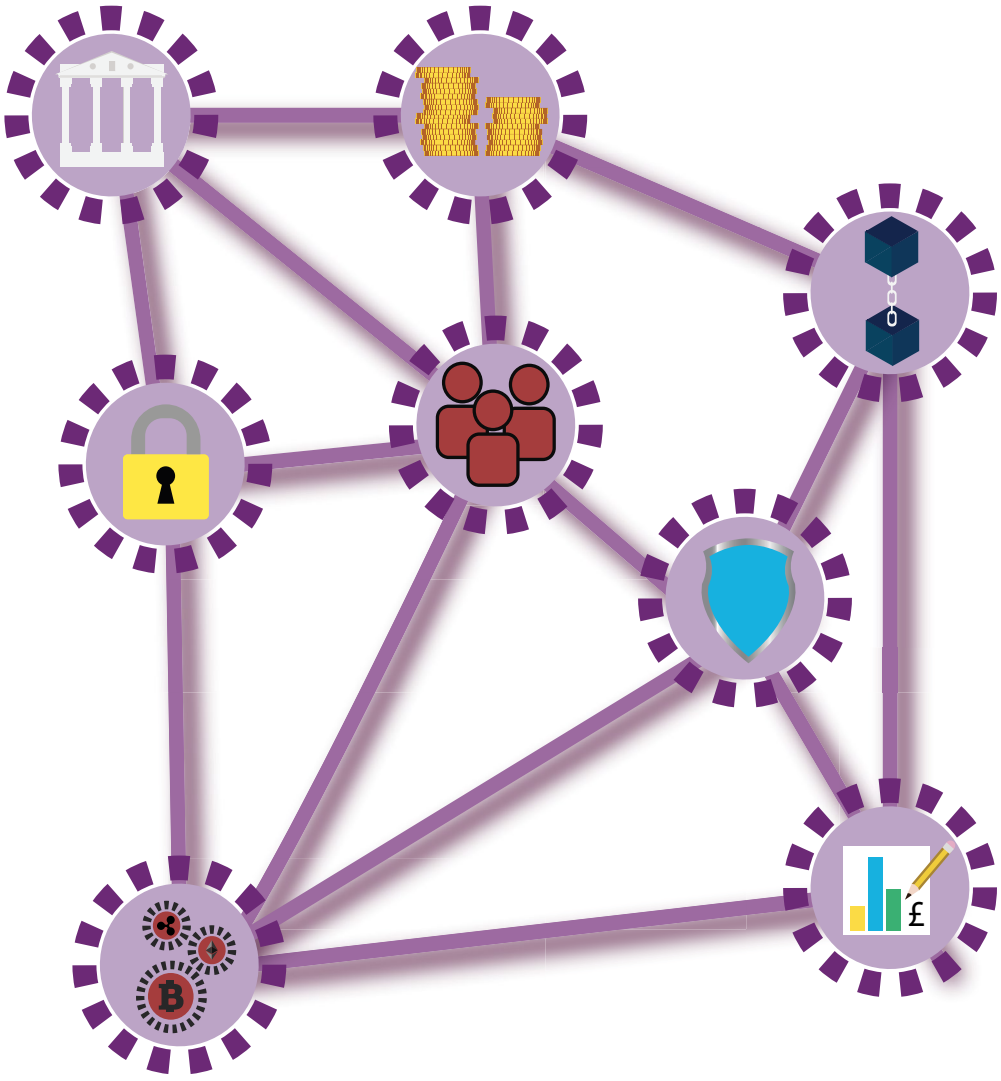
HM Treasury

FCA FINANCIAL CONDUCT AUTHORITY

BANK OF ENGLAND

Cryptoassets Taskforce:

final report



October 2018

HM Treasury

FCA FINANCIAL CONDUCT AUTHORITY

BANK OF ENGLAND

Cryptoassets Taskforce:

final report

October 2018

This publication is available at www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to us at public.enquiries@hmtreasury.gov.uk

ISBN 978-1-912809-13-4
PU2196

Contents

Foreword

Cryptoassets and the distributed ledger technology (DLT) that underpins them have attracted significant attention globally. DLT has the potential to deliver substantial benefits, both in financial services and other sectors. Cryptoassets are one application of DLT, and whilst the UK market has grown, it remains small compared to some other jurisdictions, with many cryptoasset firms based outside the UK. Mainstream financial services firms are taking first steps into the market, and a small derivatives market is developing. At the same time, there is growing evidence of harm to consumers and markets.

It is against this backdrop that the Chancellor of the Exchequer launched the Cryptoassets Taskforce, consisting of HM Treasury, the Financial Conduct Authority and the Bank of England in March 2018.

The government has set out an ambition for the UK to be the world's most innovative economy, and to maintain its position as one of the leading financial centres globally.[1] The UK is well placed to achieve this, as host to a very mature and diverse domestic financial sector. This is a function of, but also relies on, the UK maintaining its international reputation as a safe and transparent place to do business in financial services; ensuring high regulatory standards in financial markets; protecting consumers; and allowing innovators in the financial sector that play by the rules to thrive, so that the benefits of new technologies can be fully realised. The Taskforce has developed a response to cryptoassets and DLT that is consistent with these objectives.

This report provides an overview of cryptoassets and the underlying technology, assesses the associated risks and potential benefits, and sets out the path forward with respect to regulation in the UK. It brings together existing work and new analysis carried out by the Taskforce, and has benefited from the contributions of stakeholders across the DLT and cryptoasset sector.[2] This has been a substantial undertaking, and the joint efforts of all three authorities – as well as valuable industry input – have been crucial in considering these issues holistically.

The Taskforce has concluded that while DLT is at an early stage of development, it has the potential to deliver significant benefits in financial services and other sectors in the future, and all three authorities will continue to support its development.

---

[1] 'UK Digital Strategy', Department for Digital, Culture, Media, and Sport, 2017, https://www.gov.uk/government/publications/uk-digital-strategy/executive-summary; 'The UK's Industrial Strategy', Department for Business, Energy, and Industrial Strategy, 2017, https://www.gov.uk/government/topical-events/the-uks-industrial-strategy; 'Fintech Sector Strategy', HM Treasury, 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692874/Fintech_Sector_Strategy_print.pdf

[2] More information on the Taskforce's stakeholder engagement can be found in Annex B.

There is limited evidence of the current generation of cryptoassets delivering benefits, but this is a rapidly developing market and benefits may arise in the future. There are substantial potential risks associated with cryptoassets, and the most immediate priorities for the authorities are to mitigate the risks to consumers and market integrity, and prevent the use of cryptoassets for illicit activity. The authorities will also guard against threats to financial stability that could emerge in the future, and encourage responsible development of legitimate DLT and cryptoasset-related activity in the UK. This report sets out actions the authorities will take to deliver these objectives.

The Taskforce has concluded that strong action should be taken to address the risks associated with cryptoassets that fall within existing regulatory frameworks. Further consultation and international coordination is required for those cryptoassets that pose new challenges to traditional forms of financial regulation, and fall outside the existing regulatory framework. The authorities plan to engage with international bodies to ensure a comprehensive response.

This report lays out a clear path to establish the UK's policy and regulatory approach to cryptoassets and DLT. This is a fast-moving global market, with the technology developing and the nature of cryptoassets evolving. The authorities will keep their approach to cryptoassets and DLT under review to ensure the UK continues to support innovation, while maintaining safe and transparent financial markets.



Katharine Braddick	Andrew Bailey	Dave Ramsden
Director General, Financial Services, HM Treasury	Chief Executive Officer of the Financial Conduct Authority	Deputy Governor for Markets and Banking, Bank of England

Chapter 1
Introduction

1.1 In recent years, the government, the FCA and the Bank of England have undertaken work to understand the implications of cryptoassets and other applications of DLT in financial services more widely.

1.2 The government has:

- published a call for information on digital currencies and a summary of the responses. Outcomes included announcing the government's intention to apply anti-money laundering regulation to cryptoasset exchanges in the UK (2014-15).[1]
- published a report by the Government Office for Science, 'Distributed Ledger Technology: Beyond Blockchain', which set out how this technology could transform the delivery of public services and boost productivity (2016).[2]
- launched the Digital Strategy, which set out the government's ambition to make the UK the best place in the world to start and grow a digital business, including by trialling new technologies such as DLT (2017).[3]
- supported the development of DLT by investing over £10 million through Innovate UK and the research councils to support a diverse range of DLT projects; building proofs of concept to trial the use of DLT in the public sector; joining the EU Blockchain Partnership to help develop cross-border Blockchain projects in the public sector; creating a £20 million GovTech Catalyst Fund to explore technology-based solutions for public sector challenges, potentially including the use of DLT; and considering how DLT might be deployed to support new forms of financial services infrastructure through its Shared Platforms work with Deloitte.[4]

---

[1] 'Digital currencies: responses to the call for information', HM Treasury, 2015, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/414040/digital_currencies_response_to_call_for_information_final_changes.pdf

[2] 'Distributed ledger technology', Beyond Blockchain', Government Office for Science, 2016, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf

[3] 'UK Digital Strategy', DCMS, 2017, https://www.gov.uk/government/publications/uk-digital-strategy

[4] The UK signed the declaration on the establishment of an EU Blockchain Partnership on 10 April 2018. For further detail, see: 'Press release – European countries join Blockchain Partnership', European Commission, 2018, https://ec.europa.eu/digital-single-market/en/news/european-countries-join-blockchain-partnership; 'New support for tech to boost public sector productivity', HM Treasury, Department for Business, Energy, and Industrial Strategy, 2017, https://www.gov.uk/government/news/new-support-for-tech-to-boost-public-sector-productivity; 'Fintech Sector Strategy', HM Treasury, 2018, https://www.gov.uk/government/publications/fintech-sector-strategy

1.3 The FCA has established the Innovation Hub and Regulatory Sandbox to support innovation in the interests of consumers, both of which are held up as global examples of best practice. The FCA has also undertaken work to explore the potential of DLT in financial services:

- the Sandbox allows businesses to test innovative products, services, business models and delivery mechanisms in the real market, with real consumers in a controlled environment. DLT is the most popular technology tested in the Sandbox. More than one third of 89 firms that were accepted into the Sandbox used DLT and/or cryptoassets. The use of DLT appears to be rising, with further DLT sandbox tests expected in the fifth cohort. The fourth Sandbox cohort of 29 firms features 14 firms that use DLT and/or cryptoassets.[5]
- the FCA is actively exploring the use of DLT for its supervisory duties, via its RegTech initiative.[6]
- the FCA's Direct Support team provides a dedicated contact for innovative businesses that are considering applying for authorisation or a variation of permission and need support when doing so, or do not need to be authorised but could benefit from support. The team can also help businesses understand the regulatory regime and the challenges they may face when developing their innovative product or business model.
- in 2017, the FCA started a dialogue on the potential for DLT in the financial markets, and published a Discussion Paper and Feedback Statement.[7]

1.4 The Bank of England has set up a new Fintech Hub to consider the policy implications of Fintech.[8] In addition, the Bank of England has:

- published Quarterly Bulletin articles on the 'The economics of digital currencies' and 'Innovations in payment technologies', which explored the innovations of DLT (2014).[9]
- completed work with 18 firms via proof of concepts to understand how new technologies are being adopted and how they might relate to its objectives, and is embedding this approach into its business-as-usual activities. This included four DLT focused proofs-of-concept (2016-18).[10]

---

[5] The latest list of FCA's regulatory sandbox firms is available here: https://www.fca.org.uk/firms/regulatory-sandbox/regulatory-sandbox-cohort-4-businesses

[6] For further detail, see 'RegTech', FCA, 2018, https://www.fca.org.uk/firms/regtech

[7] For further detail, see: 'Feedback statement 17/4: distributed ledger technology', FCA, 2017, https://www.fca.org.uk/publications/feedback-statements/fs17-4-distributed-ledger-technology

[8] 'Open to Fintech – speech by Dave Ramsden', Bank of England, 2018, https://www.bankofengland.co.uk/speech/2018/dave-ramsden-speech-hmts-international-fintech-conference

[9] 'The economics of digital currencies', Bank of England, 2014, https://www.bankofengland.co.uk/-/media/boe/files/digital-currencies/the-economics-of-digital-currencies; 'Innovations in payment technologies and the emergence of digital currencies', Bank of England, 2014, https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/innovations-in-payment-technologies-and-the-emergence-of-digital-currencies.pdf

[10] 'Fintech proofs-of-concept', Bank of England, 2018, https://www.bankofengland.co.uk/research/fintech/proof-of-concept

- committed to ensure that the backbone of the existing payments system – the Bank of England's new RTGS service – will be compatible with DLT-based payment systems, supporting further innovation and use of DLT in financial services.[11] This includes conducting a proof-of-concept with four firms to help understand how this may be achieved (2018).[12]
- assessed the financial stability implications of cryptoassets via the Financial Policy Committee (2018).

The Cryptoassets Taskforce

1.5 In light of rapid developments in the market, the substantial potential of applications of DLT, and growing evidence of the risks associated with cryptoassets; the Chancellor of the Exchequer launched the Cryptoassets Taskforce in March 2018 as part of the government's Fintech Sector Strategy.[13]

1.6 The Taskforce has brought together HM Treasury, the FCA and the Bank of England.[14] The authorities have developed an approach to cryptoassets and DLT that:

- maintains the UK's international reputation as a safe and transparent place to do business in financial services
- ensures high regulatory standards in financial markets
- protects consumers
- guards against threats to financial stability that could emerge in the future
- allows those innovators in the financial sector that play by the rules to thrive

1.7 Parliament's Treasury Select Committee recently published a report following its Digital Currencies Inquiry, which considered similar questions to the Taskforce.[15] The Taskforce welcomes the Committee's work, and the government will formally respond in November.

Overview of the Taskforce's report

1.8 This report outlines the Taskforce's analysis and findings.

- Chapter 2 outlines key concepts, provides an overview of the UK market, and sets out the Taskforce's framework for differentiating between types of cryptoassets and DLT. It also outlines how the current regulatory perimeter applies to different uses of cryptoassets.

---

[11] 'A blueprint for a new RTGS service for the UK', Bank of England, 2017, https://www.bankofengland.co.uk/-/media/boe/files/payments/a-blueprint-for-a-new-rtgs-service-for-the-uk.pdf

[12] 'RTGS Renewal Programme Proof of Concept: Supporting DLT Settlement Models', Bank of England, 2018, https://www.bankofengland.co.uk/news/2018/july/rtgs-renewal-programme-proof-of-concept-supporting-dlt-settlement-models

[13] 'Fintech Sector Strategy', HM Treasury, 2018, https://www.gov.uk/government/publications/fintech-sector-strategy.

[14] See Annex A for more detail on each of the authorities' objectives.

[15] The Treasury Select Committee is a Parliamentary Committee under the House of Commons. The Committee launched an inquiry into digital currencies on 22 February 2018. For the full report, see: 'Crypto-assets: Twenty-second report of session 2017-19', House of Commons Treasury Committee, 2018, https://publications.parliament.uk/pa/cm201719/cmselect/cmtreasy/910/910.pdf.

- Chapter 3 considers the impact of DLT in financial services. It explores the benefits that the authorities have seen through both their work and that of innovative firms, and identifies some of the barriers to further deployment of DLT.
- Chapter 4 assesses the risks and potential benefits associated with cryptoassets.
- Chapter 5 sets out the Taskforce's conclusions and the actions that will be taken forward by HM Treasury, the FCA, and the Bank of England.

Chapter 2

Key concepts

Box 2.A: Summary

The current generation of DLT has its origins in the blockchain that powers Bitcoin, the first cryptoasset. However, since the development of Bitcoin in 2008, the technology and market have evolved, and cryptoassets are only one of many applications of DLT.

There is no standard form of DLT. Most DLT platforms being developed for use in financial services are different from the original Bitcoin blockchain, and are often not fully distributed or decentralised.

The Taskforce has developed a framework to distinguish between the different types and uses of cryptoassets, which supports analysis of the risks, benefits, and regulatory implications.

The Taskforce recognises that cryptoassets pose new challenges to the current regulatory framework, and the complexity of certain types of cryptoassets means it is difficult to determine whether they fall within the regulatory perimeter.

Distributed ledger technology

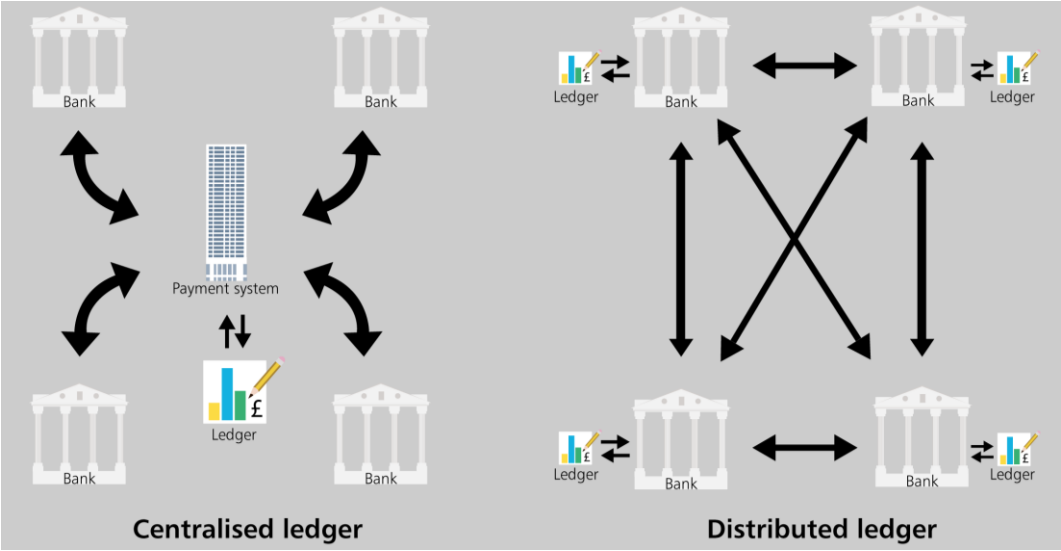
Key features

2.1 DLT is a type of technology that enables the sharing and updating of records in a distributed and decentralised way. Participants can securely propose, validate, and record updates to a synchronised ledger (a form of database), that is distributed across the participants.[1]

2.2 A DLT platform can be used like any conventional database that sets out who owns what, or who did what. They can store a range of data, such as ownership of existing financial assets (for example, shares), tangible assets (for example, wine, houses), or digital assets (for example, Bitcoin).

[1] In the context of this report, 'participant' refers to a computer participating in the operation of a DLT arrangement, otherwise known as a node.

Chart 2.A: Centralised and distributed ledgers[2]



2.3 There are many different types of DLT platforms, and they usually combine elements of four common features:

- **Data distribution:** Many participants can keep a copy of the ledger, and are able to read and access the data.
- **Decentralisation of control:** Many participants can update the ledger, subject to agreed processes and controls.
- **Use of cryptography:** Cryptography may be used to identify and authenticate approved participants, confirm data records, and facilitate consensus.[3] The use of this technology is not unique to DLT.
- **Programmability/automation:** Computer-coded automation (such as smart contracts) can automatically implement the terms of an agreement, such as automatically triggering interest payments on a bond.[4]

2.4 There is no standard form of DLT. The specific combination of these features depends on what a particular DLT platform is being used for and the design choices made by developers.

2.5 The term 'blockchain' is often used interchangeably with DLT, but it refers to a specific way of structuring data on a DLT platform. Bitcoin was the first platform to use a blockchain to record information, and the first platform to combine the four common features of DLT described above. [5]

---

[2] Diagram adapted from 'The Fintech 2.0 paper: rebooting financial services', Innoventures, Santander, Oliver Wyman, Anthemis Group, 2015, https://www.finextra.com/finextra-downloads/newsdocs/the%20fintech%202%200%20paper.pdf

[3] 'Distributed ledger technology in payment, clearing and settlement', Committee on Payments and Market Infrastructures, 2017, https://www.bis.org/cpmi/publ/d157.pdf

[4] Smart contracts can carry out pre-determined commands without further human intervention.

[5] For further detail, see: 'Bitcoin: a peer-to-peer electronic cash system', Satoshi Nakomoto, 2008, https://bitcoin.org/en/bitcoin-paper

Permissioned and permissionless DLT

2.6 The individual technologies used in DLT are tried and tested, and some are even decades old. However, Bitcoin's unique innovation was to combine these technologies to build a decentralised network that has no central, trusted authority and which is open to anyone to participate. Networks that operate in this way are entirely '**permissionless**', so that anyone can become one of the multiple participants who maintain identical copies of the ledger. These participants employ a process known as a consensus mechanism to come to agreement on the contents of, and updates to, the ledger.[6] Bitcoin specifically uses a consensus mechanism known as 'proof of work', which is highly energy and cost intensive.[7]

2.7 In contrast, most of the DLT platforms being developed for use in financial services make significant departures from the original Bitcoin blockchain and are '**permissioned**', both in terms of who can access the network and who can update it. Access to the network is restricted to a list of known and approved parties, for example, banks who already trade with each other. The use of permissioned platforms might be preferable in some cases because financial institutions handle sensitive data and need to know who they are dealing with on the platform. There are also practical benefits to permissioned networks: if only known and trusted users are admitted to the network, the consensus mechanism used can be significantly faster and more energy and cost efficient than in permissionless systems.[8] This means that permissioned platforms avoid much of the negative environmental impact of permissionless systems.

Design choices in DLT

2.8 DLT platforms use varying degrees of distribution and decentralisation.

- **Distribution** relates to how data are shared and accessed. In permissionless platforms such as Bitcoin and many other cryptoasset platforms, any of the participants may keep a copy of the ledger,and anyone can read the data on the ledger. In permissioned platforms – which are more commonly explored in financial services - storage and access to the data is restricted to a list of known and approved participants. In addition, certain data may be shared only with a subset of participants, for example the two counterparties to a trade.
- **Decentralisation** relates to who is involved in updating the ledger. In permissionless platforms such as Bitcoin, any participant can join the network and compete to update the ledger with the latest transactions. In

---

[6] For further detail, see: 'Consensus: immutable agreement for the internet of value', KPMG, 2016, https://assets.kpmg.com/content/dam/kpmg/pdf/2016/06/kpmg-blockchain-consensus-mechanism.pdf

[7] For a more detailed description of the Bitcoin proof-of-work process, see: 'Innovations in payment technologies', Bank of England, 2014. https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/innovations-in-payment-technologies-and-the-emergence-of-digital-currencies.pdf. October 2018 estimates from the Digiconomist estimates the entire Bitcoin network uses just over 73kwh of electricity in a year, placing it ahead of Switzerland, Chile and Austria. For further detail, see: 'Bitcoin energy consumption index', Digiconomist, 2018, https://digiconomist.net/bitcoin-energy-consumption; and 'Bitcoin's energy usage is huge', The Guardian, 2018, https://www.theguardian.com/technology/2018/jan/17/bitcoin-electricity-usage-huge-climate-cryptocurrency

[8] For example, if all participants in a network are known, the right to update the ledger can be randomly allocated, or participants could simply agree on updates via simple majority voting. For more detail, see: 'Consensus', KPMG, 2016. https://assets.kpmg.com/content/dam/kpmg/pdf/2016/06/kpmg-blockchain-consensus-mechanism.pdf

permissioned platforms, only a group of selected, known parties may participate in the process of updating the ledger. This still requires a consensus mechanism, but is much simpler and less energy intensive.

Cryptoassets

2.9 Cryptoassets are one application of DLT. While all cryptoassets utilise some form of DLT, not all applications of DLT involve cryptoassets. The current most common cryptoassets are issued on permissionless ledgers.

2.10 There is not a single widely agreed definition of a cryptoasset. Broadly, a cryptoasset is a cryptographically secured digital representation of value or contractual rights that uses some type of DLT and can be transferred, stored or traded electronically. Examples of cryptoassets include Bitcoin and Litecoin (and other 'cryptocurrencies'), and those issued through the Initial Coin Offering (ICO) process, often referred to as 'tokens'. The market is constantly evolving, with new and different cryptoassets being developed and around 2000 currently in existence.[9]

2.11 The Taskforce considers there to be three broad types of cryptoassets:

A. **Exchange tokens** – which are often referred to as 'cryptocurrencies' such as Bitcoin, Litecoin and equivalents. They utilise a DLT platform and are not issued or backed by a central bank or other central body. They do not provide the types of rights or access provided by security or utility tokens, but are used as a means of exchange or for investment.

B. **Security tokens** – which amount to a 'specified investment' as set out in the Financial Services and Markets Act (2000) (Regulated Activities) Order (RAO).[10] These may provide rights such as ownership, repayment of a specific sum of money, or entitlement to a share in future profits. They may also be transferable securities or financial instruments under the EU's Markets in Financial Instruments Directive II (MiFID II).

C. **Utility tokens** – which can be redeemed for access to a specific product or service that is typically provided using a DLT platform.

The Taskforce's cryptoassets framework

2.12 Different cryptoassets vary significantly in the rights they grant their owners, as well as their actual and potential uses. Given the variety and complexity of applications, the Taskforce has developed a framework which takes into account the different uses of the three different types of cryptoassets identified above. Cryptoassets are typically used:

1 **As a means of exchange,** functioning as a decentralised tool to enable the buying and selling of goods and services, or to facilitate regulated payment services.

9 'All Cryptocurrencies', CoinMarketCap, as at 26.10.18, https://coinmarketcap.com/

10 'Regulated Activities Order - Specified investment', FCA, 2016, https://www.handbook.fca.org.uk/handbook/glossary/G1117.html?date=2016-03-21

2 **For investment,** with firms and consumers gaining direct exposure by holding and trading cryptoassets, or indirect exposure by holding and trading financial instruments that reference cryptoassets.

3 **To support capital raising and/or the creation of decentralised networks** through Initial Coin Offerings (ICOs).

2.13 While cryptoassets can be used as a means of exchange, they are not considered to be a currency or money, as both the Bank of England and the G20 Finance Ministers and Central Bank Governors have previously set out.[11] They are too volatile to be a good store of value, they are not widely-accepted as means of exchange, and they are not used as a unit of account.[12]

2.14 ICOs (or 'token sales') can be used in the creation of decentralised networks and/or as a digital way of raising funds from the public by issuing a project-specific exchange, security or utility token in exchange for an existing cryptoasset or fiat currency. Firms use ICOs as an alternative to traditional capital raising instruments, and in many cases use the funds raised to develop or improve services provided using a DLT platform. Individuals and firms typically buy ICO tokens as an investment, to secure access to a specific service, or to gain other rights attached to a token. Once issued, these cryptoassets may also be traded on a secondary market.

2.15 Chart 2.B provides a high-level overview of the three types of cryptoassets and their most common uses. These categories are not mutually exclusive – the way a cryptoasset is used, or its features, means that it could fall under several categories at any one time or at different points in its lifecycle. For example:

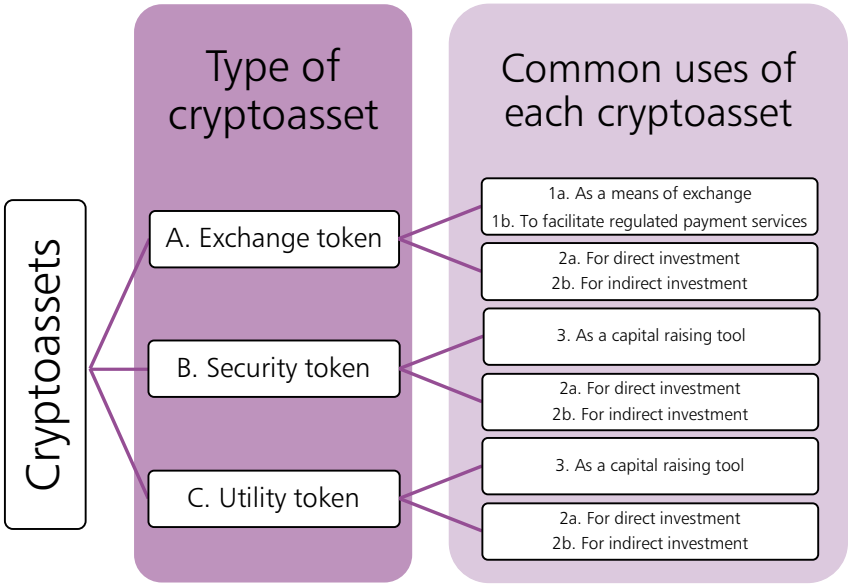
- A firm may use an ICO to issue a new cryptoasset to raise capital (category 3) and an investor may buy that cryptoasset for investment purposes (category 2).
- Bitcoin was originally intended as a means of exchange (category 1) and is still used as such by some. However, most current users of Bitcoin hold it for investment purposes (category 2).

2.16 The FCA will keep this framework under review and update it as necessary as the cryptoasset market continues to develop.

[11] For further detail, see, for example: 'The future of money – speech by Mark Carney', Bank of England, 2018, https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference; and 'Communiqué – Finance Ministers and Central Bank Governors', G20, 2018, https://g20.org/sites/default/files/media/communique_-_fmcbg_march_2018.pdf

[12] Ibid.

Chart 2.B: The Taskforce's cryptoassets framework



Box 2.B: Tokenisation of existing assets using DLT

The DLT that powers cryptoassets can also be used to 'tokenise' existing financial or tangible assets. Tokenisation occurs when an existing asset is recorded on a DLT platform and represented as a token in order to improve processes around trading and transfer of the asset. Depending on the underlying asset, these tokens may look similar to the types of cryptoassets discussed above.

Some taxonomies of cryptoassets draw a distinction between 'native' and 'non-native' tokens. Native tokens are intangible, non-physical assets that derive their value from the DLT platform. Non-native tokens are those which represent tangible and/or financial assets that exist elsewhere.

Many potential applications of DLT in financial services rely on this process of tokenisation. For example, a token could represent a share of ownership of a specific property (a tangible asset) or a government bond (a financial asset). In these examples, the asset (the property or government bond) has been tokenised on the DLT system, and the token represents ownership of the asset which exists outside the system.

The regulatory status of an asset or activity should not be affected by the use of DLT and the process of tokenisation, provided that doing so does not change the financial risk characteristics of the asset or the legal title to the underlying asset. If an existing asset is regulated, representing it as a token using a DLT platform should not change its regulatory status. However, the use of DLT may change the way in which regulation applies. For example, there may be differences in the systems and controls that a firm needs to have.

The UK cryptoasset market

2.17 Reliable and comprehensive data are not yet available, given the market is still in its early stages and developing rapidly. However, using a range of sources, the Taskforce has been able to identify that while the market has grown recently, the UK is not one of the major markets for cryptoasset trading globally.

2.18 **Cryptoassets as a means of exchange:** Cryptoassets are not widely used as a means of exchange in the UK. No major high street or online retailer accepts them as a form of payment, and only around 500 independent shops, bars and cafes around the UK accept Bitcoin.[13] Some of the few major online payment processors who accepted payment via cryptoassets have recently dropped their support.[14] There is also evidence that globally, the usage of cryptoassets for payments (rather than for investment) is declining.[15]

2.19 **Cryptoassets as a form of investment:** Data from cryptoasset exchanges shows that trading of sterling against Bitcoin makes up just 0.33% of daily global trade volumes.[16] This may partially understate the true scale of activity by UK participants in the cryptoasset market; it is currently difficult to exchange sterling directly for cryptoassets, so many active UK traders will first convert to another currency which is more widely supported. The pseudonymous nature of cryptoassets means that direct data on UK consumer holdings of, and exposure to cryptoasset markets is difficult to assess accurately. Online consumer surveys suggest that cryptoasset ownership rates among UK survey respondents are between 5-10% (in line with other G7 economies), however figures for the wider population are likely to be lower.[17]

2.20 **Cryptoassets as a form of capital raising:** The Taskforce estimates that there are 56 ICO projects in the UK that have been used for capital formation, which accounts for 4.3% of the 983 projects globally.[18] Estimates suggest that ICOs, by issuing entities in the UK, have raised $330 million, which accounts for less than one percent of the $24 billion raised globally by ICOs.[19] In general, it is not possible to see the location of the investors in ICOs, but the pattern may be quite different to the location of issuers – that is, while the proportion of funds raised through ICOs by UK entities is small relative to the global market, UK consumers may be investing in ICOs in other jurisdictions. While the total capital raised globally through ICOs increased in 2018, this appears to have been concentrated in larger token sales by

---

13 'Evidence submitted by the Bank of England – Treasury Select Committee on digital currencies', Bank of England, 2018, http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/treasury-committee/digital-currencies/written/82252.pdf

14 'Ending Bitcoin support', Stripe, 2018, https://stripe.com/blog/ending-bitcoin-support

15 'Bitcoin's use in commerce keeps falling even as volatility eases', Bloomberg, 2018, https://www.bloomberg.com/news/articles/2018-08-01/bitcoin-s-use-in-commerce-keeps-falling-even-as-volatility-eases

16 'Bitcoin trade volume by currency', CryptoCompare, as at 26.10.2018, https://www.cryptocompare.com/coins/btc/analysis/USD

17 'Global cryptocurrency survey results', Dalia Research, 2018, https://daliaresearch.com/wp-content/uploads/2018/05/2018-05-07_Pressrelease_Global_Cryptocurrency_Survey-Google-Docs.pdf; and 'Cracking the code on cryptocurrency', ING, 2018, https://think.ing.com/uploads/reports/ING_International_Survey_Mobile_Banking_2018.pdf

18 Figures based on Coinschedule market research, shared with the Taskforce on the 20.08.2018

19 This is less than ICOs issued by entities within other countries, such as the United States ($6.7 billion), Singapore ($1.3 billion), Switzerland ($1.1 billion) but more than raised by entities in Japan ($0.1 billion). This market research was undertaken by Coin Schedule on 20.08.2018 and compared against other sources including CoinDesk, Autonomous Next, Token Data and ICO tracking websites.

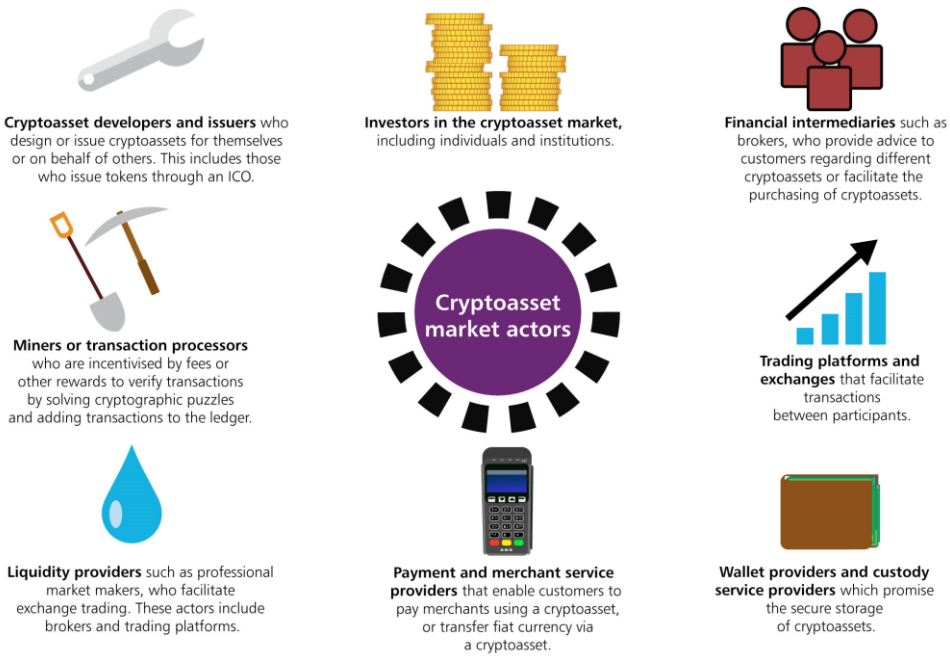
issuing entities outside of the UK.[20] However, the volumes raised through ICOs has been declining globally in the latter half of 2018.[21]

2.21 **UK exchanges:** There are fewer than 15 cryptoasset spot exchanges headquartered in the UK, out of a global market of 206. Only four of these spot exchanges regularly post daily individual trading volumes above $30 million, which is small relative to the global market.[22] The 12 spot exchanges with visible trading activity at the time of writing account for around 2.66% ($249 million) of daily global trading volume.[23] There are several branches of larger international exchanges operating in the UK, but these have only recently been incorporated and are yet to establish a significant footprint in the UK.

Cryptoasset market actors

2.22 A number of different actors are involved in a range of activities related to cryptoassets. The actors are constantly evolving, but the core elements are shown in Chart 2.C.

Chart 2.C: Actors in the cryptoasset market



[20] Neither Telegram or EOS, owned by Block.One, are located inside the UK. For further detail, see 'State of Blockchain 2018 Q2 report', CoinDesk, 2018, https://www.coindesk.com/research/state-of-blockchain-q2-2018/

[21] 'September ICOs 90% down from January', Autonomous Next, as at 08.10.2018, https://next.autonomous.com/thoughts/crypto-september-icos-90-down-from-january-but-venture-funding-is-ray-of-hope

[22] '24 hour volume rankings', CoinMarketCap, as at 26.10.2018, https://coinmarketcap.com/exchanges/volume/24-hour/

[23] Ibid.

Cryptoassets and financial services regulation

2.23 Financial services regulation in the UK is broadly carried out by the FCA and the Bank of England (including through the Prudential Regulation Authority (PRA)).

- The FCA's regulation aims to protect consumers from harm, protect and enhance the integrity of the UK's financial services sector, and promote effective competition in the interest of consumers.
- The Bank of England's regulation aims to ensure the safety and soundness of firms (through the PRA) and to remove or reduce systemic risks that could pose a threat to financial stability (through the Financial Policy Committee and the Bank's supervision of Financial Market Infrastructures).

The current regulatory perimeter

2.24 The regulatory perimeter refers to the types of financial services activity to which regulation is applied. The perimeter includes specified activities and investments defined in the Financial Services and Markets Act (2000) (Regulated Activities) Order (RAO), as well as regulation set out in separate legislation such as the Payment Services Regulations 2017 (PSR). Regulated activities can also be set through EU law, which is then transposed into domestic law.

2.25 The following section and Table 2.A broadly outline how the current regulatory perimeter applies to cryptoasset-related activities, drawing on the Taskforce's framework for cryptoassets. This is a high-level analysis; a particular cryptoasset may fall under several categories, and all categories that might be relevant for that cryptoasset should be considered.

2.26 Whether and what regulation applies to a particular cryptoasset instrument or activity can only be decided on a case-by-case basis. Firms and persons involved in providing services or investments related to cryptoassets should carefully consider if their activities could involve regulated activities or the issuing of financial promotions, and must ensure they are complying with relevant legal and regulatory obligations.[24]

2.27 The FCA has been conducting enquiries into activities of unauthorised firms that are involved in some form of cryptoassets business to determine whether they are carrying on regulated activities that require FCA authorisation. If so, the FCA may investigate and take action, identifying and determining the most serious matters which pose the greatest risk to consumers. The FCA has also been encouraging regulated firms to speak to the FCA supervisors regarding cryptoasset activities they are undertaking or considering.

2.28 In addition, financial services law is not the only potentially applicable body of laws. For example, contract law, consumer law, and advertising standards may apply.

[24] The FCA's general guidance on the regulatory perimeter in the Perimeter Guidance Manual (PERG) may be helpful, see https://www.handbook.fca.org.uk/handbook/PERG.pdf. Firms can also contact FCA Innovate to apply for support in relation to their propositions, see https://www.fca.org.uk/firms/innovate-innovation-hub/request-support.

Table 2.A: Cryptoassets and the current regulatory perimeter

Common uses of cryptoassets	Within perimeter?	Detail	Most common use cases
As a means of exchange.	Depends on type of cryptoasset.	Payment services regulation under the PSR only covers activities involving fiat funds. Cryptoassets used as a means of exchange therefore do not fall within the perimeter. However, some cryptoassets used as a means of exchange may meet the definition of e-money.[25]	Exchange tokens such as Bitcoin or Litecoin can be used to enable the buying and selling of goods and services, but are not considered to be currency or money.[26] Utility tokens may be considered e-money when structured in certain ways, for example when centrally issued, and accepted by third parties as a means of exchange.
To facilitate regulated payment services.	Yes.	When cryptoassets are used to facilitate a regulated payment service as set out in the PSR, the business carrying out this service falls within the perimeter.[27]	Cryptoassets can be used as an intermediary in cross-border transactions (for example, GBP – Bitcoin – USD). Aspects of such services are regulated as money remittance under the PSR, although this will not include the cryptoasset part of the transaction.
For investment directly in cryptoassets.	Depends on type of cryptoasset and type of investor.	Direct investment in cryptoassets does not fall within the perimeter unless the cryptoasset is a security token or the	Exchange tokens such as Bitcoin, security and utility tokens can all be held as a form of investment by firms and consumers.

25 'Payment Services Regulations and Electronic Money Regulations', FCA, 2018, https://www.fca.org.uk/firms/payment-services-regulations-e-money-regulations

26 'The future of money – speech by Mark Carney', Bank of England, 2018, https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference; and 'Communiqué – Finance Ministers and Central Bank Governors', G20, 2018, https://g20.org/sites/default/files/media/communique_-_fmcbg_march_2018.pdf

27 In the UK, payment services are regulated by the Payment Services Regulations 2017 (PSR). In summary, the different types of payment services are: 1.) services enabling cash to be paid into or withdrawn from a payment account and all of the operations required for operating a payment account; 2.) execution of payment transactions - such as direct debits, credit transfers and card payments; 3.) issuing of payment instruments (for example credit or debit cards); 4.) acquiring payment transactions; 5.) money remittance 6.) account information services and 7.) payment initiation services. For further detail, see: 'Payment Services Regulations and Electronic Money Regulations', FCA, 2018, https://www.fca.org.uk/firms/payment-services-regulations-e-money-regulations

Common uses of cryptoassets	Within perimeter?	Detail	Most common use cases
		investment is made by a regulated investment vehicle.	
For indirect investment through financial instruments that reference cryptoassets.	Yes.	Financial instruments that reference cryptoassets likely fall within the perimeter. These instruments may also be financial instruments under MiFID II.[28]	Financial instruments that reference cryptoassets include contracts for difference (CFDs), options, futures, exchange traded notes, units in a collective investment scheme, or alternative investment funds.
As a capital raising tool or as part of a process designed to support a particular project, such as the creation of decentralised networks.	If a security token - yes.	Security tokens amount to a specified investment as set out in the RAO. For example, they are (or have characteristics which mean they are like) securities such as shares, bonds, or units in a collective investment scheme. They may also be transferable securities or financial instruments under MiFID II.[29]	Security tokens or utility tokens are typically issued through an ICO. Exchange tokens can also be issued through an ICO.
	If a utility token – no.	Utility tokens typically do not have the characteristics of specified investments as set out in the RAO.	

28 For further detail, see 'MiFID II', FCA, 2018, https://www.fca.org.uk/markets/mifid-ii

29 Ibid.

Other considerations for regulated firms

2.29 There are also broader considerations for regulated firms that carry out cryptoasset-related activities. Some regulatory provisions in the FCA's Handbook – such as the Principles for Business, the Senior Managers and Certification Regime, the Systems and Controls Provisions, and the Financial Promotions rules – can apply to unregulated activities in certain contexts.

- The Principles for Business are 11 high-level rules which apply to all FCA-regulated firms. Three of the Principles – those relating to the adequacy of a firm's financial resources, the adequacy of a firm's systems and controls, and the duty to deal with the FCA in an open and cooperative way – can extend to unregulated activity undertaken by regulated firms.
- The Senior Managers and Certification Regime allows the FCA to hold senior management in regulated firms to account for unregulated activities. The FCA expects these principles to apply to unregulated cryptoasset-related business being conducted by regulated firms.
- The Systems and Controls Provisions cover, amongst other things, organisational requirements, risk control, record keeping, and employee requirements.[30] The FCA has previously taken action against regulated firms carrying out unregulated activities for breaches in systems and controls.[31]
- Financial Promotions rules placed on regulated firms state that financial promotions must be fair, clear, and not misleading; give a balanced impression of the product or service; and not disguise and diminish important warning statements.

2.30 In addition to the Financial Promotions rules placed on regulated firms, there are also broader legislative restrictions in respect of financial promotions. Section 21 of the Financial Services and Markets Act 2000 (FSMA) provides that a person must not, in the course of business, communicate an invitation or inducement to engage in investment activity unless the promotion has been made or approved by an authorised person or it is exempt. Issuing a financial promotion in breach of Section 21 of FSMA is a criminal offence.

30 The FCA's systems and controls provisions are primarily in the Senior Management Arrangements, Systems and Controls (SYSC) section of the FCA Handbook. For further detail, see 'FCA Handbook', https://www.handbook.fca.org.uk/handbook/SYSC/

31 'Press release – FCA fines five banks £1.1 billion for FX failings and announces industry-wide remediation programme', FCA, 2014, https://www.fca.org.uk/news/press-releases/fca-fines-five-banks-%C2%A311-billion-fx-failings-and-announces-industry-wide

Challenges posed by cryptoassets for the regulatory perimeter

2.31 There are instances in which the government reassesses the regulatory perimeter, primarily for one or more of the following reasons:

- there is evidence of regulatory arbitrage to avoid the policy intention of regulation
- prior policy decisions to exclude a particular activity produce unintended consequences that must be addressed
- future business models or use cases were not predicted or considered when the perimeter was defined, and are therefore not appropriately captured by the perimeter

2.32 The Taskforce considers that cryptoassets fall into this third category. This is a new and fast-paced market with complex and opaque products, and distinguishing whether a cryptoasset falls within regulation can be difficult.

Security tokens and other similar products

2.33 While security tokens fall within the current regulatory perimeter and it is the responsibility of firms to determine whether their activities require authorisation, the Taskforce recognises that the complexity and opacity of many cryptoassets means it is difficult to determine whether they qualify as security tokens.

2.34 The Taskforce also recognises that there may be instances in which firms issue cryptoassets that have comparable features to investments (such as those set out in the RAO) but are structured in such a way that they fall outside the regulatory perimeter (either intentionally or not). In such circumstances, it is important to consider the logical position of the perimeter to ensure that cryptoassets that are structured in similar ways and seek to achieve similar outcomes are treated in similar ways by regulators. Given the complexity and variety of cryptoasset products intended to function as investments, the Taskforce is concerned that there is not sufficient consistency of regulatory application in these circumstances.

2.35 Chapter 5 discusses in more detail how the authorities will provide further clarity on the application of regulation to security tokens, and ensure a consistent application of regulation.

Exchange tokens

2.36 While security tokens are a new form of an existing financial instrument, the Taskforce considers that exchange tokens do not meet the traditional definition of a financial instrument. However, from the perspective of consumers and investors, exchange tokens are most commonly used as a financial investment, and have no use other than as a financial investment or means of exchange. This highlights that these assets are unlike other financial services products, and do not fit neatly within existing definitions or financial regulatory frameworks.

Chapter 3

Impacts of distributed ledger technology

Box 3.A: Summary

The Taskforce considers that DLT has the potential to deliver significant benefits in financial services, as well as in a broad range of other sectors. As an emerging leader in DLT, the UK should look to capitalise on these opportunities.

DLT has the potential to enhance system resilience; improve the efficiency of end-to-end settlement processes and reporting, auditing and oversight; and enable greater automation.

However, the Taskforce considers that the technology is still in its early days, and there are some significant challenges to wider adoption.

The Taskforce does not consider there to be regulatory barriers to the adoption of DLT. The PRA and FCA will continue to take a technologically neutral approach to regulation, as well as providing a platform for innovation.

Use of DLT in the UK

3.1 The UK is an emerging leader in the development of DLT. The UK has the second largest number of DLT start-ups in the world, following the United States.[1] London also has the second highest number of DLT projects listed on code repository GitHub, just behind San Francisco.[2]

Potential benefits of DLT in financial services

3.2 Chapter 2 described four key elements of DLT: data distribution, decentralisation of control, cryptography, and programmability/automation. Using examples from the FCA's Regulatory Sandbox, the Bank of England's Fintech proofs of concept and other projects, this chapter explores how certain combinations of these elements have the potential to bring benefits in financial services to both firms and consumers. There are many more DLT use cases within financial services, and other sectors.

---

1 'State of Blockchain 2018 Q2 report', CoinDesk, 2018, https://www.coindesk.com/research/state-of-blockchain-q2-2018/; and 'Blockchain Start-up Tracker', Outlier Ventures, 2016, https://outlierventures.io/research/the-blockchain-startup-tracker/

2 'The state of the token market', Fabric Ventures, 2017, https://www.fabric.vc/report

Enhanced resilience

3.3 It may be possible to realise resilience benefits in DLT platforms which are highly distributed and decentralised. This was a theme noted by respondents to the FCA's Discussion Paper on DLT and in the Taskforce's stakeholder engagement. Maintaining copies of data that are recorded and accessed by multiple participants reduces the impact of data loss caused by an incident with any one participant. In addition, network consensus may also provide enhanced cyber resilience, as an attacker would need to take control of multiple participants to control the system. DLT can also eliminate, or reduce, central points of failure, so that if one participant in the network fails, others can continue processing.

Box 3.B: Bank of England proof of concept – transferring asset ownership

The Bank of England recognised the resilience benefits of DLT systems in one of its proofs of concept in June 2016.[3] This involved building a multi-node distributed ledger environment on the Ethereum protocol to enable the transfer of ownership of a fictional asset among several participants, including a central authority that could establish the supply of the asset and permissions to access and use the ledger. The proof of concept demonstrated that participants in the network could continue to trade the fictional asset without the central authority, removing the single point of failure of the system and considerably increasing its resilience. This work also highlighted a number of potential limitations, which were not explored in this proof of concept, but which merited further investigation, including scalability, security, privacy, interoperability and sustainability.

More efficient end-to-end settlement processes

3.4 DLT platforms can enable a wider range of participants to directly access their own immutable copy of identical data. When multiple participants can get timely access to the same, distributed but synchronised data, it provides a single source of truth. This results in more efficient end-to-end settlement processes, as it can eliminate the need for costly and slow reconciliation processes between platforms (and disputes when different systems do not tally). This benefit has been widely acknowledged, including by the European Securities and Markets Authority[4] and in the Taskforce's stakeholder engagement.

[3] 'Fintech Accelerator proof of concept', Bank of England, 2016, https://www.bankofengland.co.uk/research/fintech/-/media/boe/files/fintech/pwc.pdf

[4] 'Press release: ESMA assesses DLT's potential and interactions with EU rules', European Securities and Markets Authority, 2017, http://www.esma.europa.eu/press-news/esma-news/esma-assesses-dlt%E2%80%99s-potential-and-interactions-eu-rules

Box 3.C: FCA Regulatory Sandbox – issuance processes

One firm within the FCA's Sandbox used a permissionless DLT network to mimic the traditional issuance process for a short-term debt instrument, whilst another used a permissionless DLT network to test a platform to issue a structured product.

Both these tests demonstrated that DLT can help to streamline traditional approaches, whilst meeting legal and regulatory requirements. In a small scale test, cost reductions were achieved by a high degree of automation and by removing the need for registrars and nominees. For example, for the cost of clearing, settlement and custody of a traditionally issued product, the DLT-based solution could issue 16 equivalent products.

Due to the permissionless DLT network, ownership of an asset is recorded publicly which increases transparency for investors who, to some extent, do not rely on the issuer to hold the record of ownership anymore. This also eliminates the need for reconciliation between network participants because they share the same record of ownership, supporting more efficient settlement operations.

More efficient reporting, auditing and oversight

3.5 DLT's shared data model may reduce manual reporting within and between financial institutions, or between financial institutions and the regulators. For example, regulators could be granted access rights to consult or retrieve data stored on DLT ledgers, giving them access to one accurate and verifiable ledger in real-time.[5] Research also suggests that such uses could automate other processes, such as auditing.[6]

Box 3.D: Investment Association Digital Fund

As part of the Asset Management Taskforce, chaired by the Economic Secretary to the Treasury, the Investment Association is looking to create the UK's first digital fund. This aims to use DLT to streamline back office fund administration functions, and to increase speed and reduce cost. By reducing the number of intermediaries, a fund will make cost savings that could result in lower costs for the end investor. A DLT-enabled fund would also enable real-time clearing and settlement.[7]

[5] Ibid.

[6] 'Blockchain technology: a game-changer in accounting?', Deloitte, 2016, https://www2.deloitte.com/content/dam/Deloitte/de/Documents/Innovation/Blockchain_A%20game-changer%20in%20accounting.pdf

[7] 'The Investment Management Strategy II', HM Treasury, 2017, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/665668/The_Investment_Management_Strategy_II.pdf; and 'Fintech sector strategy', HM Treasury, 2018.

Box 3.E: Regulatory Technology ('RegTech')

The FCA's RegTech team worked with the R3 consortium and two major banks in September 2017 to develop a prototype application for regulatory reporting of mortgage transaction data using the Corda DLT platform. By hosting a 'regulator node' on the network, the FCA was able to receive real-time mortgage transaction reports from the two banks in a test environment. The prototype records, executes and manages financial agreements, with DLT used to enable secure communication between participants. This collaboration demonstrated how DLT could enable continuous regulatory reporting for financial institutions at comparatively low cost.

In 2017, the FCA and Bank of England initiated a Digital Regulatory Reporting pilot, which aims to develop a prototype using a DLT network that can demonstrate the potential benefits of an end-to-end process for machine executable reporting.[8] The pilot will share the findings with industry, ask for feedback, and evaluate the potential costs and benefits of a new reporting mechanism.

Efficiency gains from automated contract tools

3.6 DLT has the potential to improve efficiency using automated reporting and smart contracts. DLT platforms built for financial services generally have a high degree of programmability, which allows them to be tailored to a specific use case. A simple example could be locking the funds for a transaction, which are then automatically released to the recipient only when specific conditions are met (for example, the confirmed delivery of goods).

[8] The Digital Regulatory Reporting pilot was initiated in November 2017, following a successful two-week TechSprint to examine how technology, like DLT, can make the current system of regulatory reporting more accurate, efficient and consistent. The pilot is an industry collaboration with a number of regulated firms (Santander, Lloyds, Barclays, Nationwide, NatWest and Credit Suisse), together with the University College Cork and University College London. For further detail, see 'Digital Regulatory Reporting', FCA, 2018, https://www.fca.org.uk/firms/our-work-programme/digital-regulatory-reporting

Box 3.F: Trade finance

Trade finance was frequently identified in the Taskforce's stakeholder engagement as a use case that demonstrates how DLT could speed up settlement times and increase efficiency through automation. For example, smart contracts could replace letters of credit and create a record of ownership at each step.

Stakeholders noted that the nearer-term take-up of DLT is most likely for processes such as trade finance that are old and highly paper-based.

The Hong Kong Monetary Authority and the Monetary Authority of Singapore are developing a cross-border infrastructure based on DLT to digitalise trade finance. The aim of the project is to build an information highway that will make cross-border trade and financing cheaper and safer, as well as removing the inefficiencies in the existing paper-based system.[9]

Box 3.G: FCA Regulatory Sandbox – insurance industry

Various Sandbox firms have demonstrated that DLT platforms can be used with regulated payments and e-money services to allow the deployment of smart contracts to execute transactions automatically. A Sandbox firm tested a fully automated, DLT-based flight delay insurance product. When a flight was delayed, the system would automatically trigger a pay-out in a cryptoasset or in fiat currency.

Enabling the tokenisation of existing assets

3.7 DLT platforms can enable existing assets to be 'tokenised' and represented as tokens on a DLT platform (see Box 2.B). Firms or investors may do this to gain the advantages of the technology, such as efficiency improvements from smart contracts or enhanced resilience.

3.8 Recording ownership in this way also allows fractional ownership of assets, so that users can tokenise partial units of an asset, such as property. This has the potential to lower barriers to investment, improve liquidity and tradability, and increase efficiency.

[9] 'Press release – Hong Kong and Singapore launch a joint project on cross-border trade and trade finance platform', Hong Kong Monetary Authority (HKMA), 2017, https://www.hkma.gov.hk/eng/key-information/press-releases/2017/20171115-6.shtml

Box 3.H: FCA Regulatory Sandbox – tokenisation of existing assets

A firm in the Sandbox tested the use of a DLT-enabled smart contract to allow UK private limited companies to digitally represent – or tokenise - their shares and corporate governance processes. Changes of share ownership on the firm's platform were directly updated in the Companies House register, resulting in improved efficiency and cost savings.

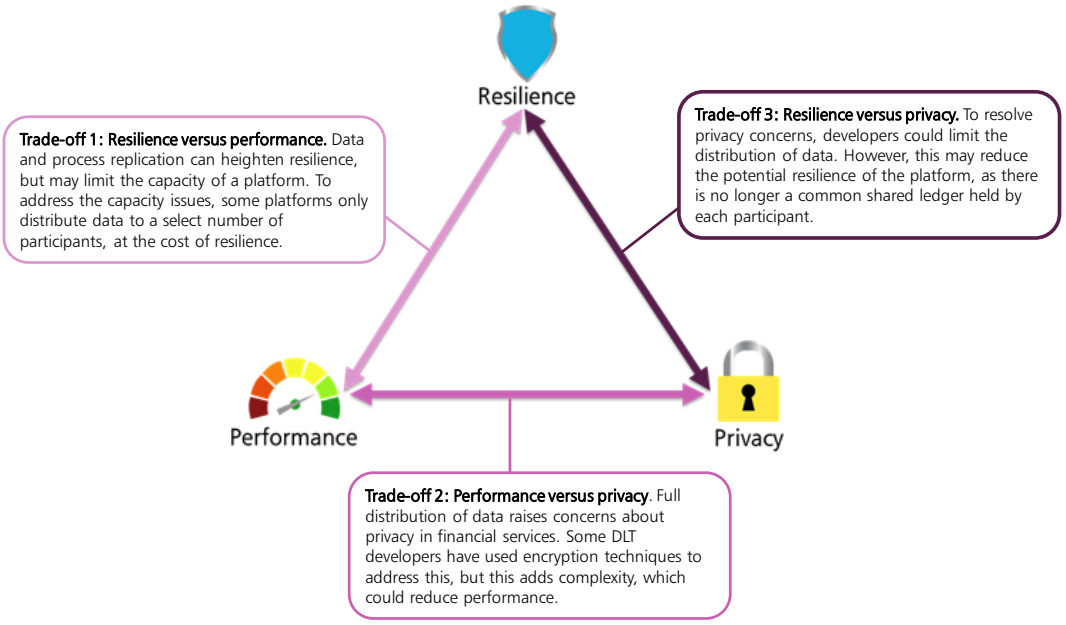
Challenges associated with the use of DLT

3.9 Despite a broad range of use cases, DLT is still a relatively young technology and there are a several challenges which must be overcome before it can be deployed at scale in financial services. There are both trade-offs in the design of DLT platforms and other barriers to the wider adoption of DLT.

Technological trade-offs in the design of DLT

3.10 Design choices made by DLT developers, particularly with respect to the degree of data distribution and decentralisation of control, often lead to important trade-offs that must be made between some of the features of DLT platforms. Some of the key trade-offs are between performance (for example, transaction capacity and scalability), resilience and privacy. Future technical advancements may alter these trade-offs.

Chart 3.A: Trade-offs in DLT design



Box 3.I: Privacy considerations

The potential for data to be fully distributed often leads to transparency being cited as a benefit of DLT. However, in financial services it may be better to consider the *appropriate* sharing of data, because it is rare that every participant should have access to every piece of data recorded on the platform. Platforms with the full transparency of the Bitcoin blockchain, in which every transaction amount, source, and destination is publicly visible, would be unusable for many financial services applications. Consequently, privacy of data is also important, both for commercial reasons, and because of the UK's commitment to high levels of data protection.[10]

One of the Bank of England's proofs of concept explored privacy in DLT with Chain.[11] This was an academic exercise focused on cryptographic techniques to achieve privacy in a DLT system, whilst keeping data shared amongst participants. This proof of concept found that it appears theoretically possible to configure a DLT platform in such a way that transactions remain private whilst keeping all data shared across the network. However, the trade-offs (especially with respect to scalability, speed of transaction processing, and risks around the security of the cryptographic techniques employed) would need to be further explored.

Potential barriers to the wider adoption of DLT

3.11 **Interoperability of systems:** DLT deployment is likely to be gradual, which means different platforms will need to be able to work with legacy systems, and with each other. This will require coordinated technology standards to realise many of the benefits set out earlier in this chapter.[12] The International Organisation for Standardisation (ISO) have started to develop a set of standards.[13] Coordination such as this will be important to encourage take-up on a global scale, so that there are not different standards in different jurisdictions.[14]

3.12 **Competition issues:** As with the application of other new technologies, firms' use of DLT may also raise a number of competition questions. For example, if a closed or permissioned DLT network developed to become essential infrastructure (for example in clearing and settlement) then there could be competition concerns around access.[15]

---

10 See, for example: 'Data Protection Act 2018 Overview', DCMS and Home Office, 2018, https://www.gov.uk/government/publications/data-protection-act-2018-overview; and 'Guide to the General Data Protection Act (GDPR)', Information Commissioner's Office, 2018, https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/

11 'Fintech proof of concept', Bank of England, 2018, https://www.bankofengland.co.uk/-/media/boe/files/fintech/chain.pdf

12 'Press release: ESMA assesses DLT's potential and interactions with EU rules', ESMA, 2017, https://www.esma.europa.eu/press-news/esma-news/esma-assesses-dlt%E2%80%99s-potential-and-interactions-eu-rules

13 'ISO/TC 307 Blockchain and distributed ledger technologies', International Standards Organisation, 2016, https://www.iso.org/committee/6266604.html

14 'DLT in payment, clearing, and settlement', BIS, 2017, https://www.bis.org/cpmi/publ/d157.htm

15 For further detail, see: 'Speech by Mary Starks – Blockchain: considering the risks to consumers and competition,' FCA, 2018, https://www.fca.org.uk/news/speeches/blockchain-considering-risks-consumers-and-competition

3.13 **Legal challenges**: Aside from financial services regulation, the application of DLT might also pose challenges with respect to civil law (for example, on the question of enforceability of smart contracts) and data protection (for example, the General Data Protection Regulation (GDPR)).[16] Amongst other provisions, GDPR establishes a right to erasure, which might cause tension with core features of some DLT networks that offer immutable data storage (without the technical possibility of erasure). There are particular DLT solutions, which, when compared to more traditional database technologies, claim to provide a more efficient way of complying with GDPR requirements (for example, by only sharing selective data or storing data locations rather than data files on-chain).[17] All organisations that use technologies such as DLT to process personal data must comply with the Data Protection Act 2018 and the GDPR.

3.14 **Settlement finality:** In payment systems, it is essential to know when a payment is final and irrevocable. In some versions of DLT, it can take time to ensure that all participants agree on the same version of the ledger. In rare cases, this means that a payment that appears to have been successfully completed could be 'overwritten' with a different version of the ledger. However, this is primarily a problem for permissionless platforms;[18] in permissioned platforms, consensus mechanisms can be designed to ensure that the point of final settlement is much clearer.

3.15 **Governance challenges:** DLT is by its nature a shared system. As a result, firms will have to pay careful attention to allocating responsibilities appropriately, given the absence of a central point of authority.[19] This is more of an issue for permissionless systems.

3.16 **Banking relationships:** Many stakeholders have highlighted that it is difficult for firms working in the DLT industry, including cryptoasset firms, to access banking services in the UK.

3.17 **Awareness and understanding**: Another commonly cited barrier to the effective take-up of DLT is the lack of understanding and awareness of how and when to use the technology appropriately. This may lead to situations where DLT is pursued for applications for which it is unsuitable or unnecessary, and where more traditional and established technologies may be sufficient. Conversely, because the technology is still in the early stages of development, some of the Taskforce's industry engagement noted that firms may not be aware of the range of potential applications and may therefore choose not to experiment with DLT.

---

16 GDPR seeks to protect personal information and improve the way in which firms collect, store and process personal data. It has been effective since May 2018 and is overseen and enforced in the UK by the Information Commissioner's Office. For further detail, 'Guide to the General Data Protection Act (GDPR)', Information Commissioner's Office, 2018, https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/

17 'DLT FS17/04', FCA, 2017, https://www.fca.org.uk/publications/feedback-statements/fs17-4-distributed-ledger-technology

18 This is because most permissionless platforms use consensus mechanisms such as proof of work, which offer *probabilistic settlement:* the chance of a transaction being overwritten falls over time until it is statistically close to certain that the transaction will not be overwritten.

19 'Discussion Paper on DLT', FCA, 2017, https://www.fca.org.uk/publication/discussion/dp17-03.pdf

Regulatory approaches to DLT

3.18 The FCA and the PRA (subject to any risks to their respective objectives) take a technologically neutral approach to regulation. Regulation is an enabler of positive innovation based on new technologies, as well as a means of containing undue risk. A technologically neutral approach means that the regulators do not mandate regulated firms to use a particular type of technology to facilitate their services.

3.19 The technology of choice will influence associated operational risks, but will not influence the regulatory status of a firm. For example, dealing in paper-based or token-based bonds will not influence the regulatory status of a firm.

3.20 Both the FCA and the Bank of England will continue to explore whether there are any unintended consequences of regulation to the innovations of new technologies, including DLT. The FCA considered this in their Discussion Paper on DLT and concluded that no changes to regulations were required.[20] The Taskforce therefore believes that the UK regulatory approach is well suited to support the development of DLT in financial services.

Box 3.J: Bank of England – RTGS renewal programme

The Bank of England has established a programme to deliver a renewed Real-Time Gross Settlement (RTGS) service.[21] RTGS holds accounts for banks, building societies and other institutions. It delivers final and risk-free settlement, by settling the net inter-bank movements arising from retail payments, and by settling high value (CHAPS) payments in real-time. RTGS is the hard infrastructure at the core of the UK payment system, processing payments of approximately £600 billion a day, equivalent to a third of annual UK GDP.

The renewed RTGS service will offer a diverse and flexible range of settlement models, to enable existing and emerging payment infrastructures to access central bank money.[22] The Bank of England has said that future forms of settlement, including those based on DLT, will be able to plug into the renewed RTGS service. This renewal of core infrastructure is intended to support private innovation.

In 2018, the Bank of England ran a proof of concept with a range of firms in order to understand how a renewed RTGS service could be capable of supporting settlement in systems operating on innovative payment technologies, such as those built on DLT.[23]

---

20 ibid.

21 'The Bank of England's Real-Time-Gross-Settlement infrastructure', Bank of England, 2012, https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2012/the-boes-real-time-gross-settlement-infrastructure.pdf

22 'A blueprint for a new RTGS service for the UK', Bank of England, 2017, https://www.bankofengland.co.uk/-/media/boe/files/payments/a-blueprint-for-a-new-rtgs-service-for-the-uk.pdf

23 For further detail on the outcomes of this proof of concept, see: 'RTGS renewal programme proof of concept: supporting DLT settlement models', Bank of England, 2017, https://www.bankofengland.co.uk/-/media/boe/files/payments/rtgs-renewal-programme-proof-of-concept-supporting-dlt-settlement-models.pdf

All participants confirmed that the planned functionality for the renewed RTGS service would enable their systems to connect and to achieve settlement in central bank money. A number of recommendations were made to ensure optimal access to central bank money, which the Bank of England will consider as part of the renewal programme.

Chapter 4

Impacts of cryptoassets

Box 4.A: Summary

Cryptoassets are not widely used in the UK, and the UK is not a major market relative to the global cryptoasset market. However, interest and activity in cryptoassets in the UK has grown over the past few years.

The Taskforce has assessed a wide range of potential benefits and risks associated with cryptoassets. It has concluded that there is limited evidence of the current generation of cryptoassets delivering benefits. However, benefits may materialise in the future, for example through the use of ICOs as a capital raising tool.

The Taskforce has concluded that cryptoassets pose a range of risks, notably to consumers (who may face large losses), market integrity (due to manipulation and other market-abuse style strategies) and financial crime. While cryptoassets currently pose no material risks to financial stability, this may change in the future.

Potential benefits of cryptoassets

4.1 Using the framework set out in Chapter 2, the Taskforce has considered whether cryptoassets present benefits when used:

- **as a means of exchange,** including by increasing the efficiency of international transfers
- **for investment,** including by widening access to new investment opportunities
- **as a capital raising tool,** including through streamlining the capital raising process

4.2 When **used as a means of exchange**, cryptoassets could allow for more efficient and cheaper transactions as a result of fewer intermediaries being involved (for example, micro-payments, simultaneous exchange and international transfers).[1] Some proponents also suggest that cryptoassets could improve the transparency and traceability of transactions; improve system resilience given the lack of a central

[1] Tests in the FCA's Regulatory Sandbox have demonstrated that a regulatory compliant use of cryptoassets for international transfers is possible at a small scale, and can lead to time and cost savings. For further detail, see 'Regulatory sandbox lessons learned report', FCA, 2017, https://www.fca.org.uk/publication/research-and-data/regulatory-sandbox-lessons-learned-report.pdf

system susceptible to outages; and lower barriers to entry, encouraging competition and providing, to some extent, an alternative to traditional payment services. However, these potential benefits are largely due to the use of DLT, rather than cryptoassets specifically, and would likely also apply to the use of a tokenised existing asset as a means of exchange.

4.3 When used for investment, proponents suggest that cryptoassets have the potential to widen access to new and different types of investment opportunities. However, the Taskforce considers that, in the current market, this broad access is likely to expose consumers to inappropriate levels of risks and exacerbate risks associated with the use of cryptoassets for illicit activity.

4.4 Evidence of the current generation of cryptoassets delivering any of these benefits is limited and many use cases are unproven at a large scale. This view was confirmed by much of the Taskforce's stakeholder engagement. The Taskforce therefore considers that, in many cases, the risks posed by the current generation of cryptoassets outweigh any potential benefits.

Cryptoassets used to support capital raising

4.5 The Taskforce has concluded that if benefits develop in the future, they are most likely to materialise through the use of ICOs as a capital raising tool. ICOs have the potential to present a range of opportunities, including:

- Supporting innovation and competition: Many ICOs seek to fund new, innovative business models, products and services. They may also incentivise improvements in traditional capital raising processes by introducing competition.
- Improving efficiency: ICOs directly link cryptoasset issuers with investors, which has the potential to make the capital raising process more streamlined, faster and cheaper, particularly for small issuances.
- Addressing financing gaps: Many high-risk, early stage projects struggle to raise funds. ICOs may help address these gaps by directly connecting firms and investors looking for high-risk, high-reward investments; and by allowing entrepreneurs to raise capital without needing to offer equity, in some circumstances.
- Building a new investor and customer base: The global accessibility of ICOs may also enable new sources of capital to be unlocked. Investors may also provide an initial customer base for new firms and create a community of early adopters for the product or service being developed.

4.6 In the current market, these benefits are most likely to accrue to developers and issuers, who can more efficiently access existing and new sources of capital. However, without appropriate protections, this is potentially to the detriment of consumers. This is discussed in more detail later in this chapter.

Risks associated with cryptoassets

4.7 The Taskforce has identified a range of risks associated with cryptoassets, including:

- **risks of financial crime**, including opportunities for cryptoassets to be used for illicit activity and cyber threats
- **risks to consumers**, who may buy unsuitable products, face large losses, be exposed to fraudulent activity, struggle to access market services, and be exposed to the failings of service providers
- **risks to market integrity**, which may lead to consumer losses or damage confidence in the market
- **potential implications for financial stability**, which may arise if the market grows and cryptoassets are more widely used

4.8 While most of the risks identified by the Taskforce are present across different types and uses of cryptoassets, the nature or extent of particular risks may differ.

4.9 Whilst tax was outside the Taskforce's remit, HM Treasury is working closely with HM Revenue and Customs (HMRC) to consider the tax issues raised by cryptoassets. Both authorities recognise the risks of tax avoidance and evasion arising from the increased use of cryptoassets and are continuing to review the range of enforcement tools and approaches at HMRC's disposal.

Risks of financial crime

4.10 Cryptoassets pose risks around criminal activity such as money laundering and terrorist financing because of their accessibility online, their global reach and their pseudo-anonymous nature.

4.11 The government's 2015 and 2017 National Risk Assessments of Money Laundering and Terrorist Financing (NRAs) assessed the risks associated with cryptoassets to be relatively low for both money laundering and terrorist financing, as there was little evidence of them being used to launder large amounts at high volume.[2] However, the 2017 NRA noted the role cryptoassets can play in laundering the proceeds of cyber-dependent crime (i.e. crime conducted through computer technology). Cryptoassets can also act as a method for payments between criminals and for the purchase of illicit tools or services sold online in criminal marketplaces.

4.12 Since the 2017 NRA, UK law enforcement authorities have increasingly identified cases of cryptoassets being used to launder illicit proceeds of offline crime. While the scale of this activity is unknown, certain features of cryptoassets are particularly attractive to criminals and the risks of cryptoassets being used in money laundering are expected to grow as cryptoassets become increasingly accessible.

---

[2] 'UK national risk assessment of money laundering and terrorist financing', HM Treasury and Home Office, 2015, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/468210/UK_NRA_October_2015_final_web.pdf; and 'National risk assessment of money laundering and terrorist financing', HM Treasury and Home Office, 2017, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/655198/National_risk_assessment_of_money_laundering_and_terrorist_financing_2017_pdf_web.pdf

Attractive features include the anonymity afforded by cryptoasset ATMs, by peer-to-peer exchange facilities, and by the privacy features of some coins.

4.13 UK law enforcement authorities are working with international partners to continue to develop their understanding of the role cryptoassets can play in money laundering. Europol estimates that £3-4 billion is laundered using cryptoassets each year in Europe; however, this remains a small proportion of total funds laundered in Europe, which stands at £100 billion.[3] In addition, a recent Financial Action Task Force report to the G20 noted that suspicious transaction reporting linked to cryptoassets is rising globally.[4]

Risks to consumers

4.14 Cryptoassets pose a range of substantial risks to consumers, which stem from consumers purchasing unsuitable products without having access to adequate information; from fraudulent activity; and from the immaturity or failings of market infrastructures and services.

Unsuitable products and insufficient information

4.15 Consumers may suffer unexpected or large losses without regulatory protection as a result of buying cryptoasset products that are not suitable for their needs, or buying these products while being unaware of the associated risks. The high volatility of cryptoassets, which may attract investors, can also lead to substantial losses.[5]

4.16 Consumers may also invest in products that are poor value due to unclear price formation and pricing practices, high fees and difficulty in assessing fundamental value. Investment in cryptoassets could also represent an opportunity cost for some consumers, who might forego another, potentially more suitable, investment to purchase a cryptoasset product.

4.17 The key drivers of this behaviour are a search for high returns, and some consumers lacking understanding of cryptoassets and their volatility and risks. Insufficient consumer understanding stems from the complexity of these products and a lack of available information and appropriate warnings regarding the risks. Consumers may also be unaware of the limited regulatory protections for some cryptoassets and the lack of recourse to the Financial Services Compensation Scheme (FSCS) and the Financial Ombudsman Service (FOS).

4.18 The FCA has commissioned qualitative consumer research to better understand UK consumers' understanding and attitude towards cryptoassets. This research is still underway, however preliminary findings from speaking to a number of consumers about their experience of investing in cryptoassets suggest that:

---

[3] 'Criminals hide 'billions' in crypto-cash – Europol', BBC, 2018, https://www.bbc.co.uk/news/technology-43025787

[4] 'FATF report to the G20 Finance Ministers and Central Bank Governors', Financial Action Taskforce, 2018, http://www.fatf-gafi.org/media/fatf/documents/reports/FATF-Report-G20-FM-CBG-July-2018.pdf

[5] For example, in 2017, the average volatility of the top ten exchange tokens by market capitalisation was more than 25 times that of the US equities market. See: 'The future of money – speech by Mark Carney', Bank of England, 2018, https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference

- some respondents perceived cryptoassets as a shortcut to easy money and wealth, citing 'fear of missing out' and influence from social media as reasons for investing
- some respondents tended to overestimate their knowledge of cryptoassets and the underlying technology
- because of the language and images associated with cryptoassets (such as 'mining' and 'coins'), some respondents seemed to have a sense that they were investing in tangible assets

4.19 Advertising regarding cryptoassets, which is often targeted at retail investors, is not typically fair or clear and can be misleading. Adverts often overstate benefits and rarely warn of volatility risks, the fact consumers can both grow and lose their investment, and the lack of regulation. There are also examples of regulated firms marketing cryptoasset products without clarifying that this part of their business is not regulated.

4.20 Market abuse-style activities, to which cryptoasset and related markets are vulnerable, can also result in losses for consumers (referred to in more detail in paragraph 4.30).

4.21 In addition to these risks which can be seen across different cryptoassets, certain types of cryptoassets produce some specific risks to consumers:

- **ICOs:** It can be particularly difficult for consumers to assess the risks of a particular token being issued, as the 'white paper' documents that typically accompany ICOs are not standardised and often feature exaggerated or misleading information. Given the lack of clear information, consumers may not understand that many of these projects are high-risk and at an early stage, and therefore may not suit their risk tolerance, financial sophistication or wealth.
- **Financial instruments that reference cryptoassets:** Although regulated, financial instruments that reference cryptoassets also produce some specific risks to consumers. Leveraged derivatives, such as CFDs and futures, can cause losses that go beyond the initial investment. The risk of trading losses can be exacerbated by product fees such as financing costs and spreads, as well as by a lack of transparency in the price formation of the underlying cryptoasset.

Fraudulent activity and cybercrime

4.22 Consumers are also at risk of losses resulting from fraudulent activity and deceptive practices in the cryptoasset market. In particular, the promise of high yield returns makes it easy for scammers to attract customers. A recent report by Action Fraud showed there were 203 reports of cryptoasset scams in June – July 2018, with victims reportedly losing over £2 million in total (an average of over £10,000 per person).[6] Action Fraud reported that fraudsters cold call victims and use social media platforms to advertise 'get rich quick' investments.

[6] 'Cryptocurrency fraud leads to £2 million worth of losses this summer', ActionFraud, 2018, https://www.actionfraud.police.uk/news/2m-lost-to-cryptocurrency-fraud-aug18

4.23 While fraudulent activity exists across the range of cryptoassets, it is likely to differ between types of cryptoassets. Evidence suggests there are particularly significant risks of fraudulent activity associated with ICOs. A recent study indicated that approximately 25% of ICOs could be fraudulent[7], whilst other estimates suggest that 46% of ICOs issued in 2017 have already failed.[8] In many cases investors do not receive what they were promised and issuers do not deliver the intended product or service. This is in part driven by a conflict of interest for the issuer of the ICO, who may seek to maximise the capital being raised by failing to be transparent, not providing sufficient details of the risks, and misleading consumers. In some cases, large sums of money have been raised for projects without appropriate plans or capability for delivery.

4.24 Cryptoassets also present risks to consumers through cybercrime. Cyber threats – which stem from failings on the part of exchanges and wallet providers to put in place appropriate systems and controls – can put consumers at risk of large losses. Cryptoassets are now viewed as high-value targets for theft. Both users and service providers such as wallets and exchanges are increasingly being targeted by cybercriminals, in particular to obtain the private keys which enable consumers to access and transfer their cryptoassets.[9] Some of the largest and most recent publicly-known hacks and thefts include Coincheck ($540 million stolen in January 2018), Mt Gox (nearly $500 million stolen in February 2014) and Zaif ($60 million stolen in September 2018), all in Japan, and Bithumb ($32 million stolen in June 2018) in South Korea.[10] Given the traceability of cryptoassets varies, it can be difficult for law enforcement to track stolen cryptoassets and take action against perpetrators, meaning theft and associated consumer losses are often irrecoverable.

4.25 In addition, a new but growing cybercrime threat – known as 'cryptojacking' – involves the victim's computer processing power being used to mine for cryptoassets without their explicit knowledge and permission.[11] Many internet security providers now report that cryptojacking has joined ransomware as one of the leading malware threats. One US-based software company reported that, in the first three months of 2018, new cryptojacking malware grew by 1,189%, with new ransomware threats falling by 32% from the previous quarter.[12]

---

7 'BIS Annual Economic Report', Bank for International Settlements, 2018, https://www.bis.org/publ/arpdf/ar2018e5.pdf

8 Data originally from 'TokenData', 2018, https://www.tokendata.io/, printed in 'ICOs are even riskier than you think', Bitcoin News, 2018, https://news.bitcoin.com/46-last-years-icos-failed-already/

9 The National Cyber Security Centre (NCSC) has also highlighted some of the cyber risks associated with cryptoasset storage, for further detail, see: 'Weekly threat report 2nd February 2018', NCSC, 2018, https://www.ncsc.gov.uk/report/weekly-threat-report-2nd-february-2018

10 'Coincheck: world's biggest ever digital currency 'theft'', BBC, 2018, https://www.bbc.co.uk/news/world-asia-42845505; 'MtGox gives bankruptcy details', BBC, 2014, https://www.bbc.co.uk/news/technology-26420932; 'Japan's Tech Bureau says about $60m stolen in crypto hack', Reuters, 2018, https://uk.reuters.com/article/crypto-currencies-japan-cybercrime/japans-tech-bureau-says-about-60-mln-stolen-in-crypto-hack-idUKL3N1W5692; and 'Bithumb: hackers 'rob crypto-exchange of $32m'', BBC, 2018, https://www.bbc.co.uk/news/technology-44547250

11 'The cyber threat to UK business', NCSC and National Crime Agency (NCA), 2018, http://www.nationalcrimeagency.gov.uk/publications/890-the-cyber-threat-to-uk-business-2017-2018/file

12 'McAfee Labs Threats Report', McAfee, 2018, https://www.mcafee.com/enterprise/en-us/assets/reports/rp-quarterly-threats-jun-2018.pdf

Market infrastructures and services

4.26 Risks to consumers may also result from immature market structures and failings of service providers such as exchanges, trading platforms and wallet providers.

4.27 Immature market structures and operational risk issues associated with cryptoasset exchanges, trading platforms and wallet providers may delay or deny consumers easy access to their invested funds and/or secondary market trading. This is particularly the case for less widely used cryptoassets, where there is no guarantee of liquidity in the secondary market, which makes knowing the fair price difficult and may prevent investors from selling cryptoassets and realising value.

4.28 Cryptoasset exchanges, trading platforms and wallet providers are key services required to access cryptoassets and can present risks to consumers. They may fail to put in place appropriate systems and controls, leaving consumers exposed to risks such as cybercrime (as identified in paragraph 4.24). There is also some evidence to suggest that cryptoasset exchanges, trading platforms and wallet providers are charging high and variable fees that consumers are not always made aware of. There can also be significant delays in the payment chain as a result of these service providers, which may result in consumers missing buy/sell opportunities.

Risks to market integrity

4.29 A combination of market immaturity, illiquidity and a lack of available information regarding the market give rise to concerns about market integrity. This may damage confidence and prevent both the cryptoasset market and related derivative markets from operating effectively. For cryptoassets and related markets, vulnerability to market abuse and manipulative behaviour is heightened by several factors.

- The cryptoasset market and actors are at an immature stage of development. This could mean, for example, that cryptoasset exchanges suffer from issues such as poor systems and controls, low price transparency and conflicts of interest.
- There is a lack of information about the identity of participants and their activity inherent in some instruments.
- The novel nature of the market means new abusive behaviours may arise which are not captured by current monitoring tools. Manipulation may include false signals of supply and demand (for example, wash trading, layering, and spoofing), as well as dissemination of misleading information in the media.

4.30 Market abuse-style activities pose risks to market integrity. Cryptoassets and related markets are vulnerable to such activities and there is evidence of them already occurring. Press reports indicate that individuals are using messaging applications, such as Telegram, to orchestrate 'pump and dump' schemes for cryptoassets.[13] In these arrangements, the organisers synchronise the purchase of a

[13] 'How traders pump and dump cryptocurrencies', UK Business Insider, 2017, http://uk.businessinsider.com/how-traders-pump-and-dump-cryptocurrencies-2017-11

selected cryptoasset, temporarily pushing up its price, encouraging excitement and further purchasing amongst other investors. Once the price has risen, the organisers then offload their cryptoassets for a profit, leaving consumers with an expensively purchased and often illiquid cryptoasset. Actors with large holdings, especially in the more illiquid cryptoassets, may also be able to use their dominant position to influence the price.

Box 4.B: Industry action to manage risks

Over the course of its stakeholder engagement, the Taskforce heard from firms and industry groups about the actions they have taken to mitigate some of the risks highlighted in this chapter. For example, some exchanges already implement anti-money laundering checks despite not yet being formally obliged to do so. In addition, some industry bodies are developing voluntary codes of conduct.

Implications for financial stability

4.31 In March 2018, the Financial Policy Committee (FPC) assessed the financial stability threats of cryptoassets and judged that existing cryptoassets do not currently pose a material risk to UK financial stability.[14] In addition, the Financial Stability Board (FSB) has judged that cryptoassets do not pose risks to global financial stability.[15] This assessment has been endorsed by the G20.[16] However, the market, industry and technology are evolving rapidly and risks to financial stability may emerge in the future.

4.32 The FPC's analysis focused on the 'transmission channels' which could transmit risks from the cryptoasset market into the formal financial system.[17] The FPC determined that, in the case of current cryptoassets, these transmission channels were not significant at this point in time but that, in certain circumstances, they could become more significant over time and therefore produce risks to financial stability. Table 4.A summarises the current situation and how these transmission channels may develop.

14 'Financial Policy Committee statement from its meeting – 12 March 2018', Financial Policy Committee (FPC), 2018, https://www.bankofengland.co.uk/statement/fpc/2018/financial-policy-committee-statement-march-2018

15 FSB Chair's letter to G20 Finance Ministers and Central Bank Governors', Financial Stability Board (FSB), 2018, http://www.fsb.org/2018/03/fsb-chairs-letter-to-g20-finance-ministers-and-central-bank-governors/

16 'Communique of the G20 Finance Ministers & Central Bank Governors Meeting, 21-22 July 2018. https://g20.org/sites/default/files/media/communique-_fmcbg_july.pdf

17 This approach follows the FPC's framework for assessing risks beyond the core banking sector, for further detail see: 'Financial Stability Report – November 2017', FPC, 2017, https://www.bankofengland.co.uk/financial-stability-report/2017/november-2017

Table 4.A: Financial stability transmission channels

Transmission channel	Current situation	Potential developments
Use of cryptoassets in payments and settlement.	Minimal use.	Work is underway in industry to overcome capacity and volatility constraints to the use of cryptoassets in payments. These developments are unlikely to lead to significantly greater use of cryptoassets in payments and settlement in the medium term.
Exposure of systemically important UK financial institutions to cryptoassets.	Negligible exposures.	Firms could develop direct exposure by investing directly in cryptoassets or in financial instruments that reference cryptoassets. Firms may also develop indirect exposure through relationships with exchanges or counterparty relationships with non-systemic firms exposed to cryptoassets. However, there does not currently appear to be an appetite from systemically important firms to take significant exposures to cryptoassets.
Links between cryptoasset markets and systemically important markets.	Limited links.	Links may develop if there is a proliferation of financial instruments that reference cryptoassets. However, demand to date suggests use of such products is unlikely to grow to a scale that would cause wider disruption.

Chapter 5

Conclusions and responses

Box 5.A: Summary

The Taskforce has concluded that DLT has the potential to deliver significant benefits in both financial services and other sectors, and all three authorities will continue to support its development.

HM Treasury, the FCA and the Bank of England will take action to mitigate the risks that cryptoassets pose to consumers and market integrity; to prevent the use of cryptoassets for illicit activity; to guard against threats to financial stability that could emerge in the future; and to encourage responsible development of legitimate DLT and cryptoasset-related activity in the UK.

In order to deliver these actions, the authorities will consult on:

- implementing one of the most comprehensive responses globally to the use of cryptoassets for illicit activity
- a potential prohibition of the sale to retail consumers of derivatives referencing certain types of cryptoassets (for example, exchange tokens)[1], including CFDs, options, futures and transferable securities
- guidance clarifying how certain cryptoassets already fall within the existing regulatory perimeter
- whether the regulatory perimeter requires extension in relation to cryptoassets that have comparable features to specified investments but that fall outside the perimeter

The Taskforce has also concluded that exchange tokens present new challenges to traditional forms of financial regulation. There is therefore a need to consider carefully how regulation could meaningfully and effectively address the risks posed by exchange tokens and what, if any, regulatory tools would be most appropriate. The government will issue a consultation in early 2019 to further explore whether and how exchange tokens and related firms such as exchanges and wallet providers could be regulated effectively, in the case that other measures outlined in this report do not adequately address all relevant risks.

In addition, the authorities will continue to:

- warn consumers of the risks of investing in cryptoassets
- monitor potential implications for financial stability

[1] The prospective prohibition on retail derivatives referencing certain types of cryptoassets would exclude derivatives referencing cryptoassets that qualify as securities.

5.1 HM Treasury, the FCA and the Bank of England are committed:

- to the UK maintaining its international reputation as a safe and transparent place to do business in financial services
- to ensuring high regulatory standards in financial markets
- to protecting consumers
- to guarding against threats to financial stability that could emerge in the future
- to allowing those innovators in the financial sector that play by the rules to thrive so that the benefits of new technologies can be fully realised

5.2 The Taskforce has developed a response to cryptoassets and DLT that is consistent with these objectives, and this chapter sets out the actions the authorities will take.

5.3 The Taskforce considers that DLT has the potential to deliver significant benefits in financial services, as well as in a broad range of other sectors. The Taskforce has also seen some evidence that certain types of cryptoassets have the potential to deliver benefits in the future, for example when used as an innovative capital raising tool. However, harnessing these potential benefits requires effective action to manage the range of risks observed in the current cryptoasset market – in particular, to consumers and market integrity, and the use of cryptoassets for illicit activity.

5.4 This is a fast-moving global market, with the technology developing and the nature of cryptoassets evolving. The authorities will keep their approach to cryptoassets and DLT under review to ensure the UK continues to support innovation while maintaining safe and transparent financial markets. The Taskforce will convene every six months to consider developments and review the UK's approach.

The Taskforce's response to cryptoassets

Preventing financial crime

5.5 The Taskforce has concluded that, while the use of cryptoassets for illicit activity remains low, these risks are increasing and the use of cryptoassets for money laundering is growing. The UK will not tolerate the use of cryptoassets in illicit activity, and the authorities will take strong action to address these risks by bringing all relevant firms into anti-money laundering and counter-terrorist financing (AML/CTF) regulation.

5.6 The government is developing a robust regulatory response which will address these risks by going significantly beyond the requirements set out in the EU Fifth Anti-Money Laundering Directive (5MLD), providing one of the most comprehensive responses globally to the use of cryptoassets for illicit activity. The government will consult on its proposed actions in the new year, and will legislate during 2019 to give effect to this response.

5.7 The government will bring fiat-to-cryptoasset exchange firms and custodian wallet providers within the scope of AML/CTF regulation, as required by 5MLD.

Following the work of the Taskforce, the government intends to broaden the UK's approach to go beyond the 5MLD requirements, and will consult on including:

- exchange services between different cryptoassets, to prevent anonymous 'layering' of funds to mask their origin
- platforms that facilitate peer-to-peer exchange of cryptoassets, which could enable anonymous transfers of funds between individuals
- cryptoasset ATMs, which could be used anonymously to purchase cryptoassets
- non-custodian wallet providers that function similarly to custodian wallet providers, which may otherwise facilitate the anonymous storage and transfer of cryptoassets. Consultation on this area will include considering issues of technological feasibility

5.8 In addition, the government will consult on whether to require firms based outside the UK to comply with these regulations when providing services to UK consumers, in order to prevent illicit actors in the UK from dealing with firms based abroad and therefore bypassing UK regulation.

5.9 The government has asked the FCA to consider taking on the role of supervising firms in fulfilling their AML/CTF obligations. The government will seek views on this through consultation before confirming the identity of the supervisor.

5.10 To date, the FCA has also been taking action in regard to regulated firms who interact with cryptoassets and associated financial crime risks. The FCA issued a letter to CEOs of all banks in June 2018, setting out appropriate practice for the handling of the financial crime risks associated with cryptoassets.[2]

5.11 Further to this domestic response, the UK is actively engaging in international discussions to ensure a global response to the risks posed by cryptoassets. The Financial Action Task Force (FATF), the global standard-setter on AML/CTF, has agreed to update its standards to apply to cryptoassets.[3] The UK will continue to be a leading voice in these discussions, and ensure that this work is progressed as a priority.

Regulating financial instruments that reference cryptoassets

5.12 The FCA has taken action where it has seen evidence of harm relating to the sale, marketing and distribution of particular derivative products. For example, the FCA supported ESMA's restrictions on the sale to retail consumers of contracts for difference (CFDs) referencing cryptoassets. This measure took effect on 1 August 2018 and will be renewed from 1 November 2018. The restriction, among other things, limits leverage on such products to 2:1, reflecting the high price volatility of these instruments. This intervention is temporary, but subject to renewal while the FCA (in parallel with other EU national competent authorities) implements its own permanent domestic interventions.

---

[2] 'Dear CEO – cryptoassets and financial crime', FCA, 2018, https://www.fca.org.uk/publication/correspondence/dear-ceo-letter-cryptoassets-financial-crime.pdf

[3] 'Regulation of virtual assets', Financial Action Task Force, 2018, http://www.fatf-gafi.org/publications/fatfrecommendations/documents/regulation-virtual-assets.html

5.13 Given concerns identified around consumer protection and market integrity in these markets, the FCA will consult on a prohibition of the sale to retail consumers of all derivatives referencing exchange tokens such as Bitcoin, including CFDs, futures, options and transferable securities. The proposed prohibition would not cover derivatives referencing cryptoassets that qualify as securities, however CFDs on securities would remain subject to ESMA's temporary restrictions and any future FCA proposals to implement permanent measures in relation to CFDs.

5.14 To ensure that the integrity of these regulated markets is maintained, the FCA will not authorise or approve the listing of a transferable security or a fund that references exchange tokens (for example, exchange-traded funds) unless it has confidence in the integrity of the underlying market and that other regulatory criteria for funds authorisation are met. Before listing any securities with cryptoassets as the underlying asset, the FCA will need to be satisfied that granting the listing would not be detrimental to investors' interests. To date, the FCA has not approved the listing of any exchange-traded products with exchange tokens as the underlying asset.

Clarifying the regulation of security tokens

5.15 Security tokens fall within the current regulatory perimeter. However, the Taskforce recognises that the novel nature of some cryptoassets and the presence of new market participants may mean the regulatory perimeter is not being correctly understood. In addition, the complexity and opacity of many cryptoassets means it is difficult to determine whether they qualify as security tokens.

5.16 To provide further clarity on the way regulation applies to security tokens, the FCA will consult on perimeter guidance by the end of 2018. This guidance will set out the FCA's interpretation of the current regulatory perimeter.

5.17 The FCA encourages prospective token issuers or other market participants, such as secondary market platforms, to consider whether their activities require authorisation. In parallel, the FCA will continue to monitor for potential breaches by entities or individuals carrying out regulated activities without the appropriate authorisation.

Consulting on extending the regulatory perimeter for ICOs

5.18 In addition, the Taskforce wants to ensure that firms do not issue cryptoassets that have comparable features to specified investments (such as shares or units in a collective investment scheme) but are structured in such a way that they avoid regulation. Activities related to such cryptoassets should be regulated in order to protect investors, eliminate fraudulent activity and ensure market integrity. Should the issuance of cryptoassets through ICOs or another distribution mechanism prove to have benefits in the future (for example, as a means of capital raising), consistent application of regulation will also enable legitimate activity to thrive in the UK.

5.19 The government will issue a consultation in early 2019 to further explore with the industry whether there are examples of such cryptoassets on the UK market and, if so, whether an extension of the regulatory perimeter is required. Subject to the outcomes of this consultation, the government stands ready to legislate to redefine and expand the perimeter if necessary. This will ensure that FCA regulation

can be applied to all cryptoassets that have comparable features to specified investments, regardless of the way they are structured.

Addressing the risks of exchange tokens

5.20 The Taskforce recognises the substantial potential risks to consumers and markets posed by investment and trading in exchange tokens such as Bitcoin and the firms that facilitate this activity, such as exchanges and wallet providers.

5.21 However, exchange tokens are unlike other financial services products, and present new challenges to traditional forms of financial regulation. There is a need to consider carefully how regulation could meaningfully and effectively address the risks posed by exchange tokens and what, if any, regulatory tools would be most appropriate.

5.22 To support the authorities in addressing these complexities, the government will issue a consultation in early 2019 to further explore whether and how exchange tokens and related firms such as exchanges and wallet providers could be regulated effectively, in the case that other measures outlined in this report do not adequately address all relevant risks.

5.23 The Taskforce also considers that a consistent international approach to respond to exchange tokens is essential, to ensure global regulatory coherence and avoid arbitrage in a market that is not confined to national boundaries and involves highly mobile actors. An internationally coordinated approach and action by other jurisdictions will also help to mitigate risks to UK consumers – many of whom invest in cryptoassets through firms based outside the UK.

Ensuring a coordinated international approach

5.24 Given the importance of international coordination, the government, the FCA and the Bank of England will continue to be actively involved in international efforts, and the UK will be a thought leader in shaping future regulatory approaches.

5.25 While work is underway through a range of international bodies to consider approaches to cryptoassets, there is a need for more integrated work to capture the full range of relevant issues and consider the particular challenges exchange tokens present for existing financial regulatory frameworks. The UK will advocate for these issues to be addressed through the G20 and G7.

5.26 The UK will continue to engage internationally through a range of fora:

- G20 and G7 Finance Ministers and Central Bank Governors have agreed that, while cryptoassets present risks, the underlying technology has the potential to deliver significant benefits.[4] Following these discussions, the G20 asked that the international standard setting bodies continue their work to monitor the potential risks of cryptoassets and assess multilateral

[4] 'Communique – Finance Ministers and Central Bank Governors', G20, 2018; 'Communique – Finance Ministers and Central Bank Governors', G20, 2018, https://g20.org/sites/default/files/media/communique-_fmcbg_july.pdf; and 'Chair's Summary: G7 Finance Ministers and Central Bank Governors' Meeting', G7, 2018, https://g7.gc.ca/en/g7-presidency/themes/investing-growth-works-everyone/g7-ministerial-meeting/chairs-summary-g7-finance-ministers-central-bank-governors/

responses. The UK will continue to be a leader in the G20 and G7's discussions of cryptoassets.

- **The Financial Action Task Force (FATF)**, the global standard setter on AML/CTF, has agreed to update its standards to apply to cryptoassets.[5] The UK will continue to be a leading voice in these discussions.
- The FCA is an active participant in discussions at the **International Organization of Securities Commissions** (IOSCO). As well as contributing to a consultation network of national regulators on ICOs, the FCA is chairing the organisation's Fintech Network.
- The FCA continues to engage in discussions at the European level, including with the various **European Supervisory Authorities**. In particular, the FCA is an active member of the **European Securities and Markets Authority's** taskforce on ICOs and virtual currencies.
- In August 2018, the FCA, in collaboration with 11 other overseas regulators and related organisations, published a consultation paper on the **Global Financial Innovation Network** (GFIN).[6] One of the proposed aims of this international network of regulators is to provide a forum for joint work and discussions on innovative technologies such as DLT and cryptoassets.
- The Bank of England has co-led the work of the **Financial Stability Board** to develop a global monitoring framework that will highlight risks posed by cryptoassets to financial stability.[7]
- The Prudential Regulation Authority is also actively participating in discussions with authorities internationally on the prudential regulation of cryptoassets, including at the **Basel Committee on Banking Supervision**.
- HM Treasury has led **Financial Dialogues** and **Fintech Bridges,** which have enabled the government and regulators to engage with other jurisdictions on emerging market trends and regulatory challenges, including cryptoassets. The UK has five **FinTech Bridges**, which are bilateral agreements that commit the UK to sharing FinTech policy experience and expertise with counterparts in Hong Kong, Australia, Singapore, China and the Republic of Korea.

Improving consumer awareness

5.27 The Taskforce also recognises the need to ensure UK consumers are aware of the risks of investing in cryptoassets, and the lack of regulatory protections associated with many of these products. **The authorities firmly believe that consumers should approach purchasing cryptoassets with a high degree of caution**

[5] 'Regulation of virtual assets', Financial Action Task Force, 2018, http://www.fatf-gafi.org/publications/fatfrecommendations/documents/regulation-virtual-assets.html

[6] 'Global Financial Innovation Network', FCA, 2018, https://www.fca.org.uk/publications/consultation-papers/global-financial-innovation-network

[7] 'Crypto-asset markets: Potential channels for future financial stability implications', Financial Stability Board, 2018, http://www.fsb.org/2018/10/crypto-asset-markets-potential-channels-for-future-financial-stability-implications/

and be prepared to lose money. The authorities have been taking action to warn consumers of these risks, and will continue to do so.

5.28 To date, the FCA has taken a number of steps to improve public awareness of the risks associated with all types of cryptoassets. This includes through media appearances,[8] and by issuing consumer and firm warnings about the risks of ICOs, cryptoasset derivatives, CFDs and investment scams.[9] In addition, cryptoassets have been added to the FCA's ScamSmart Warning List, a campaign that aims to help consumers over the ages of 55 falling victim to scams and investment fraud.[10]

Maintaining financial stability

5.29 While cryptoassets do not currently pose a material threat to UK or global financial stability, the Taskforce recognises that risks could emerge as the market develops and that vigilant monitoring is essential.

5.30 The Bank of England will continue to monitor market developments to identify potential implications for financial stability through the Financial Policy Committee's (FPC) monitoring of risks to financial stability, the Prudential Regulation Authority's (PRA) supervision of firms and the Bank of England's supervision of Financial Market Infrastructures.

- The FPC will act to ensure the core of the UK financial system remains resilient if linkages between crypto-assets and systemically important financial institutions or markets were to grow significantly. In the event that one or more cryptoassets were likely to become widely used for payments, or as an asset intended to store value, the FPC would require current financial stability standards to be applied to relevant payments and exchanges.
- The PRA is currently assessing the adequacy of prudential regulations, including for capital, which apply to cryptoasset-related exposures of banks, insurance companies and designated investment firms. As part of this work, the PRA issued a letter to CEOs of all PRA-regulated firms in June 2018, reminding them of the risks associated with the current generation of cryptoassets and the relevant obligations under PRA rules.[11]
- The Bank of England is also alert to potential issues related to cryptoassets as part of its supervision of Financial Market Infrastructures (FMI). The Bank has already worked with HM Treasury to widen the regulatory perimeter to include non-interbank payment systems (through the Digital

[8] In December 2017, FCA Chief Executive Andrew Bailey appeared on BBC Newsnight, warning that "If you want to invest in Bitcoin, be prepared to lose your money". For further detail, see 'Regulator warns Bitcoin buyers: be ready to lose all your money', BBC, 2017, https://www.bbc.co.uk/news/business-42360553

[9] 'Initial Coin Offerings', FCA, 2017, https://www.fca.org.uk/news/statements/initial-coin-offerings; 'Cryptocurrency derivatives', FCA, 2018, https://www.fca.org.uk/news/statements/cryptocurrency-derivatives; 'Consumer warning about the risks of investing in cryptocurrency CFDs', FCA, 2017, https://www.fca.org.uk/news/news-stories/consumer-warning-about-risks-investing-cryptocurrency-cfds; and 'Cryptocurrency investment scams', FCA, 2018, https://www.fca.org.uk/scamsmart/cryptocurrency-investment-scams.

[10] ScamSmart, FCA. 2018, https://www.fca.org.uk/scamsmart

[11] 'Dear CEO – existing or planned exposure to cryptoassets', Prudential Regulation Authority, 2018, https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2018/existing-or-planned-exposure-to-crypto-assets.pdf

Economy Act 2017). This means that a payment system, including one based on DLT, whose users are not banks, can be brought under the Bank's supervision, should one become systemically important to the UK financial system. If an FMI proposed to use cryptoassets or DLT in its clearing, payments or settlement system, this would be addressed as part of the Bank of England's existing supervisory approach. In each case, the FMI would be required to show how the use of cryptoassets or DLT met relevant regulatory requirements.

Taxation

5.31 Tax was outside the Taskforce's remit, so substantive considerations of tax issues are not included in this report. However, HM Treasury is working closely with HM Revenue and Customs to consider the tax issues raised by cryptoassets.

5.32 Current guidance on the tax treatment of cryptoassets is set out on HMRC's website.[12] HMRC will further update their guidance by early 2019, drawing on the Taskforce's work.

The Taskforce's response to distributed ledger technology

5.33 While the authorities' immediate priority is to mitigate the risks associated with the current generation of cryptoassets, the Taskforce considers that other applications of DLT have the potential to deliver significant benefits in both financial services and other sectors. The authorities do not believe there are regulatory barriers to further adoption of DLT. However, the technology requires further development before it could be used at scale and before these opportunities could be realised.

5.34 The authorities will continue to encourage and enable experimentation and innovation, so that DLT and other new technologies can develop and be adopted safely in the financial system.

5.35 The regulators take a technologically neutral approach to regulation, and will continue to provide a platform for innovation to encourage the development of new technologies to support a dynamic financial system.

5.36 The FCA has accepted a significant number of DLT-based projects into its Regulatory Sandbox, and via its RegTech initiative is actively exploring the use of DLT for its supervisory duties.

5.37 The backbone of the existing payments system – the Bank of England's new RTGS service - will be compatible with DLT-based payment systems, supporting further innovation and use of DLT in financial services.

5.38 **The government is also acting to support DLT in and beyond financial services.** The government has invested over £10 million through Innovate UK and

---

[12] For VAT purposes: 'VATFIN2330', HMRC, 2016, https://www.gov.uk/hmrc-internal-manuals/vat-finance-manual/vatfin2330;

For Capital Gains Tax purposes: 'CG12100', HMRC, 2016, https://www.gov.uk/hmrc-internal-manuals/capital-gains-manual/cg12100; and

'Revenue and Customs Brief 9 (2014): Bitcoin and other cryptocurrencies', HMRC, 2014, https://www.gov.uk/government/publications/revenue-and-customs-brief-9-2014-bitcoin-and-other-cryptocurrencies.

the research councils to support a diverse range of DLT projects; created a £20 million GovTech Catalyst Fund to explore technology-based solutions for public sector challenges, potentially including the use of DLT; and is considering how DLT might be deployed to support new forms of financial services infrastructure through its Shared Platforms work with Deloitte.[13] Many government departments are also building proofs of concept to trial the use of the technology.

Next steps

5.39 Table 5.A sets out actions to be taken forward by HM Treasury, the FCA and the Bank of England, accordance with their remits, to further develop and implement the UK's policy and regulatory approach to cryptoassets and DLT.

Table 5.A: Actions to be taken by the authorities

Action	Owner	Timing
Developing and implementing the UK's policy and regulatory approach		
Consult on guidance for cryptoasset activities currently within the regulatory perimeter	Financial Conduct Authority	By end 2018
Consult on a potential prohibition of the sale to retail consumers of derivatives referencing certain types of cryptoassets (for example, exchange tokens), including CFDs, options, futures and transferable securities	Financial Conduct Authority	By end 2018
Consult on potential changes to the regulatory perimeter to bring in cryptoassets that have comparable features to specified investments, and explore how exchange tokens might be regulated if necessary	HM Treasury	In early 2019
Transpose the EU Fifth Anti-Money Laundering Directive and broaden the scope of AML/CTF regulation further	HM Treasury	Consultation in the new year, with legislation in 2019
Continue to assess the adequacy of the prudential regulatory framework, in conjunction with international counterparts	Prudential Regulation Authority	Ongoing
Issue revised guidance on the tax treatment of cryptoassets	HM Revenue and Customs	By early 2019
Monitoring market developments		
Continue to monitor market developments and regularly review the UK's approach	HM Treasury, Financial Conduct Authority and Bank of England	The Taskforce will convene every six months

[13] 'New support for tech to boost public sector productivity', HM Treasury, Department for Business, Energy, and Industrial Strategy, 2017, https://www.gov.uk/government/news/new-support-for-tech-to-boost-public-sector-productivity; 'Shared platforms' will help UK firms that face certain barriers due to the need to invest in new systems and perform complex financial services activities by creating economies of scale around the provision of these activities. For further detail, see: 'Fintech sector strategy', HM Treasury, 2018, https://www.gov.uk/government/publications/fintech-sector-strategy

Action	Owner	Timing
Continue to monitor financial stability risks	Bank of England	Ongoing
Promoting a coordinated international response		
Continue to engage internationally through the G20, G7, FATF, FSB, IOSCO, BCBS, EU, OECD and bilaterally	HM Treasury, Financial Conduct Authority and Bank of England	Ongoing
Supporting innovation with distributed ledger technology		
Enable the renewed RTGS service to be capable of interfacing with innovative payment platforms, including those based on DLT	Bank of England	Update on timing to be provided at the end of 2018
Continue to develop experience with DLT applications through the Regulatory Sandbox and support firms through the Innovate initiative	Financial Conduct Authority	Ongoing
Continue to explore the use of DLT to enable a more accurate, efficient and consistent regulatory reporting system	Financial Conduct Authority	Ongoing
Continue to consider how DLT might be deployed to support new forms of financial services infrastructure, including in work on Shared Platforms	HM Treasury	Ongoing
Continue to identify opportunities to use DLT in the public sector, including through the cross-government Blockchain Network, the GovTech Catalyst Fund, and building proofs of concept to trial the use of the technology.	Various government departments	Ongoing
Test the potential of DLT through Field Labs, where the Digital Catapult will work with businesses, investors, and regulators in a range of areas, including in construction and the management of goods in ports.	Digital Catapult	Ongoing

Annex A

The authorities' objectives

A.1 The Taskforce has considered its approach to cryptoassets and distributed ledger technology in financial services in a holistic way by bringing together perspectives from across government, the central bank, and the financial services regulators. Each authority has its own objectives:

- HM Treasury is the government's economic and finance ministry, and is responsible for financial services policy. One of its priorities is to promote a stable and efficient financial services sector that supports growth, consumers, and businesses, including through enabling effective competition and improving outcomes for consumers.
- The FCA is the conduct regulator for 58,000 financial services firms and financial markets in the UK, and the prudential regulator for over 18,000 of those firms. Its operational objectives are to protect consumers, protect financial markets, and promote competition.
- The Bank of England is the UK's central bank and has statutory objectives to maintain monetary and financial stability. The Prudential Regulation Authority (PRA) is its regulatory arm. One of the PRA's primary objectives is to promote the safety and soundness of the firms it regulates.

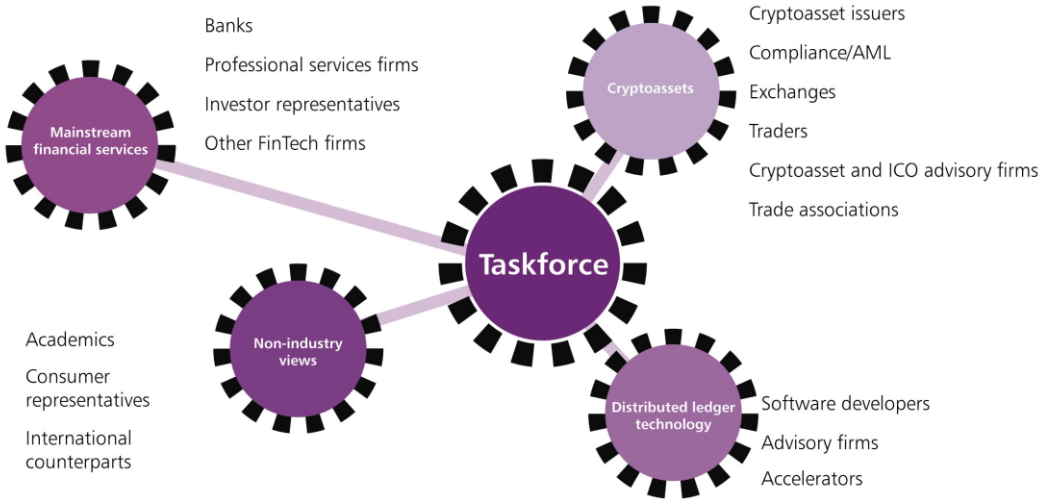
Annex B

Stakeholder engagement

B.1 Industry engagement has formed an important part of the Taskforce's work, and the views and opinions of industry have helped to shape some of the conclusions of this report. Overall, the Taskforce met over 60 firms and other stakeholders.

B.2 It was important for the Taskforce to speak to a range of stakeholders across various sectors, to ensure it heard different perspectives.

Chart B.1 The Taskforce's stakeholder engagement



B.3 The Taskforce used its engagement to seek views on a variety of topics, including: the trajectory of the industry; the risks, benefits and underlying economic value of cryptoassets; and the UK's future regulatory approach.

B.4 Many of the issues raised by stakeholders have been cited throughout this report. Other views heard in the course of engagement are captured in Table B.1.

Table B.1: Examples of stakeholder views

Theme	Comments
Cryptoassets	• The market is continuing to evolve rapidly. • The current generation of cryptoassets lack clear benefits for consumers. • There is increasing institutional investment in this space, and many banks are starting to explore how they can interact with this growing market.
DLT	• There are many use cases demonstrating the potential benefits of DLT. • There is a lack of understanding of what DLT can and cannot do. • There are technological barriers to DLT adoption, such as governance and scalability. • It is difficult for DLT firms (including cryptoasset firms) to get bank accounts in the UK.
Regulatory approach	• There is a lack of regulatory clarity in the UK. • Regulation should be introduced to support the legitimate players in this market. It is also crucial in mitigating risks. • Regulatory and tax frameworks should be aligned.

HM Treasury contacts

This document can be downloaded from www.gov.uk

If you require this information in an alternative format or have general enquiries about HM Treasury and its work, contact:

Correspondence Team
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

Tel: 020 7270 5000

Email: public.enquiries@hmtreasury.gov.uk