁵⁹ Ms Kaminska and Mr Walker also cited other examples of the deployment of blockchain in capital markets, including “Digital Asset Holdings’ and the Depository Trust and Clearing Corporation’s work on repos; Digital Asset Holdings’ project to replace the back-office system of the Australian Stock Exchange; and Axoni’s work on equity swaps.”⁶⁰

39. In their written evidence to the Committee, Ms Kaminska and Mr Walker acknowledged that “a very wide range of claims have been made [...] about the potential benefits of applying blockchain [...] technologies in the financial services sector.”⁶¹ However, they argued that in most cases, “how blockchain [would] specifically solve problems or generally make things better [is] not explained.”⁶²

40. In discussing examples of the wider application of blockchain to the financial services sector, Ms Kaminska and Mr Walker noted that many of these do not deploy crypto-assets, restrict the number of participants on the ledger and have “a central body [...] responsible for maintenance of the ledger and [...] granting access to it.”⁶³ They added that, in many cases, these examples were “so different from the original blockchain, it becomes meaningless to refer to it as blockchain.”⁶⁴

Supply chain management

41. The Committee also received evidence on the use of blockchain in verifying the quality of physical assets. Mr Taylor explained that the company he represented, Everledger, used blockchain to track and verify diamonds:

The blockchain ledger allows us to capture each step of that asset along its journey through the supply chain. That can be through trading patterns, through import-export processes or through grading houses. All that information is gradually building upon the original record of the diamond. That allows the participants in the supply chain to have greater confidence around the authenticity, existence and attributes and history of those items.⁶⁵

42. Mr Taylor argued that using blockchain to track assets through a supply chain also delivers wider benefits to a range of stakeholders:

57 Bank of England ([DGC0055](#)) para 22

58 Smart contracts are self-executing contracts that are written on software which are able to tell when, for example, payments have been made, which could automate delivery or the dispatch of goods without human intervention.

59 R3 ([DGC0044](#))

60 Izabella Kaminska and Martin Walker ([DGC0034](#))

61 Izabella Kaminska and Martin Walker ([DGC0034](#))

62 Izabella Kaminska and Martin Walker ([DGC0034](#))

63 Izabella Kaminska and Martin Walker ([DGC0034](#))

64 Izabella Kaminska and Martin Walker ([DGC0034](#))

65 Q3

It also enables other participants in the supply chain, such as Governments, to have greater confidence about what is crossing their borders. It also provides other participants, such as finance houses and insurers, a way to identify if assets have already been financed, for example, or have already been insured, or are already the subject of an insurance claim previously. It has a high value in the reduction of fraud across the industry.⁶⁶

43. While many claims are made as to how a blockchain could improve supply chain verification, practical problems would still need to be overcome. Mr Walker told the Committee that, when using blockchain to track a supply chain, or to verify the provenance of a physical asset, “the recurring problem [...] is actually keeping the data record linked to the physical object.”⁶⁷ He noted that “there are many, many stages in [a] supply chain, at each of which some kind of fraudulent activity could occur.”⁶⁸ Thus there is still a need for “people [and] auditing [...]”⁶⁹ This corroborates with Mr Taylor’s argument, referenced earlier, that a blockchain “is the same as any system. It is garbage in, garbage out.”⁷⁰

Initial Coin Offerings (ICOs)

44. An Initial Coin Offering (ICO) is a way of raising funds from the public using a crypto-asset. ICO issuers accept a crypto-asset, like Bitcoin or Ether, in exchange for a proprietary ‘coin’ or ‘token’ that is related to a specific firm or project. The digital token issued may represent a share in a firm, a prepayment voucher for future services, or in some cases offer no discernible value at all. Often, projects funded by ICOs are in a very early stage of development or are entirely fictitious.⁷¹

45. David Raw, Deputy Director of Banking and Credit at HM Treasury, told the Committee that the scale of the growth of ICOs has been significant and that from January 2018 to end May 2018, approximately \$10 billion was raised through ICOs globally.⁷²

46. The regulation of ICOs, and the risks to investors, are considered in the next chapter.

47. Crypto-assets and blockchain were originally designed as an alternative system of making payments in exchange for goods and services. But even the most widely-used crypto asset—Bitcoin—is not widely accepted by merchants. Moreover, the blockchain that underpins Bitcoin transactions cannot process anything like the volumes of transactions that would be required for it to become a mass-market payments system. Even at current levels, the energy costs of verifying transactions appear disproportionate to the potential benefits of a decentralised payments system.

48. The slow, costly and energy-intensive verification process for transactions is not unique to Bitcoin, but a fundamental feature of crypto-assets based on public, decentralised blockchains. This may ultimately limit the extent to which crypto-assets and blockchain can replace conventional money and payments systems.

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71 FCA, [Consumer warning about the risks of Initial Coin Offerings \(“ICOs”\)](#), 12 September 2017

72 Q170

49. The arguments put forward that crypto-assets could further financial inclusion are unconvincing. Efforts to further financial inclusion are best focused on reducing the number of people without access to bank accounts, rather than increasing the numbers with access to crypto-assets.

50. There are a number of examples of blockchain being deployed in the financial services industry and supply chain management. The Committee is supportive of good innovation, but notes that blockchain should not be pursued for its own sake. Rather, Government and industry should identify what problems exist and consider whether blockchain offers the most appropriate solution. The Committee recognises that blockchain technology may have the potential to solve problems caused by a lack of trust in data integrity and may be a more efficient method of managing certain types of data in the long term, offering higher levels of security than centralised databases.

51. However, at present—although small scale uses for blockchain may exist—the Committee has not been presented with any evidence to suggest that universal applications of the technology are currently reliably operational.

3 The risks of crypto-assets and the regulatory response

52. Investors in crypto-assets face a number of risks. These include:

- High price volatility compared to other asset classes. In the Governor of the Bank of England’s speech on *The Future of Money*, he noted that “the average volatility of the top ten crypto-assets by market capitalisation was more than 25 times that of the US equities market in 2017”⁷³;
- Investors in crypto-assets also face the risk of hacking of crypto-asset exchanges (i.e. theft of their investment);
- Those who have purchased crypto-assets typically store them with crypto-asset exchanges, or in digital wallets on platforms developed by software providers. There have been instances of consumers losing their passwords for their accounts, and have subsequently been told by the exchanges and software providers that they can no longer access their crypto-asset investments;
- The FCA noted in its written evidence that poor market liquidity and considerably lower trading volumes in crypto-asset markets, mean that “there is greater potential for malicious actors to coordinate price manipulation”⁷⁴;
- Crypto assets could act as a vehicle for money laundering; and
- The growth of crypto-assets could have implications for financial stability.

53. Despite this, “crypto-assets themselves [...] are generally not within the scope of FCA regulation. Transferring, buying and selling of crypto-assets, including the commercial operation of crypto-asset exchanges will also typically fall outside the FCA’s regulatory perimeter.”⁷⁵ This chapter will consider the current regulatory remit and look at each of these risks in turn.

Current regulatory remit

54. In the FCA’s written evidence to the Committee, it clarified that “crypto-assets themselves (i.e. those designed primarily as a means of payment / exchange) are not within the scope of FCA regulation.”⁷⁶ This is because crypto-assets “generally will not meet the criteria to be considered a specified investment under the Regulated Activities Order, nor would they typically qualify as ‘funds’ or ‘e-money’ in the Payments Services Directive 2 and E-Money Regulation 2009.”⁷⁷

55. Whether an Initial Coin Offering (ICO) is regulated in the UK depends on how it is structured and what the token subsequently represents.⁷⁸ For example, when tokens represent a transferable security such as shares and bonds, that ICO would fall within the

73 Speech by Dr Mark Carney, Governor of the Bank of England, *The Future of Money*, 2 March 2018

74 Financial Conduct Authority ([DGC0028](#)) para 20

75 Financial Conduct Authority ([DGC0028](#)) para 3

76 Financial Conduct Authority ([DGC0028](#)) para 3

77 Financial Conduct Authority ([DGC0028](#))

78 Financial Conduct Authority ([DGC0028](#)) para 6

regulatory perimeter of the FCA. Issuers would thus be subject to the FCA's Principles⁷⁹ and relevant rules. If an ICO falls within the regulatory perimeter, the FCA would also be required to ensure an appropriate degree of protection for ICO investors as they are 'consumers' for the purposes of the FCA's statutory objectives. However, when tokens represent a claim on prospective services or products, they do not amount to transferable securities or other regulated products and thus fall outside the regulatory perimeter.⁸⁰ Issuers would therefore not be required to follow the FCA's principles and relevant rules, and the FCA would not be required to ensure an appropriate degree of protection for investors. The FCA states that "most ICOs are not regulated by the FCA and many are based overseas."⁸¹

56. David Geale, Director of Policy at the FCA, noted that this distinction creates risks for consumers, and that the FCA "have concerns that [...] consumers may think they are operating in a regulated space when they are not."⁸² However, he did note that ICOs "can be a useful way for some small and mediumsized enterprises to raise capital."⁸³

57. Regulatory initiatives to bring crypto-asset exchanges into the money laundering regulations are underway in the EU. The European Parliament adopted the Fifth Anti-Money Laundering (AML) Directive on 19 April 2018.⁸⁴ The Fifth AML Directive will extend AML and Counter-Terrorist Financing rules to virtual currencies, such that rules will now apply to entities which provide services that are in charge of holding, storing and transferring virtual currencies.⁸⁵ In future, these entities will have to identify their customers and report any suspicious activity to relevant regulators and authorities.⁸⁶ The Directive came into effect on 9 July 2018 and EU member states will have until 10 January 2020 to amend their national laws to conform with the new Directive.

Price volatility

58. As discussed earlier in this report, crypto-asset prices are volatile. The price of a Bitcoin in January 2013 was less than \$20.⁸⁷ In December 2013 the price of Bitcoin reached just over \$1,000 but its value subsequently fell back into the hundreds.⁸⁸ In March 2017, the price of Bitcoin began to rise again and greatly surpassed its previous records, reaching a peak of \$19,206 in December 2017. However, within two months, the price dropped to just over \$7,000 by February 2018. Since then, the price of Bitcoin has fluctuated between just over \$11,000 and just under \$6,000, to \$6,467.25 in September 2018 when this report was published.⁸⁹ Coinbase's chart below tracks the value of Bitcoin from January 2013 to now.⁹⁰

79 These include requirements to conduct business with integrity and to treat customers fairly.

80 Financial Conduct Authority ([DGC0028](#)) para 6

81 FCA, [Consumer warning about the risks of Initial Coin Offerings \(ICOs\)](#), 12 September 2017

82 Q169

83 Q99

84 European Commission, Press Release, [Statement by First Vice-President Timmermans, Vice President Dombrovskis and Commissioner Jourova on the adoption by the European Parliament of the 5th Anti-Money Laundering Directive](#), 19 April 2018

85 European Commission, Fact Sheet, *Strengthened EU rules to prevent money laundering and terrorism financing*, 9 July 2018

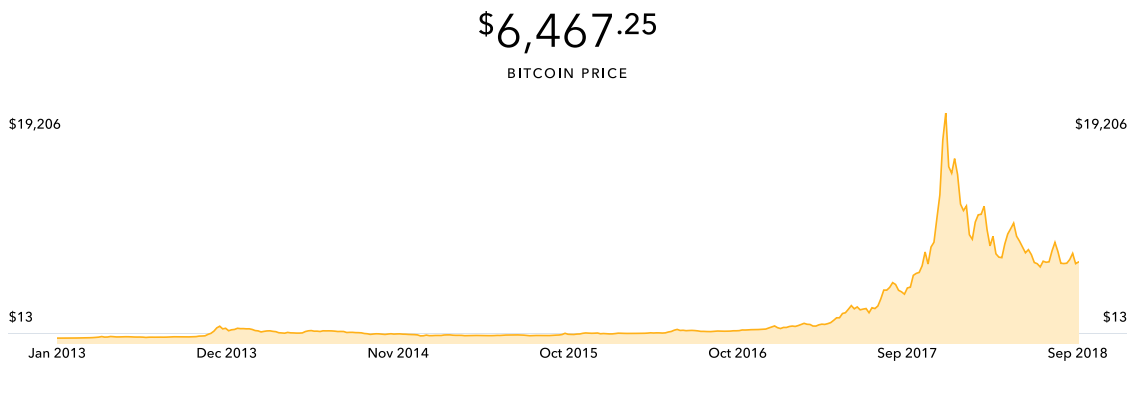
86 European Commission, Fact Sheet, *Strengthened EU rules to prevent money laundering and terrorism financing*, 9 July 2018

87 <https://www.coinbase.com/charts>

88 <https://www.coinbase.com/charts>

89 <https://www.coinbase.com/charts>

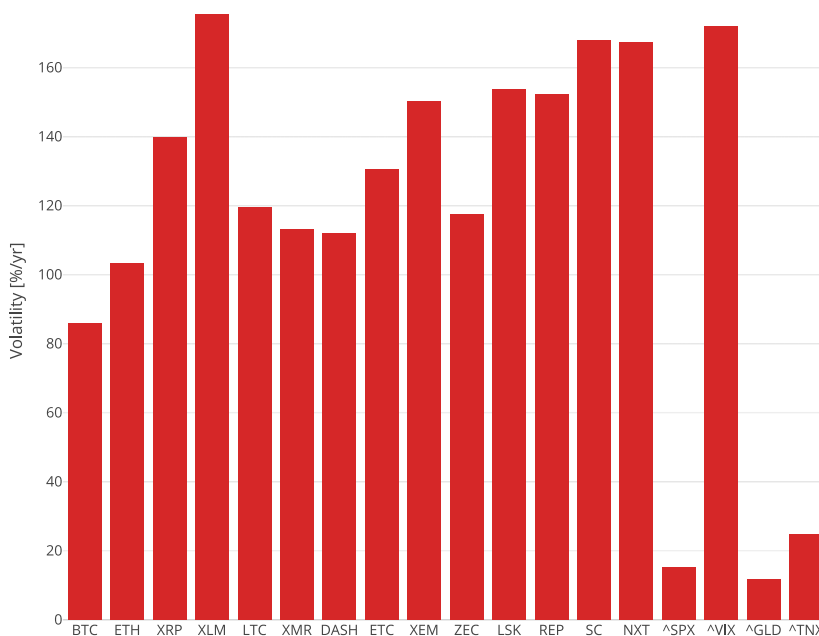
90 <https://www.coinbase.com/charts>



Source: Coinbase. These figures were obtained from Coinbase, a crypto-asset wallet and platform where merchants and consumers can transact with crypto-assets. Coinbase tracks the value of Bitcoin, Bitcoin Cash, Ethereum and Litecoin.

59. Other crypto-assets that emerged since Bitcoin have not achieved the same market capitalisation, but have exhibited similar or greater volatility.⁹¹ For example, the price of Ethereum has varied from \$0 to \$1,339 between August 2015 and August 2018. At the time of writing, the price of Ethereum was \$203.59.⁹²

60. The chart below plots the volatility of crypto-asset returns over a year against other assets.⁹³ It shows that Bitcoin (represented by BTC) is in fact not as volatile as other crypto-assets, such as Ethereum (ETH) and Stellar (XLM). The chart also highlights that crypto-assets are considerably more volatile than other assets, such as gold, equities and other financial assets.⁹⁴



Source: Sifr Data.

91 A comparison of volatility of different crypto-assets has been produced by Sifr Data, a cryptocurrency analytics company

92 <https://www.coinbase.com/charts> Price correct at 13 September 2018

93 This chart plotting the volatility of crypto-asset returns was obtained from Sifr Data which conducts analysis of crypto-assets and creates simulations and visualisations to reflect trends. <https://www.sifrddata.com/volatility-of-cryptocurrency-returns/>

94 In this chart, GLD represents SPDR gold shares. SPX represents the Standard&Poor's (S&P)500 Index. TNX represents the CBOE 10 Year Treasury Note Yield Index.

61. The FCA explained why the price volatility of crypto-assets exceeds that of other asset classes:

Price discovery in a traditional marketplace is set by the information on the current consumption and expected future demand for a particular asset or commodity. [...] As most crypto-assets do not have any inherent worth in and of themselves [...] and they are not actively used in commerce or secured by a central bank of a nation state, their price is reliant on market sentiment and speculative use cases [rather] than real world applications. This results in greater price instability—especially over a short time horizon.⁹⁵

62. Iqbal Gandham, Chair of Crypto UK⁹⁶ and Managing Director at eToro,⁹⁷ argued that the price volatility of crypto-assets has been decreasing over time:

If you have a look at the volatility of individual currencies, Bitcoin's volatility at launch was 50 per cent of its price on a daily basis. Last year, it was 10 per cent. This year, if I have a look at the data on eToro's platform—one of our members, CryptoCompare, supplied the data—it is 4 per cent to 5 per cent. The same trend can be seen in Ethereum, Litecoin or any other currencies that have been around for five to six years, so the daily volatility is falling.⁹⁸

Obi Nwosu, Chief Executive Officer of Coinfloor, shared this view and argued that increasing liquidity entering the market could reduce volatility further:

Price volatility has been reducing all the time, and one thing that has caused that is the increase in volume and liquidity entering the market. There are a number of institutional players that would like to get into the market, but they can only deal with other regulated institutions. If they enter the market, they will bring the disciplines that relate to that, but they will also massively increase the liquidity, stabilise the price and make it a safer place for consumers.⁹⁹

63. However, Izabella Kaminska, Editor of the Financial Times Alphaville, argued that the price volatility of crypto-assets indicates they are not suitable assets for mainstream investors:

The question we should be asking is this: should this be propagated and should its use be encouraged among day-to-day people [...] Anyone who had invested in November or December last year would be very disappointed in the returns they had had. Yes, you can look at the whole picture and say, 'the early adopters have done fabulously well', but this turns out to be a poor case for the currency argument, because that encourages the sort of inequality that we have never even seen before in any currency spectrum.

95 Financial Conduct Authority ([DGC0028](#)) para 17

96 Crypto UK was established in February 2018 as the first self-regulatory industry body for the crypto-asset industry. Founding members are: BlockEx; CEX.IO; Coinbase; Coinshares; Coinfloor; CommerceBlock; CryptoCompare; eToro.

97 eToro is trading platform which enables its customers to trade crypto-assets.

98 Q98

99 Q102

Something like less than 1 per cent of all the wallets own most of the wealth in bitcoin. Yes, you might be able to argue that people who entered it early have benefited [...] if you are a late adopter, you tend to lose out.¹⁰⁰

64. **Crypto-assets have no inherent value. In the absence of any market fundamentals, their prices fluctuate according to sentiment. This causes far higher volatility than other asset classes, exposing investors to larger potential gains, but correspondingly greater risk of loss. The use of blockchain as a payments system exacerbates these risks, since the exchange rate (vis-à-vis other crypto-assets, or conventional currency) can fluctuate significantly during the time it takes to settle a transaction.**

65. **On account of their volatility alone, crypto-assets are especially risky, particularly for inexperienced retail investors.**

Hacking of crypto-asset exchanges and losing access to accounts

66. Crypto-asset exchanges enable people to use fiat currency to buy crypto-assets, such as Bitcoin.¹⁰¹ Crypto-asset exchanges can be custodial and non-custodial. Custodial crypto-asset exchanges hold crypto-assets on behalf of their customers whereas non-custodial crypto-asset exchanges do not have custody of customers' money. In these cases, customers have complete ownership of their money and are responsible for its security. David Raw, Deputy Director of Banking and Credit at HM Treasury, told the Committee it is the custodial exchanges that are at a greater risk of being hacked.¹⁰² To hack a non-custodial exchange would be to hack the blockchain itself, which, as far as is known, has not yet been successfully done.

67. Several custodial crypto-asset exchanges have been hacked and customers' crypto-assets have been stolen. For example, on 28 February 2014 Mt Gox, a Japanese Bitcoin exchange, filed for bankruptcy after announcing that it may have lost all of its investors' virtual coins, after its computer system was hacked.¹⁰³ More recently, over the weekend commencing 9 June 2018, South Korean exchange Coinrail suffered a cyber-attack which caused a loss of approximately 30 per cent of the crypto-assets traded on the exchange.¹⁰⁴

68. Martin Etheridge, Head of Notes Operations at the Bank of England, noted the importance of distinguishing between the hacking of crypto-asset exchanges and the hacking of the blockchain:

This reinforces the need for a distinction between the underlying technology and the tokens themselves, because people will tell you how resilient and secure distributed ledger technology is but, when you look at the system that is currently in operation, it is not the distributed ledger that is being hacked; it is the custodians [i.e. the custodial wallet providers and exchanges] that are being hacked.¹⁰⁵

100 Q99

101 Apart from mining and exchanging fiat currency for wallet keys face-to-face, this is the only way of acquiring crypto-assets, and so the key intermediary in the system.

102 Q185

103 Reuters, [Mt Gox files for bankruptcy, hit with lawsuit](#), 28 February 2014

104 Reuters, [S.Korean exchange Coinrail says hit by hackers, bitcoin slides](#), 11 June 2018

105 Q186

69. When asked why crypto-asset exchanges appeal to hackers, Izabella Kaminska, Editor of the Financial Times Alphaville, argued that the characteristics of crypto-assets and the underlying technology incentivises and facilitates their theft:

On the hacking point, it is important to put this in lay terms. What we have here is the creation of a bearer asset. We hear a lot about how amazing it is that the blockchain is immutable. The downside of immutability is that if somebody steals your asset it continues down the chain, unless we start to blacklist said coins that have been stolen. [...] In terms of what we are talking about physically, we are talking about [crypto-asset owners'] capacity to remember a very complicated string of numbers [which] is what gives you access to your funds. It is all about how securely those numbers can be kept. [...] If a criminal finds your string they have full access. By the time it has gone and been spent you have lost access. You are only as secure as your own capacity to remember those numbers. [...] The real weak point is the user.¹⁰⁶

70. When asked how crypto-asset exchanges can mitigate the risk of hacking, Iqbal Gandham, Chair of Crypto UK and Managing Director of eToro, explained that by keeping customers' details offline, greater security can be achieved. He said:

We at Crypto UK have created a self-regulatory code of conduct, one aspect of which is that any member exchange needs to keep 90plus per cent of customer currency in cold storage, so not connected to the internet, to avoid [hacking]. People are moving their assets, they are disconnecting them from the internet. They are also now insuring any assets that are connected to the internet. It is very difficult to get insurance, because the insurance products have not matured enough, but they are working to address these concerns.¹⁰⁷

71. Obi Nwosu, Chief Executive Officer of Coinfloor, elaborated on the concept of cold storage further:

[An individual's] private key, the stamp for authorising [a transaction], can be kept online, in what is known as hot storage, on an internet-connected device, or it can be kept in cold storage, offline, on a device that is not connected to the internet. It would be created offline, stored offline and used offline. That is known as cold storage. This is important, because every single successful hack of an exchange has always involved the hot element.¹⁰⁸ [...] This is the equivalent of money in your purse versus money in a bank vault. One is online, available for other people to access, while the other is money offline and behind various security.¹⁰⁹

72. However, Ms Kaminska argued that the use of cold storage highlights the inefficiencies of the crypto-asset exchanges, and creates market liquidity issues:

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Cold storage has been put forward as a solution here, but we need to recognise what that actually means. It means total inefficiency. There is something called a security access paradox, insomuch as if it is secure it is not accessible, and if it is accessible it is not secure. When everything is in cold storage, it is very difficult to maintain the liquid availability of funds to manage things in real time.¹¹⁰

73. When asked if exchanges had mechanisms for compensation in the event of a hack and subsequent loss of crypto-assets, Mr Nwosu stated that most exchanges did not have any mechanisms for compensation at this stage.¹¹¹

74. An additional risk that consumers may not be aware of came to the attention of the Committee during the inquiry relating to the storing and access to passwords of crypto-asset platforms. The Committee has heard of instances where customers that have lost their passwords (and consequently access to their accounts) and have been told by the firm that runs their account that the passwords cannot be restored. For example, in response to a customer who had forgotten their password and recovery phrase, Blockchain, a non-custodial software platform that provides wallets to customers, stated that “your recovery phrase is the only way to restore access to your wallet if you forget your password.”¹¹² Thus, there is no recourse for customers who have lost their password and recovery phrase.

75. Investors typically access and invest in crypto-assets through exchanges. A number of these have been hacked, with customers losing significant amounts of money as a result.

76. There is no collective deposit insurance scheme to compensate investors in the event of a hack, nor do individual exchanges generally have arrangements in place to do so. The risk of hacking associated with crypto-assets may not be something investors in conventional assets have experience of, and therefore they may not be well placed to judge this risk. It constitutes further evidence that crypto-assets are particularly ill-suited to retail investors.

77. There have also been instances of investors losing access to their crypto-assets when they have lost their passwords to their accounts with exchanges or crypto-asset platforms. Exchanges and crypto-asset platforms have subsequently been unable to recover their customers’ details, so customers are locked out of their accounts permanently. This often unexpected outcome for investors is a stark contrast against how customers of banks, and other regulated financial services firms, are treated when they have forgotten their details.

Initial Coin Offerings (ICOs)

78. Many Initial Coin Offerings (ICOs) have failed in their fruition, resulting in financial losses for those who had initially invested in the ICO. A crowdsourcing website that keeps track of coins that have gone out of existence, www.deadcoins.com, has identified over 900 ICOs that have failed.¹¹³ The website lists whether the ICOs failed due to their inadequate business proposals, through a successful hack of the coins or whether they were a fraud or

110 Q115

111 Q115

112 Extract from [Blockchain’s Facebook page](#), accessed on 12 June 2018

113 Deadcoins.com, accessed 20 August 2018

scam to begin with. For example, CraftCoin was designed to be a crypto-asset that would be used as an in-game currency for Minecraft¹¹⁴ users but failed to launch.¹¹⁵ According to CoinMarketCap, a website tracking the market capitalisation of crypto-assets, the value of CraftCoin in September 2018 was \$0.000738 and the market capitalisation, volume traded in the last 24 hours and the circulation supply were unknown.¹¹⁶ Additionally according to ICO Data, a website that lists the funds raised of ICOs, an ICO for a new crypto-asset called Infinitum Coin was launched in January 2018 and ended in April 2018, having raised \$0.¹¹⁷ A study of 2,400 ICOs by a research team at Boston College, Massachusetts found that 56 per cent failed within the first four months.¹¹⁸

79. Izabella Kaminska, Editor of the Financial Times Alphaville, told the Committee that would-be investors in ICOs should be cautious:

You have to ask: why are these companies going to the ICO markets instead of going to the conventional markets? If your product is good enough to raise money in the markets, you should be able to raise it in the regulated markets, not just go to the ICO issuance.¹¹⁹

80. As discussed earlier, most ICOs are not regulated in the UK, and investors are extremely unlikely to have access to regulatory protections.¹²⁰ David Geale, Director of Policy at the FCA, explained that:

The bulk of this [ICO] activity seems to be in the unregulated space, around things like the utility tokens, where you are buying, for example, future rights to access a theme park or something that does not exist at the moment. Is that the sort of thing we would regulate? It is certainly not the sort of thing we regulate at the moment [...]¹²¹

81. In its evidence to the Committee, MIT Media Lab argued that “ICOs are essentially a new method of capital raising for a new enterprise [and] they should not be able to avoid relevant securities regulations just by tweaking the form.”¹²² This view is reflected in the approach taken by the US Securities and Exchange Commission, whose Chairman, Jay Clayton, issued a public statement in December 2017 that:

A change in the structure of a securities offering does not change the fundamental point that when a security is being offered, our securities laws must be followed. Said another way, replacing a traditional corporate interest recorded in a central ledger with an enterprise interest recorded through a blockchain entry on a distributed ledger may change the form of the transaction, but it does not change the substance. The Commission applied longstanding securities law principles to demonstrate that a particular token constituted an investment contract and therefore was a

114 Minecraft is an internet-based game where players go on adventures in Minecraft’s digital realm.

115 <https://deadcoins.com/>

116 <https://coinmarketcap.com/currencies/craftcoin/>

117 <https://www.icodata.io/coin/infinitum>

118 Benedetti, Hugo and Kostovetsky, Leonard, *Digital Tulips? Returns to Investors in Initial Coin Offerings*, 20 May 2018

119 Q158

120 FCA, *Consumer warning about the risks of Initial Coin Offerings (“ICOs”)*, 12 September 2017

121 Q169

122 MIT Media Lab ([DGC0058](https://www.mit.edu/~media/0000058))

security under our federal securities laws. Specifically, we concluded that the token offering represented an investment of money in a common enterprise with a reasonable expectation of profits to be derived from the entrepreneurial or managerial efforts of others.¹²³

82. In particular, Mr Clayton highlighted that “utility” tokens would generally be treated by the SEC as securities, and regulated accordingly:

Certain market professionals have attempted to highlight utility characteristics of their proposed initial coin offerings in an effort to claim that their proposed tokens or coins are not securities. Many of these assertions appear to elevate form over substance. Merely calling a token a ‘utility’ token or structuring it to provide some utility does not prevent the token from being a security. Tokens and offerings that incorporate features and marketing efforts that emphasize the potential for profits based on the entrepreneurial or managerial efforts of others continue to contain the hallmarks of a security under U.S. law.¹²⁴

83. Mr Geale explained how differences in the law gave rise to the different regulatory approaches to ICOs in the UK and the US:

The tests [the SEC] applies are different [from the FCA]. It applies them on the basis of case law, which is more like asking, ‘does it look and feel like an investment, because you are investing for some form of speculative return?’, whereas the definitions of a ‘financial instrument’ are laid down in legislation here. It is different, but if it is a financial instrument that looks like a form of security, or if there is a form of security [...] it will be regulated. [...] For utilities, where it is not conferring rights to future returns but there might be a future reward of some description, it is outside the perimeter.¹²⁵

84. On 12 September 2017 the FCA published a consumer warning about the risks of Initial Coin Offerings (ICOs), stating that ICOs are “very high risk, speculative investments”¹²⁶ and highlighting the absence of regulatory protections.¹²⁷ The consumer warning went on to highlight the risks faced by consumers from price volatility, potential for fraud and inadequate documentation that are typically associated with ICOs. It cautioned that investors should be “prepared to lose [their] entire stake.”¹²⁸

85. The FCA’s power to issue consumer warnings extends to products that fall within its remit. Mr Geale conceded that the FCA’s warning on ICOs may “have gone a little bit outside of our remit.”¹²⁹

123 US Securities and Exchange Commission, [Statement on Cryptocurrencies and Initial Coin Offerings by Chairman Jay Clayton](#), 11 December 2017

124 US Securities and Exchange Commission, [Statement on Cryptocurrencies and Initial Coin Offerings by Chairman Jay Clayton](#), 11 December 2017

125 Q193

126 FCA, [Consumer warning about the risks of Initial Coin Offerings \(“ICOs”\)](#), 12 September 2017

127 FCA, [Consumer warning about the risks of Initial Coin Offerings \(“ICOs”\)](#), 12 September 2017

128 FCA, [Consumer warning about the risks of Initial Coin Offerings \(“ICOs”\)](#), 12 September 2017

129 Q199

86. It is not known how many current or prospective ICO investors have read the FCA's warning. When asked whether it had been useful, Ms Kaminska stated that “personally, I do not think they have gone far enough, and they have been very late to the game as well. We were all waiting to see action much earlier than it happened.”¹³⁰

87. The FCA's stark consumer warning on ICOs is evidence that they present significant risks to investors. But apart from drawing attention to the risks, there is little the FCA can do to protect individuals from being defrauded or losing their money. This is because most ICOs do not promise financial returns, but instead offer future access to a service or utility, meaning they fall outside the regulatory perimeter.

88. While there may be no explicit promise of financial returns, investors in ICOs clearly expect them: they are not buying tokens to gain access to as-yet unbuilt theme parks, or to obtain dental services in years to come, but in the hope of selling them at a profit. The development of ICOs has exposed a regulatory loophole that is being exploited to the detriment of ordinary investors. The Regulated Activities Order should be updated to bring ICOs within the FCA's perimeter as a matter of urgency, and bring investor protections into line with those in the United States.

89. Crypto assets and ICOs are extremely risky, and the Committee agrees with the FCA that investors should be prepared to lose all their money.

Money laundering and terrorist financing

90. Although they will fall within the scope of the Fifth Anti-Money Laundering (AML) Directive and will have to comply with anti-money laundering and counter-terrorist financing rules, crypto-asset exchanges are not included in Anti-Money Laundering (AML) regulations that are currently in force. As the FCA notes:

The activities that require firms to comply with anti-money laundering (AML) obligations are set out in the Money Laundering, Terrorist Financing and Transfer of Funds (Information on the Payer) Regulations 2017 (MLR). Crypto-asset exchange activities are not included in the MLR, which means that such firms are not currently subject to AML requirements.¹³¹

91. It is suspected that crypto-assets and crypto-asset exchanges appeal to money launderers and are being used to facilitate money laundering and terrorist financing. The Solicitors Regulation Authority noted that given the current lack of regulation, “crypto-[assets], and any similar technologies [...] facilitate anonymity [...]”¹³²

92. When asked about crypto-assets' role in facilitating money laundering, David Raw, Deputy Director of Banking and Credit at HM Treasury, stated that “the latest risk assessment from the National Crime Agency is that [crypto-assets'] use for money laundering and terrorist financing is currently low. They are seeing cases of it, but it is not widespread.”¹³³

130 Q158

131 Financial Conduct Authority ([DGC0028](#)) para 5

132 Solicitors Regulation Authority ([DGC0017](#)) para 10

133 Q181

93. In evidence to the Committee’s Economic Crime inquiry, Donald Toon, Prosperity Command at the National Crime Agency, explained that even though there is a growing risk that crypto-assets are facilitating money laundering and terrorist financing, “it is important that we place virtual currencies in the context of the whole money laundering problem.”¹³⁴ There are “other large-scale areas of the problem.”¹³⁵ Nevertheless, he stated that “we are not relaxed about this. We see it as a problem.”¹³⁶

94. Mr Raw, HM Treasury, explained that, although they provide a degree of anonymity, some characteristics of crypto-assets disincentivise criminals and terrorists from using them to launder money:

[While crypto-assets are] an anonymous way of paying for illicit activity, there is the fact that you are potentially creating a more transparent record of the transaction, which is potentially auditable. There is a question over whether terrorists would want to use this method. There are other methods available to them, many of which are easier, such as cash couriers.¹³⁷

95. However, the FCA stated that the role of crypto-assets in money laundering could be more significant than previously assessed:

In 2017, the UK’s National Risk Assessment of money laundering and terrorist financing risk (NRA), assessed the risk of crypto-asset use for money laundering to be relatively low. This was because of a lack of evidence of crystallised risk. However, FCA work on this issue using information that postdates the intelligence the NRA relied on shows evidence supporting wider-scale criminal use and we now view the potential harm in this space to be greater than previously assessed.¹³⁸

96. The Committee received written evidence from Crypto UK arguing that “lack of regulation around the ‘on’ and ‘off’ ramps, where fiat is converted into a cryptocurrency and vice versa, [i.e. crypto-asset exchanges], means that these points are currently vulnerable to criminal activity.”¹³⁹

97. Obi Nwosu, Chief Executive Officer of Coinfloor, argued that there is an important role for exchanges in mitigating the risk of money laundering:

If exchanges put efforts into knowing their customer, track the source and destination of funds on the crypto side as well as the fiat side, have strong policies around monitoring behaviour on the site and have a policy of submitting suspicious activity to the National Crime Agency [...] they [would] have very low rates of issues in [money laundering].¹⁴⁰

134 Oral evidence taken on 4 July 2018, HC (2017–19) 940, Q262 [Donald Toon, Prosperity Command at National Crime Agency]

135 Oral evidence taken on 4 July 2018, HC (2017–19) 940, Q262 [Donald Toon, Prosperity Command at National Crime Agency]

136 Oral evidence taken on 4 July 2018, HC (2017–19) 940, Q259 [Donald Toon, Prosperity Command at National Crime Agency]

137 Q182

138 Financial Conduct Authority ([DGC0028](#)) para 29

139 Crypto UK ([DGC0031](#)) para 2.2

140 Q116

98. However, Izabella Kaminska, Editor of the Financial Times Alphaville, argued that the current policies and practices of crypto-asset exchanges are often ineffective:

There is a difference between asserting that you are pre-emptively compliant and the reality of that compliance. In my day job as a journalist, I often test a lot of these platforms for exactly that. I have often been privy to situations where I can open accounts without providing the full spectrum of information that is usually needed to fulfil KYC [Know Your Customer] requirements. [...] It is very easy to say that you are compliant, but who is testing that compliance?¹⁴¹

99. Mr Raw highlighted to the Committee that the Government is already considering how to apply AML regulation to the crypto-asset landscape. He said the “key thing [...] in terms of tackling money laundering and terrorist financing, is [...] to bring the exchanges, which is the point at which fiat currency exchanges for cryptocurrencies, into the money laundering directive regulations”.¹⁴²

100. Mr Raw told the Committee that the next step was for the UK to transpose the European Directive into UK regulation:

Transposing the Fifth AML Directive is certainly a matter of urgency.¹⁴³ [...] We will be consulting on how to transpose that over the remainder of this year and the course of next year. The precise timings are still being worked out, but by the end of next year it will be transposed so we will know precisely what that new money laundering framework looks like in relation to crypto assets and exchanges, including who the responsible regulator is. We will know precisely how we are going to deal with it.¹⁴⁴

101. The Committee also heard in evidence from David Geale, Director of Policy at the FCA, that the FCA has reminded firms of their own AML responsibilities whilst the Fifth AML Directive is being transposed:

In the interim, we have [...] written to the chief executives of the banks, asking them to think about the use of crypto assets in terms of whom they are dealing with, the due diligence they do on the customers they have and who those people are dealing with, the jurisdictions they are dealing in, the underlying technology and the governance that is being put around that. There are interim steps that we can take and are taking to remind the banks of their own responsibilities under existing antimoney laundering laws. The new ones will help in terms of what actually comes through the exchanges.¹⁴⁵

102. The Committee also heard from Iqbal Gandham, Chair of Crypto UK and Managing Director of eToro, that some crypto-asset exchanges are preparing for the implementation of the Fifth AML Directive, but also require further guidance from the Government and regulators:

141 Q124

142 Q181

143 Q213

144 Q211

145 Q184

[Some exchanges] are also aligning themselves with the Fifth Anti-Money Laundering Directive. [But]we still need clarity from the UK Government to say, ‘these are the checks that we want you to do.’¹⁴⁶

103. Owing to their anonymity and absence of regulation, crypto-assets can facilitate the sale and purchase of illicit goods and services, and can be used to launder the proceeds of serious crime and terrorism.

104. The absence of regulation of crypto-asset exchanges—through which individuals convert crypto-assets into conventional currency—is particularly problematic.

105. The adoption of the Fifth Anti-Money Laundering (AML) Directive represents a step forward in this respect. Under the Fifth AML Directive, crypto-asset exchanges will have to comply with anti-money laundering and counter-terrorist financing rules. The Committee urges the Government to treat the transposition of the Directive as a priority, and to expedite the consultation process, which is currently not planned to finish until the end of 2019. If the UK leaves the EU without a transition period in March 2019, the Committee would nonetheless expect the Government to seek to replicate the relevant provisions of the AML Directive in UK law as quickly as possible.

106. The Committee believes that the FCA should be the relevant regulator for supervising anti-money laundering.

Market manipulation

107. In its written evidence to the Committee, the FCA highlighted the risk of price manipulation in the crypto-asset market:

Because of the [...] dynamics of crypto-asset markets, where trading volume and capitalisation is considerably lower than established financial markets, there is a greater potential for malicious actors to coordinate price manipulation—such as ‘pump and dump’ schemes. This presents a risk for any potential buyers—retail or institutional—who may interpret sudden price appreciation as a sign of a high quality crypto-asset with strong potential, only to lose their money as these price rises are reversed.¹⁴⁷

The FCA also noted the risks of other forms of market abuse:

The relatively immature market infrastructure underpinning the crypto-asset market could lend itself to more complex forms of market manipulation such as insider trading or spoofing orders—the latter enabled by the lack of reporting standards and the overreliance on non-professional websites for price or market information.¹⁴⁸

The FCA indicated that these risks are exacerbated by the difficulties of policing crypto-asset markets, even if they had the powers to do so:

[T]here would be practical difficulties policing market abuse in many crypto-assets, even with the requisite powers, since much of the exchange trading is concentrated in non-EU jurisdictions, and identifying the

146 Q120

147 Financial Conduct Authority ([DGC0028](#)) para 20

148 Financial Conduct Authority ([DGC0028](#)) para 21

underlying owners of crypto-assets, who may hold ‘inside information’ or those malicious actors spreading false information may be hampered by the virtual and, in part, anonymised nature of these assets.¹⁴⁹

108. An example of market manipulation of the price of Bitcoin was highlighted in a paper by academics at the University of Texas, published on 25 June 2018.¹⁵⁰ The paper investigated whether Tether, a digital currency pegged to the US dollar, influences the price of Bitcoin and found that:

Purchases [of Bitcoin] with Tether are timed following market downturns and result in sizable increases in Bitcoin prices. Less than 1 per cent of hours with such heavy Tether transactions are associated with 50 per cent of the meteoric rise in Bitcoin and 64 per cent of other top cryptocurrencies. [...] These patterns cannot be explained by investor demand proxies but are most consistent with supply-based hypothesis where Tether is used to provide price support and manipulate cryptocurrency prices.¹⁵¹

109. In its written evidence to the Committee, Crypto UK noted that the current lack of regulation of crypto-asset exchanges “create[s] an environment where there is a risk to consumer manipulation.”¹⁵² Thus Crypto UK argued that pro-actively introducing regulation of crypto-asset exchanges means that “[the] Government can pre-emptively protect consumers against market abuse and exploitation.”¹⁵³

110. One of the FCA’s three objectives is to “protect and enhance the integrity of the UK financial system.”¹⁵⁴ The FCA argued that “the markets need to be supported by resilient infrastructure, with appropriate access and transparency to meet the needs of the consumers, corporates and other wholesale clients that use them.”¹⁵⁵ The FCA therefore seeks to ensure that senior management are accountable for the capital market activities, there is a positive culture of proactively identifying and managing conflicts of interest, and firms’ business models, activities, controls and behaviour maintain trust in the integrity of markets and do not create or allow market abuse, systemic risk or financial crime.¹⁵⁶

111. Crypto-asset markets are particularly vulnerable to manipulation, and they fall outside the scope of market abuse rules. In responding to this Report, the FCA should outline the approach it would take to market manipulation were these markets to fall within its remit.

149 Financial Conduct Authority (DGC0028) para 22

150 Griffin, John M. and Shams, Amin, *Is Bitcoin Really Un-Tethered?* (June 13, 2018). Available at SSRN: <https://ssrn.com/abstract=3195066> or <http://dx.doi.org/10.2139/ssrn.3195066>

151 Griffin, John M. and Shams, Amin, *Is Bitcoin Really Un-Tethered?* (June 13, 2018). Available at SSRN: <https://ssrn.com/abstract=3195066> or <http://dx.doi.org/10.2139/ssrn.3195066>

152 Crypto UK (DGC0031) para 2.3

153 Crypto UK (DGC0031) para 2.3

154 FCA, [Enhancing market integrity](#), 9 January 2017

155 FCA, [Enhancing market integrity](#), 9 January 2017

156 FCA, [Enhancing market integrity](#), 9 January 2017

Risks to financial stability

112. In March 2018, the Bank of England’s Financial Policy Committee “judged that existing crypto-assets did not currently pose a material risk to UK financial stability.”¹⁵⁷ Martin Etheridge, Head of Note Operations at the Bank of England, elaborated on the Bank of England’s position:

From the Bank’s perspective, the primary lens through which we look at this is one of financial stability. [...] [Crypto-assets] are not currently functioning in payments and settlement, so that is not a particular worry. In terms of the linkages with systemically important firms or systemically important markets, right now, those linkages are pretty negligible. The market itself is small in comparison to other large financial markets. In terms of the activities of UK firms, that is also pretty small.¹⁵⁸

The Bank of England also emphasised this in its written evidence, noting that “since the peak on 6 January 2018, the crypto-asset market has lost 65 per cent of its value in just 12 weeks [...]. Despite this fall, there has been no disruption to the financial system.”¹⁵⁹

113. Mr Etheridge said that this view is shared by regulators globally:

[This] is also a position shared by our counterparts overseas as part of the Financial Stability Board, which has reported to the G20 that it does not currently believe there are material threats to global financial stability.¹⁶⁰

114. The Bank of England is taking precautionary measures to ensure crypto-assets do not become a risk to financial stability and Mr Etheridge informed the Committee that the Bank of England is “stepping up [...] monitoring activity [...] [and] will be monitoring the extent to which there is additional take-up for these asset classes.”¹⁶¹

115. Furthermore, Sam Woods, the Deputy Governor for Prudential Regulation and Chief Executive Officer of the Prudential Regulation Authority (PRA), wrote to the CEOs of banks, insurance companies and designated investment firms on 28 June 2018, noting the risks crypto-assets pose and the regulator’s expectations:

Crypto-assets have exhibited high price volatility and relative illiquidity [...] raise concerns related to misconduct and market integrity [and] may appear vulnerable to fraud and manipulation, as well as money laundering and terrorist financing risks. [...] I remind you of your firm’s responsibilities [...] to (i) act in a prudent manner; (ii) have effective risk strategies and risk management systems; and (iii) deal with regulators in an open and cooperative way [...].¹⁶²

157 Bank of England, [Record of the Financial Policy Committee Meeting](#) on 12 March 2018, published on 27 March 2018

158 Q168

159 Bank of England ([DGC0055](#)) para 12

160 Q175

161 Q188

162 Letter from Sam Woods to CEOs on [Existing or planned exposure to crypto-assets](#), 28 June 2018

116. **The Committee agrees with the Bank of England that, since they are not being widely used as a means of payment, and the linkages to systemically-important firms and markets are negligible, the risk to financial stability arising from crypto-assets is low. The Committee expects the Bank of England and the FCA to continue to monitor developments in crypto-asset markets, and financial institutions' exposure to them.**

Advertising and investor protections

117. Both ICO issuers and crypto-exchanges use advertisements, including on social media, that highlight the potential for quick returns on investments in crypto-assets. Because neither ICO issuers or crypto-exchanges are regulated, these advertisements are not subject to the FCA's rules, nor does the regulator have any powers to withdraw a misleading advert. For example, Coinshop, a website that enables users to buy Bitcoin and Ethereum, advertised its services in Easy Jet's inflight magazine in May 2018 stating that "in 2017 we've witnessed the Bitcoin rise from \$1,000 to \$19,000—a 1800 per cent increase. Millionaires, top level CEOs and wall-street strategists predict that the Bitcoin will increase to levels between a conservative \$50,000/Coin to a high of \$1,000,000/Coin by the end of 2020."¹⁶³ The advert does not mention that the price of Bitcoin fell from \$19,000 at its peak in December 2017 to under \$7,000 in April 2018.¹⁶⁴ The advert also omits investment warnings that past performance is not a reliable indicator of future results, that investments may fall as well as rise, and that the amount realised may be less than the original sum invested.

118. David Geale, Director of Policy at the FCA, told the Committee how the FCA might approach these advertisements were they to fall within the regulator perimeter:

If [crypto-assets] were to come into our regulatory remit, I imagine the protection we applied would be similar to that we apply elsewhere. We would look at things like the customers the firms are dealing with, who they are targeting through their marketing, the standards of their marketing, the standards of their disclosures through things like risk warnings, the balance and sufficiency of those, and so on. [...] For crowdfunding, for example, we have taken steps to restrict the marketing to people who are inexperienced investors at the outset, to try to stop them putting all their life savings into it.¹⁶⁵

119. Izabella Kaminska, Editor of the Financial Times Alphaville, told the Committee that regulating the advertising of crypto-assets, crypto-exchange services, and related products, would be an important step in furthering consumer protection:

At the moment, there is a wild west situation with the adverts. They are deployed in a way that presents the impression that it is a one-sided market that will go up and that anyone can make a lot of money very easily. The advertising is prolific as well. It is not in any way catered towards a sophisticated clientele. You see it on the tube. Younger people are being exposed; older people are being exposed. Everybody is exposed at the moment, so that is certainly one area that the Committee should look to.¹⁶⁶

163 Coinshop's advertisement in Traveller, Easy Jet's inflight magazine, May 2018

164 <https://www.coinbase.com/charts?locale=en>

165 Q194

166 Q148

120. David Gerard, author of *Attack of the 50 Foot Blockchain*, shared this view and argued that “it would be appropriate to put in place strong consumer protection against mis-selling crypto-asset enterprises as investments to retail-level investors.”¹⁶⁷

121. As well as considering the absence of regulation around crypto-assets for consumers prior to their purchase, the Committee has also considered the implications of the lack of regulation on consumer detriment once the assets themselves have been bought, and how consumers can pursue redress and compensation.

122. This chapter has raised a number of ways in which consumers may experience economic detriment and not be entitled to redress or compensation:

- Being mis-sold a crypto-asset that subsequently loses much or all of its initial investment given the price volatility;
- Having your crypto-assets stolen through a hack on a crypto-asset exchange;
- Losing access to your crypto-assets when you forget the password to your account with exchanges or crypto-asset platforms; and
- Investing in an ICO that is later found to have been a fraudulent or mis-sold investment opportunity.

123. Mr Geale emphasised that the usual consumer redress and compensation, that consumers have come to expect from FCA regulated financial services would not apply to unregulated financial activities and products such as crypto-assets:

We have to separate the regulated space from the unregulated space. In the regulated space, if it is a regulated firm that has done something wrong, [the consumer] has a right to complain. They complain to the firm. Our rules require the firm to deal with that in a particular way. If they remain unsatisfied, they can go to the FOS [Financial Ombudsman Service].

If the firm has failed and has left a loss on the consumer that is not a trading loss—for example, if the firm has misappropriated client money—they may have a call on the Financial Services Compensation Scheme.

In terms of people in the unregulated space, they do not have access to the ombudsman service and they do not have access to the compensation scheme. [...] Unless there is some kind of fraud involved or something, their options are very limited.¹⁶⁸

124. David Raw, Deputy Director of Banking and Credit at HM Treasury, noted that HM Treasury may consider changing the regulatory perimeter to ensure consumers do have access to mechanisms for redress and compensation:

If we discover that there are huge risks to consumers outside the regulatory perimeter where people do not have recourse to the FOS or the FSCS, the answer may well be that the Treasury legislates or takes action to change where the regulatory perimeter is.¹⁶⁹

167 David Gerrard ([DGC0052](#)) para 33

168 Q208

169 Q209

125. **The FCA’s consumer warnings are a feeble corrective to advertisements—on social media, billboards, trains and taxis—that only emphasise the upside opportunities of crypto-asset investing. The advertisements for crypto-asset investing are clearly misleading to consumers and as crypto-asset activities fall outside the FCA’s regulatory perimeter, the FCA is restricted in actions it can take. The FCA needs more power to control how crypto-exchanges and ICO issuers market their services, by bringing the activities they perform into the regulatory perimeter. Such a step would also provide investors with wider protections against mistreatment, including loss of deposits through fraud and hacking, or losing access to funds due to the loss of passwords.**

Potential opportunities from regulation

126. The Committee heard that increasing the regulatory oversight of crypto-assets may help the market to develop. Obi Nwosu, Chief Executive Officer of Coinfloor told the Committee that:

The lack of regulation is one of the things preventing [crypto-assets] getting to a mature stage. [...] We know for a fact that there is a huge demand for the provision of much higher levels of liquidity to the market to stabilise the price. The only reason they are not entering the market is because the players are not regulated and there is not appropriate regulation in place. If there were regulation in place in a jurisdiction such as the UK, with such a strong financial and technology base, we would see a massive influx of inward investment and businesses not only migrating to this space but also expanding to this space.¹⁷⁰

127. Mr Nwosu noted that if more regulation was to be applied to crypto-assets, it could encourage insurance companies to collaborate with crypto-asset exchanges to provide mechanisms for compensation in the event of a hack.¹⁷¹

128. Iqbal Gandham, Chair of Crypto UK and Managing Director of eToro, told the Committee that regulation could have wider benefits for the competitiveness of the UK financial services industry:

Hundreds of thousands of [consumers] are buying [crypto-assets] from exchanges, such as the ones that have been hacked abroad. If you speak to these exchanges, they would be more than happy to be regulated and operate out of the UK. Currently they are going to jurisdictions such as Switzerland, Gibraltar, Malta, et cetera. They would be happy to be regulated.¹⁷²

129. **Crypto-assets have been embedded in certain pockets of society and industry, and it is highly likely that they are here to stay. The UK Government and financial services regulators appear to be deciding whether they will allow the current “wild west” situation to continue, or whether they are going to introduce regulation. The current ambiguity surrounding the Government’s and the regulators’ positions is clearly not sustainable.**

170 Q102

171 Q115

172 Q137

130. The Committee is aware of the establishment of self-regulating bodies in the crypto-asset industry such as Crypto UK, which set out codes of conduct and best practice for the industry. However, as these standards are wholly voluntary, there are inevitably firms ignoring them. When industry is self-regulating, there is no authority to hold industry to account. Throughout the inquiry, the Committee has heard of the crypto-asset industry distributing misleading advertisements and laxing on their self-imposed 'know your customer' rules. Self-regulation within the crypto-asset industry is clearly insufficient. The introduction of formal regulation would make standards compulsory and relevant regulators can hold industry to account.

131. Given the scale and variety of consumer detriment, the potential role of crypto-assets in money laundering and the inadequacy of self-regulation, the Committee strongly believes that regulation should be introduced. At a minimum, regulation should address consumer protection and anti-money laundering.

132. In deciding the regulatory approach, the UK Government and regulators should evaluate the risks of crypto-assets, and assess whether their growth in the UK should be encouraged.

133. If the Government decides that growth is to be encouraged, the Committee believes that the introduction of regulation could lead to positive outcomes for the crypto-asset market. The implementation of crypto-asset regulation in the UK may enable the market place to move to a more mature business model that improves consumer outcomes and enables it to grow sustainably. The entry of institutional investors into the market would increase liquidity, which in itself could reduce some of the inherent risks that exist at present.

134. If the UK develops an appropriate and proportionate regulatory environment for crypto-assets and if future innovations in crypto-assets proved themselves as beneficial to society and industry, the UK could be well placed to become a global centre for this activity, providing that the crypto-asset market adhered to high standards and was not associated with criminality.

4 Implementation of regulation

Introduction of regulation in the UK

135. There are two ways in which regulation of crypto-assets can be introduced in the UK: incorporating crypto-asset activity into the existing regulation or designing a new framework of regulation specifically for crypto-assets.

136. The FCA has previously explained to the Committee that under the existing framework of regulation, “certain types of financial services activity require a licence or ‘permission’ before they can be carried on.”¹⁷³ The FCA noted that “the definition of these activities, and the ‘specified investments’ to which the activity relates [...] are described at a high-level in the Financial Services and Markets Act 2000 (FSMA), and in more detail in the Financial Services and Markets Act 2000 (Regulated Activities) Order (the RAO).”¹⁷⁴ The firms conducting these regulated activities must be authorised by the relevant regulator. For example, retail banks are authorised, regulated and supervised because deposit-taking is specified as a regulated activity in the RAO. Once an activity is specified in the RAO, the relevant regulators, such as the Bank of England or the FCA, then create the regulatory system for that activity. Thus, to regulate crypto-assets under the existing framework, crypto-asset activities must be specified as a regulated activity in the RAO.

137. Introducing regulation by adding a new regulated activity to the RAO has been done before. For example, peer-to-peer (P2P) lending was not regulated initially but was subsequently added to the RAO and became a regulated activity. “Operating an electronic system in relation to lending”, i.e. operating a loan-based crowdfunding platform (also known as a peer-to-peer lending platform) was added to the RAO as a new regulated activity under Article 36H, effective from April 2014.¹⁷⁵ This brought P2P lending within the FCA’s regulatory remit, enabling the FCA to consult on its regulatory approach for P2P lending and subsequently introduce rules and regulations.¹⁷⁶ The regulatory requirements the FCA introduced for P2P lending platforms included:

- Minimum prudential requirements that firms must meet in order to ensure their ongoing viability;
- Rules that firms must follow when holding client money, to minimise the risk of loss due to fraud, misuse, poor-record keeping and to provide for the return of client money in the event of a firm failure; and
- Rules on the resolution of disputes.¹⁷⁷

173 [Letter from Andrew Bailey, Chief Executive of the FCA, to Rt Hon. Nicky Morgan, Chair of Treasury Committee, on the powers and perimeter of the FCA, 30 January 2018](#)

174 [Letter from Andrew Bailey, Chief Executive of the FCA, to Rt Hon. Nicky Morgan, Chair of Treasury Committee, on the powers and perimeter of the FCA, 30 January 2018](#)

175 FCA Consultation Paper, [The FCA’s regulatory approach to crowdfunding \(and similar activities\) CP 13/13](#), October 2013

176 FCA Consultation Paper, [The FCA’s regulatory approach to crowdfunding \(and similar activities\) CP 13/13](#), October 2013

177 FCA Consultation Paper, [The FCA’s regulatory approach to crowdfunding \(and similar activities\) CP 13/13](#), October 2013

138. In its written evidence to the Committee, Crypto UK argued that incorporating crypto-asset activity into the existing RAO was the “simplest” option for imposing regulation on crypto-assets.¹⁷⁸

139. David Raw, Deputy Director of Banking and Credit at HM Treasury, indicated that HM Treasury has not yet decided on how to incorporate crypto-assets into the current regulatory framework, but is considering expanding the RAO as a method:

It could be that the right answer [...] is to amend the Regulated Activities Order and put in place a regime that looks similar to the regime we have for peertopeer, where there are restrictions in relation to the sale to consumers and protections in place in terms of the amount of capital that exchanges need to hold or the way in which things are marketed to consumers. I am not sure that means treating them like banks, but that could be a model we end up following.¹⁷⁹

140. The alternative option to introducing regulation of crypto-assets through the RAO is to set up a new framework of regulation for crypto-assets that is separate to existing financial services regulation, the FSMA and the RAO. Crypto UK noted that this separate framework “can be tailored to meet the exact requirements of industry and [...] perhaps provides the most flexibility.”¹⁸⁰ However making the necessary alterations to all the existing legislation would take considerably more time.

141. The Committee considers that introducing the regulation of crypto-assets and associated activities by extending the Regulated Activities Order would be the quickest method of providing the FCA with the necessary legal powers to execute its duties of protecting consumers and maintaining market integrity. Designing a new framework of regulation would inevitably take much longer and given the growing risks surrounding crypto-assets and subsequent consumer detriment, the introduction of regulation should be treated as a matter of urgency.

142. The Committee recommends that the Government consider what “activity” related to crypto-assets should be specified in the RAO and the ramifications of this introduction. As discussed earlier, this should include at a minimum the issuance of ICOs and the provision of crypto exchange services.

178 Crypto UK ([DGC0031](#)) para 4.12

179 Q207

180 Crypto UK ([DGC0031](#)) para 4.17

5 International approach to regulation

143. Given that the crypto-assets can be created and traded anywhere in the world, the regulatory response to certain risks will only have limited success if other jurisdictions adopt a different approach.

144. David Raw, Deputy Director of Banking and Credit at HM Treasury, explained that international bodies are currently undertaking work to assess the risks associated with crypto-assets as well:

[T]here is an international element to this. [...] Some of the international bodies in this space, like the FSB [Financial Stability Board] and the Financial Action Taskforce, have been tasked with doing some work [...] on what the risks are and internationally what action can be taken, because the risk of regulatory arbitrage here is quite high.¹⁸¹

145. David Geale, Director of Policy at the FCA, outlined the extent of the work between regulators in the international regulatory sphere, but indicated that that work is still at the early stages:

In th[e] [...] case [of crypto-assets], there is a lot of interest among bodies like IOSCO [International Organisation of Securities Commissions], the international securities agency, and at the level of the Financial Stability Board. There is quite a lot of work going on to ensure proper information sharing so that we know the approaches we are all taking and why. We also need to think about things like the taxonomy so we are talking about the same things at the same time, and to think about the risks that are emerging and the most appropriate ways to deal with those. Everybody is feeling their way into this regulation a bit at the moment. Various jurisdictions are taking various steps. We have not yet seen which is going to be the most effective.¹⁸²

146. The global regulatory response to crypto-assets is in its infancy. Nonetheless, given the UK has yet to introduce any crypto-asset regulation, it is in a position to learn from those experience of countries that have done so.

Regulation in the United States of America (US)

147. In the US, the regulation of crypto-asset activity differs from state to state. In its written evidence to the Committee, Crypto UK argued that the approach of the New York State Department of Financial Services (NYSDFS) was “not as successful [as other regulators].”¹⁸³ The regulator introduced the “BitLicense” and regulations which required different types of crypto-asset market participants to be registered with the NYSDFS.¹⁸⁴ Crypto UK argued that “regulatory arbitrage opportunities within the US [and] a strong anti-regulatory sentiment [...] meant that a huge proportion of New York’s crypto business moved out of New York State [...]”¹⁸⁵ This was corroborated by the findings of Reuters that “the slow licensing process and strict requirements are driving some companies

181 Q167

182 Q178

183 Crypto UK ([DGC0031](#)) para 5.15

184 Crypto UK ([DGC0031](#)) para 5.15

185 Crypto UK ([DGC0031](#)) para 5.15

away.”¹⁸⁶ These companies instead looked to “other US states [that] are developing rules and awarding licenses at a faster clip, [for example] Washington State and North Carolina.”¹⁸⁷ Crypto UK stated that “the effects of the BitLicense continue today, with New York State lagging behind in terms of volume of crypto[asset] businesses compared to other comparable US states.”¹⁸⁸

148. As mentioned earlier in the report, the Securities and Exchange Commission (SEC) has already issued guidance on the regulation of initial coin offerings (ICOs). In February 2018, Reuters reported that US lawmakers are “moving to consider new rules that could impose stricter federal oversight on the emerging asset class [...]”¹⁸⁹ However, “digital assets currently fall into a jurisdictional grey area between the SEC, the Commodity Futures Trading Commission (CFTC), the Treasury Department, the Federal Reserve and individual states.”¹⁹⁰

149. Ryan Zagone, Director of Regulatory Relations at Ripple, outlined the different interpretations and approaches of authorities within the US:

There are many different categories that we see coming to the market, depending on how that technology is used. In the US, the IRS [Internal Revenue Service], our tax authority, has deemed them assets, just like property. The CFTC is saying some uses of these and some designs of these look like commodities. The Securities and Exchange Commission say some look like securities, looking at the ICOs. We are seeing, depending on how they are constructed and used, different categories. We expect that conversation to continue as technology evolves.¹⁹¹

Regulation in Asia

150. Mr Raw told the Committee that some regulators in Asia appear to have progressed further in their thinking, as “there is a lot more activity taking place in relation to crypto-assets in the Far East than there is here.”¹⁹²

151. Japan’s Financial Services Agency (FSA) approved eleven companies as operators of crypto-asset exchanges on 29 September 2017 after it recognised Bitcoin as a legal tender in April 2017 and required crypto-asset exchange operators to register with the FSA.¹⁹³ The Japanese FSA has “laid out various requirements, such as building a strong computer system, segregation of customer accounts and checking the identity of customers.”¹⁹⁴

152. The Committee received written evidence from Crypto UK commending the approach of the Japanese FSA which it argued “has led to the development of a group of mature crypto-[asset] exchanges within Japan.”¹⁹⁵ The written evidence submitted

186 Reuters, [New York’s bitcoin hub dreams fade with licensing backlog](#), 31 October 2016

187 Reuters, [New York’s bitcoin hub dreams fade with licensing backlog](#), 31 October 2016

188 Crypto UK (DGC0031) para 5.16

189 Reuters, [Congress sets sights on federal cryptocurrency rules](#), 19 February 2018

190 Reuters, [Congress sets sights on federal cryptocurrency rules](#), 19 February 2018

191 Q88

192 Q167

193 Reuters, [Japan’s FSA gives official endorsement to 11 cryptocurrency exchanges](#), 29 September 2017

194 Reuters, [Japan’s FSA gives official endorsement to 11 cryptocurrency exchanges](#), 29 September 2017

195 Crypto UK (DGC0031) para 5.14

by Coinfloor also argued that Japan's approach "crafted a framework which protects consumers, enables innovation and enables customers to adopt innovative products and services quickly."¹⁹⁶

153. China has taken a different approach to other regulators in the management of crypto-assets. In 2017, China "banned initial coin offerings, shut down local crypto-currency trading exchanges and limited bitcoin mining [...]"¹⁹⁷ On 15 January 2018, Bloomberg reported that China was "escalating its clampdown on cryptocurrency trading, targeting online platforms and mobile apps that offer exchange-like services [as] while authorities banned cryptocurrency exchanges last year, they've recently noted an uptick in activity on alternative venues."¹⁹⁸ In future, "the Government plans to block domestic access to homegrown and offshore platforms that enable centralised trading [...] authorities will also target individuals and companies that provide market-making, settlement and clearing services for centralised trading."¹⁹⁹

Regulation in Europe

154. The Gibraltar Financial Services Commission (GFSC) has established a Distributed Ledger Technology Regulatory Framework (DLT framework). Since 1 January 2018, a firm carrying out by way of business, in or from Gibraltar, the use of distributed ledger technology (DLT) for storing, transmitting value belonging to others (DLT activities), needs to be authorised by the GFSC as a DLT Provider.²⁰⁰ The GFSC noted that "a flexible, adaptive approach is required in the case of novel business activities, products and business models."²⁰¹ The GFSC has thus designed regulatory principles rather than concrete rules for DLT businesses.²⁰² These regulatory principles include:

- Conducting business with honesty and integrity;
- Communicating to customers in a way which is fair and not misleading;
- Maintaining adequate financial and non-financial resources;
- Ensuring that all systems and security access protocols are maintained to appropriate high standards;
- Having systems in place to prevent, detect and disclose financial crime risks such as money laundering and terrorist financing; and
- Developing contingency plans for the orderly and solvent wind down of its business.²⁰³

155. Obi Nwosu, Chief Executive Officer of Coinfloor, explained the reasons why Coinfloor had utilised the regulatory regime in Gibraltar to register a business:

196 Coinfloor Limited ([DGC0032](#)) para 12.2

197 Reuters, [China to block cryptocurrency platforms that allow centralised trading: Bloomberg](#), 15 January 2018

198 Bloomberg, [China escalates crackdown on cryptocurrency trading](#), 15 January 2018

199 Bloomberg, [China escalates crackdown on cryptocurrency trading](#), 15 January 2018

200 Gibraltar Financial Services Commission, [Distributed Ledger Technology Regulatory Framework \(DLT Framework\)](#)

201 Gibraltar Financial Services Commission, [Distributed Ledger Technology Regulatory Framework \(DLT Framework\)](#)

202 Gibraltar Financial Services Commission, [Distributed Ledger Technology Regulatory Framework \(DLT Framework\)](#)

203 Gibraltar Financial Services Commission, [Distributed Ledger Technology Regulatory Framework \(DLT Framework\)](#)

We have set up Coinfloor Exchange Gibraltar. The reason why is that we were incredibly impressed with Gibraltar’s forward-thinking approach to regulation. We have been working with them for over a year. They have taken a policy around AML and CTF (counter- terrorist financing). They have also looked at policies around custodianship of cryptocurrency, treating customers fairly, and they have taken a broader look at the market. This is what I was recommending that the UK should look at as well, as an example.²⁰⁴

156. The position of the French regulators is similar to the FCA. The Autorité des Marchés Financiers (AMF, Authority for Financial Markets) and the Autorité de Contrôle Prudentiel et de Résolution (ACPR, Prudential Regulation and Resolution Authority) clarified that “the purchase [and] sale of and investment in Bitcoin currently takes place outside any regulated market”²⁰⁵ and are therefore unregulated. In a similar position to the FCA, the AMF and ACPR have issued warnings to consumers that the value of Bitcoin can “unexpectedly collapse [and] investors are therefore exposed to very high risks of a [price] correction and do not benefit from any guarantee or protection of invested capital.”²⁰⁶

157. Conversely, the financial services regulator in Germany, BaFin (Federal Financial Supervisory Authority), has classified crypto-assets as “units of account from a supervisory point of view and therefore as financial instruments.”²⁰⁷ Given this classification, in Germany commercial trading in crypto-assets requires authorisation.²⁰⁸ In March 2018, BaFin also published a document on the regulatory classification of crypto-assets and ICOs in the area of securities supervision which stated that Ba Fin “determines on a case-by-case basis whether a token constitutes a [security] [...] or a capital investment [...]”²⁰⁹ In line with other regulators, BaFin has also cautioned potential investors on the range of risks associated with ICOs.²¹⁰

158. The Committee recognises the importance of international cooperation on the regulation of crypto-assets and associated activities. The Committee encourages UK regulators to continue engaging with international bodies to ensure best practice from other regulators is learned and applied to the UK context.

204 Q141

205 Autorité des Marchés Financiers press release, [Buying Bitcoin: the AMF and the ACPR issue a warning to savers](#),⁴ December 2017

206 Autorité des Marchés Financiers press release, [Buying Bitcoin: the AMF and the ACPR issue a warning to savers](#),⁴ December 2017

207 [Article from BaFin’s 2017 Annual Report, Crypto Tokens](#)

208 Ba Fin, [Article from BaFin’s 2017 Annual Report, Crypto Tokens](#)

209 Ba Fin, [Initial Coin Offerings: Advisory letter on the classification of tokens as financial instruments](#), 28 March 2018

210 Ba Fin, [Article from BaFin’s 2017 Annual Report, Crypto Tokens](#)

Conclusions and recommendations

The crypto-asset landscape

1. Functioning currencies are generally understood to serve as a store of value, a medium of exchange and a unit of account. As yet, there are no so-called “cryptocurrencies” that serve all these functions. Well-functioning cryptocurrencies currently exist only as a theoretical concept, and the term “crypto-assets” is more helpful and meaningful in describing Bitcoin, and the many hundreds of other ‘altcoins’ that have emerged over the past decade. (Paragraph 13)

Blockchain and crypto-assets: advantages and limitations

2. Crypto-assets and blockchain were originally designed as an alternative system of making payments in exchange for goods and services. But even the most widely-used crypto asset—Bitcoin—is not widely accepted by merchants. Moreover, the blockchain that underpins Bitcoin transactions cannot process anything like the volumes of transactions that would be required for it to become a mass-market payments system. Even at current levels, the energy costs of verifying transactions appear disproportionate to the potential benefits of a decentralised payments system. (Paragraph 47)
3. The slow, costly and energy-intensive verification process for transactions is not unique to Bitcoin, but a fundamental feature of crypto-assets based on public, decentralised blockchains. This may ultimately limit the extent to which crypto-assets and blockchain can replace conventional money and payments systems. (Paragraph 48)
4. The arguments put forward that crypto-assets could further financial inclusion are unconvincing. Efforts to further financial inclusion are best focused on reducing the number of people without access to bank accounts, rather than increasing the numbers with access to crypto-assets. (Paragraph 49)
5. There are a number of examples of blockchain being deployed in the financial services industry and supply chain management. The Committee is supportive of good innovation, but notes that blockchain should not be pursued for its own sake. Rather, Government and industry should identify what problems exist and consider whether blockchain offers the most appropriate solution. The Committee recognises that blockchain technology may have the potential to solve problems caused by a lack of trust in data integrity and may be a more efficient method of managing certain types of data in the long term, offering higher levels of security than centralised databases. (Paragraph 50)
6. However, at present—although small scale uses for blockchain may exist—the Committee has not been presented with any evidence to suggest that universal applications of the technology are currently reliably operational. (Paragraph 51)

The risks of crypto-assets and the regulatory response

7. Crypto-assets have no inherent value. In the absence of any market fundamentals, their prices fluctuate according to sentiment. This causes far higher volatility than other asset classes, exposing investors to larger potential gains, but correspondingly greater risk of loss. The use of blockchain as a payments system exacerbates these risks, since the exchange rate (vis-à-vis other crypto-assets, or conventional currency) can fluctuate significantly during the time it takes to settle a transaction. (Paragraph 64)
8. On account of their volatility alone, crypto-assets are especially risky, particularly for inexperienced retail investors. (Paragraph 65)
9. Investors typically access and invest in crypto-assets through exchanges. A number of these have been hacked, with customers losing significant amounts of money as a result. (Paragraph 75)
10. There is no collective deposit insurance scheme to compensate investors in the event of a hack, nor do individual exchanges generally have arrangements in place to do so. The risk of hacking associated with crypto-assets may not be something investors in conventional assets have experience of, and therefore they may not be well placed to judge this risk. It constitutes further evidence that crypto-assets are particularly ill-suited to retail investors. (Paragraph 76)
11. There have also been instances of investors losing access to their crypto-assets when they have lost their passwords to their accounts with exchanges or crypto-asset platforms. Exchanges and crypto-asset platforms have subsequently been unable to recover their customers' details, so customers are locked out of their accounts permanently. This often unexpected outcome for investors is a stark contrast against how customers of banks, and other regulated financial services firms, are treated when they have forgotten their details. (Paragraph 77)
12. The FCA's stark consumer warning on ICOs is evidence that they present significant risks to investors. But apart from drawing attention to the risks, there is little the FCA can do to protect individuals from being defrauded or losing their money. This is because most ICOs do not promise financial returns, but instead offer future access to a service or utility, meaning they fall outside the regulatory perimeter. (Paragraph 87)
13. While there may be no explicit promise of financial returns, investors in ICOs clearly expect them: they are not buying tokens to gain access to as-yet unbuilt theme parks, or to obtain dental services in years to come, but in the hope of selling them at a profit. The development of ICOs has exposed a regulatory loophole that is being exploited to the detriment of ordinary investors. The Regulated Activities Order should be updated to bring ICOs within the FCA's perimeter as a matter of urgency, and bring investor protections into line with those in the United States. (Paragraph 88)
14. Crypto assets and ICOs are extremely risky, and the Committee agrees with the FCA that investors should be prepared to lose all their money. (Paragraph 89)

15. Owing to their anonymity and absence of regulation, crypto-assets can facilitate the sale and purchase of illicit goods and services, and can be used to launder the proceeds of serious crime and terrorism. (Paragraph 103)
16. The absence of regulation of crypto-asset exchanges—through which individuals convert crypto-assets into conventional currency—is particularly problematic. (Paragraph 104)
17. The adoption of the Fifth Anti-Money Laundering (AML) Directive represents a step forward in this respect. Under the Fifth AML Directive, crypto-asset exchanges will have to comply with anti-money laundering and counter-terrorist financing rules. The Committee urges the Government to treat the transposition of the Directive as a priority, and to expedite the consultation process, which is currently not planned to finish until the end of 2019. If the UK leaves the EU without a transition period in March 2019, the Committee would nonetheless expect the Government to seek to replicate the relevant provisions of the AML Directive in UK law as quickly as possible. (Paragraph 105)
18. The Committee believes that the FCA should be the relevant regulator for supervising anti-money laundering. (Paragraph 106)
19. Crypto-asset markets are particularly vulnerable to manipulation, and they fall outside the scope of market abuse rules. In responding to this Report, the FCA should outline the approach it would take to market manipulation were these markets to fall within its remit. (Paragraph 111)
20. The Committee agrees with the Bank of England that, since they are not being widely used as a means of payment, and the linkages to systemically-important firms and markets are negligible, the risk to financial stability arising from crypto-assets is low. The Committee expects the Bank of England and the FCA to continue to monitor developments in crypto-asset markets, and financial institutions' exposure to them. (Paragraph 116)
21. The FCA's consumer warnings are a feeble corrective to advertisements—on social media, billboards, trains and taxis—that only emphasise the upside opportunities of crypto-asset investing. The advertisements for crypto-asset investing are clearly misleading to consumers and as crypto-asset activities fall outside the FCA's regulatory perimeter, the FCA is restricted in actions it can take. The FCA needs more power to control how crypto-exchanges and ICO issuers market their services, by bringing the activities they perform into the regulatory perimeter. Such a step would also provide investors with wider protections against mistreatment, including loss of deposits through fraud and hacking, or losing access to funds due to the loss of passwords. (Paragraph 125)
22. Crypto-assets have been embedded in certain pockets of society and industry, and it is highly likely that they are here to stay. The UK Government and financial services regulators appear to be deciding whether they will allow the current “wild west” situation to continue, or whether they are going to introduce regulation. The current ambiguity surrounding the Government's and the regulators' positions is clearly not sustainable. (Paragraph 129)

23. The Committee is aware of the establishment of self-regulating bodies in the crypto-asset industry such as Crypto UK, which set out codes of conduct and best practice for the industry. However, as these standards are wholly voluntary, there are inevitably firms ignoring them. When industry is self-regulating, there is no authority to hold industry to account. Throughout the inquiry, the Committee has heard of the crypto-asset industry distributing misleading advertisements and laxing on their self-imposed ‘know your customer’ rules. Self-regulation within the crypto-asset industry is clearly insufficient. The introduction of formal regulation would make standards compulsory and relevant regulators can hold industry to account. (Paragraph 130)
24. Given the scale and variety of consumer detriment, the potential role of crypto-assets in money laundering and the inadequacy of self-regulation, the Committee strongly believes that regulation should be introduced. At a minimum, regulation should address consumer protection and anti-money laundering. (Paragraph 131)
25. In deciding the regulatory approach, the UK Government and regulators should evaluate the risks of crypto-assets, and assess whether their growth in the UK should be encouraged. (Paragraph 132)
26. If the Government decides that growth is to be encouraged, the Committee believes that the introduction of regulation could lead to positive outcomes for the crypto-asset market. The implementation of crypto-asset regulation in the UK may enable the market place to move to a more mature business model that improves consumer outcomes and enables it to grow sustainably. The entry of institutional investors into the market would increase liquidity, which in itself could reduce some of the inherent risks that exist at present. (Paragraph 133)
27. If the UK develops an appropriate and proportionate regulatory environment for crypto-assets and if future innovations in crypto-assets proved themselves as beneficial to society and industry, the UK could be well placed to become a global centre for this activity, providing that the crypto-asset market adhered to high standards and was not associated with criminality. (Paragraph 134)

Implementation of regulation

28. The Committee considers that introducing the regulation of crypto-assets and associated activities by extending the Regulated Activities Order would be the quickest method of providing the FCA with the necessary legal powers to execute its duties of protecting consumers and maintaining market integrity. Designing a new framework of regulation would inevitably take much longer and given the growing risks surrounding crypto-assets and subsequent consumer detriment, the introduction of regulation should be treated as a matter of urgency. (Paragraph 141)
29. The Committee recommends that the Government consider what “activity” related to crypto-assets should be specified in the RAO and the ramifications of this introduction. As discussed earlier, this should include at a minimum the issuance of ICOs and the provision of crypto exchange services. (Paragraph 142)

International approach to regulation

30. The global regulatory response to crypto-assets is in its infancy. Nonetheless, given the UK has yet to introduce any crypto-asset regulation, it is in a position to learn from those experience of countries that have done so. (Paragraph 146)
31. The Committee recognises the importance of international cooperation on the regulation of crypto-assets and associated activities. The Committee encourages UK regulators to continue engaging with international bodies to ensure best practice from other regulators is learned and applied to the UK context. (Paragraph 158)

Formal minutes

Wednesday 12 September 2018

Members present:

Nicky Morgan, in the Chair

Rushanara Ali

Stewart Hosie

Mr Simon Clarke

Alison McGovern

Charlie Elphicke

Wes Streeting

Stephen Hammond

Draft Report (*Crypto-assets*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 158 read and agreed to.

Resolved, That the Report be the Twenty-Second Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Tuesday 9 October at 2.00 p.m.]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

Tuesday 1 May 2018

Question number

Ryan Zagone, Director of Regulatory Relations, Ripple, **Martin Walker**, Director, Centre for Evidence Based Management, **Dr Grammateia Kotsialou**, King's College London and **Chris Taylor**, Chief Operating Officer, Everledger

[Q1-93](#)

Wednesday 20 June 2018

Marco Santori, President and Chief Legal Officer, Blockchain, **Obi Nwosu**, CEO and Founder, Coinfloor, **Iqbal Gandham**, Chairman, CryptoUK and Managing Director, eToro and **Izabella Kaminska**, Editor, FT Alphaville

[Q94-165](#)

Wednesday 4 July 2018

David Geale, Director of Policy, FCA, **Martin Etheridge**, Head of Note Operations, Bank of England and **David Raw**, Deputy Director Banking and Credit, HM Treasury

[Q166-220](#)

Published written evidence

The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

DGC numbers are generated by the evidence processing system and so may not be complete.

- 1 Adrian Markey Ltd ([DGC0006](#))
- 2 Bank of England ([DGC0055](#))
- 3 Bank of England ([DGC0063](#))
- 4 Barclays ([DGC0023](#))
- 5 Baton Systems ([DGC0050](#))
- 6 Blockchain Training ([DGC0029](#))
- 7 BSI ([DGC0018](#))
- 8 Chaintech PLC ([DGC0045](#))
- 9 Charities Aid Foundation ([DGC0030](#))
- 10 City of London Corporation ([DGC0051](#))
- 11 Clearmatics ([DGC0049](#))
- 12 Coinfloor Limited ([DGC0032](#))
- 13 Coinfloor PLC ([DGC0062](#))
- 14 ConsenSys ([DGC0039](#))
- 15 Creative Investment Research ([DGC0010](#))
- 16 Cryptonomy ([DGC0011](#))
- 17 CryptoUK ([DGC0031](#))
- 18 CryptoUK ([DGC0061](#))
- 19 David Gerard ([DGC0052](#))
- 20 Digital Currency Foundation ([DGC0046](#))
- 21 Digital Currency Initiative, MIT Media Lab ([DGC0058](#))
- 22 Dr Alison Lui ([DGC0016](#))
- 23 Dr Andres Guadamuz ([DGC0013](#))
- 24 Dr Grammateia Kotsialou and Dr Luke Riley ([DGC0035](#))
- 25 Electronic Money Association ([DGC0056](#))
- 26 Everledger ([DGC0033](#))
- 27 Eversheds Sutherland (International) LLP ([DGC0020](#))
- 28 Financial Conduct Authority ([DGC0028](#))
- 29 Financial Reporting Council ([DGC0022](#))
- 30 Henry Jackson Society ([DGC0057](#))
- 31 Izabella Kaminska and Martin Walker ([DGC0034](#))
- 32 Mastercard ([DGC0048](#))
- 33 Miss Ilaria Zavoli ([DGC0012](#))

- 34 Mr Adam Kershaw ([DGC0007](#))
- 35 Mr Alfio Puglisi ([DGC0025](#))
- 36 Mr Andrew Britto ([DGC0009](#))
- 37 Mr David Prais ([DGC0008](#))
- 38 Mr Reece Procter ([DGC0002](#))
- 39 Mr Sam Hodge ([DGC0005](#))
- 40 NAC Foundation ([DGC0026](#))
- 41 NCC Group ([DGC0043](#))
- 42 Newgate Communications ([DGC0036](#))
- 43 Outlier Ventures ([DGC0059](#))
- 44 Positive Money ([DGC0024](#))
- 45 Positive Money ([DGC0027](#))
- 46 Professor Jorge Stolfi ([DGC0054](#))
- 47 Professor Ross Anderson ([DGC0047](#))
- 48 Pundi X Labs Pte ([DGC0041](#))
- 49 R3 ([DGC0044](#))
- 50 Ripple ([DGC0060](#))
- 51 Solicitors Regulation Authority ([DGC0017](#))
- 52 Susan Hedley ([DGC0042](#))
- 53 The Poseidon Foundation ([DGC0021](#))

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the [publications page](#) of the Committee's website. The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2017–19

First Report	Appointment of Sir Dave Ramsden as Deputy Governor for Markets and Banking at the Bank of England	HC 472
Second Report	Appointment of Professor Silvana Tenreyro to the Bank of England Monetary Policy Committee	HC 471
Third Report	The Solvency II Directive and its impact on the UK Insurance Industry	HC 324 (HC 863)
Fourth Report	Transitional arrangements for exiting the European Union	HC 473 (HC 850)
Fifth Report	Autumn Budget 2017	HC 600 (HC 757)
Sixth Report	Appointment of Elisabeth Stheeman to the Financial Policy Committee	HC 758
Seventh Report	Student Loans	HC 478 (HC 995)
Eighth Report	Appointment of Charles Randell as Chair of the Financial Conduct Authority and the Payment Systems Regulator	HC 838
Ninth Report	Childcare	HC 757 (HC 1196)
Tenth Report	Re-appointment of Alex Brazier to the Financial Policy Committee	HC 936
Eleventh Report	Re-appointment of Donald Kohn to the Financial Policy Committee	HC 937
Twelfth Report	Re-appointment of Martin Taylor to the Financial Policy Committee	HC 938
Thirteenth Report	The Motability Scheme	HC 847
Fourteenth Report	Re-appointment for Gertjan Vlieghe to the Monetary Policy Committee	HC 1056
Fifteenth Report	Women in finance	HC 477 (HC 1567)
Sixteenth Report	Appointment of Bradley Fried as Chair of Court, Bank of England	HC 1319
Seventeenth Report	Appointment of Professor Jonathan Haskel to the Monetary Policy Committee	HC 1318
Eighteenth Report	Appointment of Andy King to the Budget Responsibility Committee of the OBR	HC 1340

Nineteenth Report	Household finances: income, saving and debt	HC 565
Twentieth Report	Appointment of Jill May to the Prudential Regulation Committee	HC 1511
Twenty-first Report	Appointment of Professor Julia Black to the Prudential Regulation Committee	HC 1512
First Special Report	Transitional arrangements for exiting the European Union: Government Response to the Treasury Committee's Fourth Report	HC 850
Second Special Report	The Solvency II Directive and its impact on the UK Insurance Industry: Bank of England Response to the Committee's Third Report of session 2017–19	HC 863
Third Special Report	Autumn Budget 2017: Government and Office for Budget Responsibility responses to the Treasury Committee's Fifth Report	HC 757
Fourth Special Report	Student Loans: Government and Office for National Statistics responses to the Committee's Seventh Report	HC 995
Fifth Special Report	Childcare: Government Response to the Committee's Ninth Report	HC 1196
Sixth Special Report	Women in finance: Government Response to the Committee's Fifteenth Report	HC 1567