

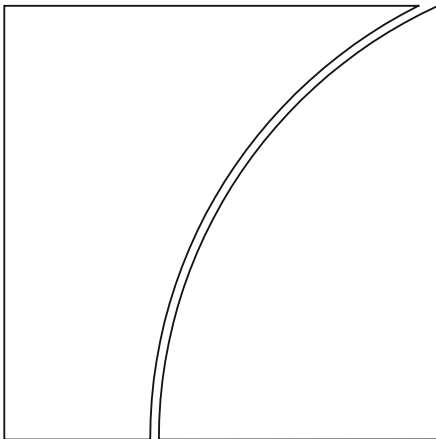
Basel Committee on Banking Supervision

Discussion paper

Designing a prudential treatment for crypto- assets

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Executive summary

The past few years have seen rapid growth in crypto-assets. The estimated market capitalisation of crypto-assets reached a historical peak exceeding \$800 billion in January 2018. While the crypto-asset market remains small relative to the size of the global financial system, and banks' exposures to crypto-assets are currently limited, its absolute size is meaningful and there continues to be rapid developments, with increased attention from a broad range of stakeholders.

As previously indicated, the Committee is of the view that the growth of crypto-assets and related services has the potential to raise financial stability concerns and increase risks faced by banks. Crypto-assets are an immature asset class given the lack of standardisation and constant evolution. Certain crypto-assets have exhibited a high degree of volatility, and present risks for banks, including liquidity risk; credit risk; market risk; operational risk (including fraud and cyber risks); money laundering and terrorist financing risk; and legal and reputation risks.

While certain types of crypto-assets are at times referred to as "crypto-currencies", the Committee is of the view that such assets do not reliably provide the standard functions of money and can be unsafe to rely on as a medium of exchange or store of value. These types of crypto-assets are not legal tender, and are not backed by any government or public authority. Therefore, if banks are authorised, and decide, to acquire crypto-assets or provide related services, the Committee is of the view that banks should apply a conservative prudential treatment to such exposures, especially for high-risk crypto-assets.

To that end, the Committee is publishing this discussion paper to seek the views of stakeholders on a range of issues related to the prudential regulatory treatment of crypto-assets, including:

- (i) the features and risk characteristics of crypto-assets that should inform the design of a prudential treatment for banks' crypto-asset exposures; and
- (ii) general principles and considerations to guide the design of a prudential treatment of banks' exposures to crypto-assets, including an illustrative example of potential capital and liquidity requirements for exposures to high-risk crypto-assets.

There have been recent initiatives related to some types of crypto-assets. For example, some initiatives seek to reduce the volatility exhibited to date by anchoring crypto-assets to a reference asset. Other initiatives include redemption or repurchase assurances by a legal entity. These crypto-assets are sometimes referred to as 'stablecoins', although the stability of such assets has yet to be tested completely. The scope of stablecoin initiatives vary, with some focusing on intragroup or interbank payment systems, while others seek to target a broader audience, including consumers globally. While many of these types of crypto-assets have yet to become operational in practice, some may have the potential to become systemically important.¹ The Committee is of the view that these types of crypto-assets warrant further assessment and elaboration before specifying a prudential treatment.

A separate initiative relates to central bank digital currencies, where many central banks are continuing to look at the implications of this potential type of central bank money.² Such forms of digital currencies are outside the scope of this discussion paper.

The responses to this paper will inform the Committee's development of a prudential treatment for crypto-assets at large, including for crypto-assets that are issued by regulated financial institutions, or that make use of stabilisation tools. The Committee is continuing to assess the appropriate prudential treatment for such types of crypto-assets, and will consult on any specific measures.

¹ G7 Working Group on Stablecoins (2019): "Investigating the impact of global stablecoins", October.

² Committee on Payments and Market Infrastructures and Markets Committee (2018): "Central bank digital currencies", March.

This paper is organised as follows. Chapter 1 provides some background about the Committee's work on crypto-assets. Chapter 2 reviews the defining technological and economic features of crypto-assets, and outlines the different potential channels by which crypto-assets could derive their value. Chapter 3 sets out some general principles to guide the design of a prudential treatment, and identifies the possible direct and indirect channels by which banks could be exposed to crypto-assets. It then outlines an illustrative example of a potential prudential treatment for high-risk crypto-assets, and sets out additional considerations related to other types of crypto-assets.

This paper forms part of a broader work plan by the Committee on crypto-assets, which includes: (i) vigilant monitoring of market and regulatory developments related to crypto-assets and an assessment of the impact of such developments on the banking system; (ii) the quantification of banks' direct and indirect exposures to crypto-assets through periodic data-collection exercises; and (iii) an assessment of the appropriate prudential treatment for banks' exposures to crypto-assets.

The growth of crypto-assets and potential future evolutions in the industry raise several policy questions that are outside the scope of this paper, including the implications for monetary policy, the smooth operation of payment systems, consumer protection and market integrity, deposit insurance and guarantee schemes, anti-money laundering and the combatting of terrorist financing, the accounting treatment, financial inclusion, competition, data privacy, taxation, and the broader role of distributed ledger technology. These aspects could also impact banks' risk profiles.

Many of these issues are being discussed across different standard setting bodies and international fora, including the Committee on Payments and Market Infrastructures, the Financial Action Task Force, the Financial Stability Board, the International Organisation of Securities Commissions and the International Monetary Fund. While this discussion paper focuses on the prudential treatment, a robust regulatory framework would require effective regulations and standards related to crypto-asset exchanges and platforms, and other agents involved in the ecosystem (eg wallet providers). The Committee is closely coordinating its work with these bodies to help develop a holistic approach to the regulatory treatment of crypto-assets.

Should the Committee decide to specify a prudential treatment of crypto-assets, it will issue a consultation paper detailing its proposals and seek further input from stakeholders. Any specified treatment would constitute a minimum standard for internationally-active banks. Jurisdictions would be free to apply additional and/or more conservative measures if warranted. As such, jurisdictions that currently prohibit their banks from having any exposures to crypto-assets would be deemed compliant with any potential global prudential standard. More generally, this discussion paper should not be interpreted as an endorsement or support by the Committee for any specific existing or planned crypto-asset.

The Committee welcomes comments on the analyses and ideas set out in this paper from all stakeholders, including academics, banks, central banks, finance ministries, market participants, payment system operators and providers, supervisory authorities, technology companies and the general public.

Comments on any elements of this discussion paper should be submitted by 13 March 2020 using the following link: www.bis.org/bcbs/commentupload.htm. All comments may be published on the website of the Bank for International Settlements unless a respondent specifically requests confidential treatment.

Chapter 1: Introduction

The Committee's work on crypto-assets comprises three broad elements:

- (i) vigilant monitoring of market and regulatory developments related to crypto-assets, and an assessment of the impact of such developments on the banking system;
- (ii) the quantification of banks' direct and indirect exposures to crypto-assets and related services through periodic data-collection exercises; and
- (iii) an assessment of the appropriate prudential treatment for banks' crypto-asset exposures, and the extent to which this treatment should vary based on different types of crypto-assets.

In March 2019, the Committee published a newsletter on the risks associated with crypto-assets (Box 1). The Committee noted that the continued growth of crypto-assets has the potential to raise financial stability concerns and increase risks faced by banks, and that many types of crypto-assets do not reliably provide the standard economic functions of money issued or backed by a government or public authority and are unsafe to rely on as a medium of exchange or store of value. The newsletter outlined a set of minimum supervisory expectations for banks that are authorised, and decide, to acquire crypto-assets and/or provide related services.

There have been recent initiatives related to some types of crypto-assets. For example, some initiatives seek to reduce the volatility exhibited to date by anchoring crypto-assets to a reference asset. Other initiatives include redemption or repurchase assurances by a legal entity. These crypto-assets are sometimes referred to as 'stablecoins', although the stability of such assets has yet to be tested completely. The scope of stablecoin initiatives vary, with some focusing on intragroup or interbank payment systems, while others seek to target a broader audience, including consumers globally. While many of these types of crypto-assets have yet to be operational in practice, some may have the potential to become systemically important. The Committee is of the view that these types of crypto-assets warrant further assessment and elaboration before specifying a prudential treatment.

A separate initiative relates to central bank digital currencies, where many central banks are continuing to look at the implications of this potential type of central bank money. Such forms of digital currencies are outside the scope of this discussion paper.

Accordingly, as an input to its ongoing work related to crypto-assets, the Committee is publishing this discussion paper to seek the views of stakeholders on the prudential regulatory treatment of crypto-assets.

Box 1: Basel Committee statement on crypto-assets – published on 13 March 2019

The past few years have seen a growth in crypto-assets. While the crypto-asset market remains small relative to that of the global financial system, and banks currently have very limited direct exposures, the Committee is of the view that the continued growth of crypto-asset trading platforms and new financial products related to crypto-assets has the potential to raise financial stability concerns and increase risks faced by banks.

While crypto-assets are at times referred to as "crypto-currencies", the Committee is of the view that such assets do not reliably provide the standard functions of money and are unsafe to rely on as a medium of exchange or store of value. Crypto-assets are not legal tender, and are not backed by any government or public authority.¹ Through this newsletter, the Basel Committee is setting out its prudential expectations related to banks' exposures to crypto-assets and related services, for those jurisdictions that do not prohibit such exposures and services.

Crypto-assets have exhibited a high degree of volatility and are considered an immature asset class given the lack of standardisation and constant evolution. They present a number of risks for banks, including liquidity risk; credit risk; market risk; operational risk (including fraud and cyber risks); money laundering and terrorist financing risk; and legal and reputation risks. Accordingly, the Committee expects that if a bank is authorised and decides to acquire crypto-asset exposures or provide related services, the following should be adopted at a minimum:

- **Due diligence:** Before acquiring exposures to crypto-assets or providing related services, a bank should conduct comprehensive analyses of the risks noted above. The bank should ensure that it has the relevant and requisite technical expertise to adequately assess the risks stemming from crypto-assets.
- **Governance and risk management:** The bank should have a clear and robust risk management framework that is appropriate for the risks of its crypto-asset exposures and related services. Given the anonymity and limited regulatory oversight of many crypto-assets, a bank's risk management framework for crypto-assets should be fully integrated into the overall risk management processes, including those related to anti-money laundering and combating the financing of terrorism and the evasion of sanctions, and heightened fraud monitoring. Given the risk associated with such exposures and services, banks are expected to implement risk management processes that are consistent with the high degree of risk of crypto-assets. Its relevant senior management functions are expected to be involved in overseeing the risk assessment framework. Board and senior management should be provided with timely and relevant information related to the bank's crypto-asset risk profile. An assessment of the risks described above related to direct and indirect crypto-asset exposures and other services should be incorporated into the bank's internal capital and liquidity adequacy assessment processes.
- **Disclosure:** A bank should publicly disclose any material crypto-asset exposures or related services as part of its regular financial disclosures and specify the accounting treatment for such exposures, consistent with domestic laws and regulations.
- **Supervisory dialogue:** The bank should inform its supervisory authority of actual and planned crypto-asset exposure or activity in a timely manner and provide assurance that it has fully assessed the permissibility of the activity and the risks associated with the intended exposures and services, and how it has mitigated these risks.

The Committee continues to monitor developments in crypto-assets, including banks' direct and indirect exposures to such assets. The Committee will in due course clarify the prudential treatment of such exposures to appropriately reflect the high degree of risk of crypto-assets. It is coordinating its work with other global standard setting bodies and the Financial Stability Board.

¹ Crypto-assets differ from central bank digital currencies. See the report by the Committee on Payments and Market Infrastructures and the Markets Committee, available [here](#).

Chapter 2: Features of crypto-assets and their potential sources of value

In considering the appropriate prudential regulatory treatment of crypto-assets, a natural starting point is to consider the defining features of such assets. This chapter outlines some of the main technological and economic features of crypto-assets. It assesses the different underlying sources by which crypto-assets derive their perceived value. It also reviews additional dimensions that could potentially impact the risk profile of different crypto-assets.

Key features of crypto-assets

There is no single or generally-recognised definition of crypto-assets at present.³ Terms such as crypto-currencies, virtual currencies, tokens, and coins are used in different contexts to refer to some or all types of crypto-assets. This is due in part to the evolving nature of crypto-assets, the different purported uses of crypto-assets, and the different associated legal and regulatory implications across jurisdictions. As such, the defining features of crypto-assets may continue to evolve over time.

Examples of current technological and design features of crypto-assets relative to other traditional asset classes include the following:

- **Digital / virtual nature:** Crypto-assets are digital / virtual in their nature, and do not possess physical characteristics (eg unlike banknotes or coins). As such, they are typically transferred, stored and traded electronically;
- **Reliance on cryptography:** Crypto-assets primarily rely on cryptography and advanced mathematical techniques to restrict the transmission of data to the relevant intended parties. Examples of cryptographic tools include symmetric encryption cryptography (which relies on the same digital key to create and verify cryptopgrahic signatures data), asymmetric encryption cryptography (which relies on different keys) and hashing (to verify the integrity of data); and
- **Use of distributed ledger technology:** Crypto-assets rely on distributed ledger technology or similar technology to administer and record information and data. The database could be designed in an unrestricted 'permissionless' manner (eg any member of the public can be a user) or a 'permissioned' network restricted to a specified group of users.

In addition, some crypto-assets may not represent a financial claim on, or a liability of, a specific issuer or custodian, unlike current electronic financial instruments.

Q1. What features of crypto-assets should be considered in the context of developing any potential prudential regulatory definition? Please describe the features and their relevance for the prudential treatment of crypto-assets.

³ Different definitions have been adopted by international fora and authorities for different purposes. For example, the Financial Stability Board defines crypto-assets for the purpose of its monitoring work as 'a type of private asset that depends primarily on cryptography and distributed ledger or similar technology as part of their perceived or inherent value'. See Financial Stability Board (2019): "Crypto-assets: work underway, regulatory approaches and potential gaps", May

Economic functions and potential sources of value of crypto-assets

Crypto-assets in general can serve different functions, some of which may potentially be similar to existing asset classes captured by the Basel framework. For example, crypto-assets may be used for one or several of the following economic functions:

- **Payments and exchanges:** Some types of crypto-assets could be used as a means of payment or exchange. While this may be the case in principle, the Committee is of the view that existing crypto-assets do not typically provide the full functions of money issued or backed by a jurisdictional authority, including as a store of value and a unit of account;
- **Investments: / securities** Some types of crypto-assets could be used as a source of investment / security by providing holders rights and obligations and the ability to speculate on the change in market value of the crypto-asset, and as a source of funds for issuers (eg similar to an equity share or a debt instrument); and/or
- **Utility access:** Other types of crypto-assets could also grant holders access to a current or prospective product, application or service.

Crypto-assets may in theory derive their potential value from the following channels and inputs, some of which are similar to traditional asset classes:

- the belief or perception that the crypto-asset has **value** to be exchanged for other goods or services, or a certain amount of fiat currency, at a future point in time (eg similar to other means of payment or exchange);
- the use of **stabilisation mechanisms** linked to reference assets, which in principle aim to minimise fluctuations in the value of crypto-assets. Examples of such stabilisation tools include: (i) funds held by the issuer or a custodian that back the crypto-asset and are fully redeemable; and (ii) other asset classes (including crypto-assets) that back the crypto-asset, and which are held by the issuer, a custodian or recorded in a decentralised manner;
- the current and future **cash flows** expected by a holder of crypto-assets (eg similar to dividends from equity securities or debt interest payments); and/or
- the current and future **services** accessible to holders of crypto-assets.

In addition, the value of crypto-assets could also be indirectly affected by some of the **technological features** discussed above. For example, capacity constraints (whether self-imposed or because of insufficient computing resources), digital storage considerations and the scalability of a crypto-asset could affect the number of transactions that can be processed at any given time, which in turn could impact the value of crypto-assets. Changes to the terms and conditions of crypto-assets (eg so-called 'forks' that change the underlying 'rules' of a crypto-asset protocol) could also affect the value of crypto-assets.

- Q2. What are the main economic and related functions and potential sources of value of crypto-assets that are relevant in the context of developing a prudential treatment? To what extent do these functions and potential sources of value affect the relative prudential risks of different crypto-assets for banks? Are there other potential sources of value that are relevant in designing a prudential treatment for crypto-assets?
- Q3. What benefits do crypto-assets provide for the banking system, and the provision of financial services more generally?

Additional factors that could affect the risk profile of crypto-assets

The Committee's preliminary review of the risks associated with crypto-assets suggests that other factors could also be considered in distinguishing between the relative risks of such assets. For example, these could include:

- The **creation** of the crypto-asset. In many cases, unbacked crypto-assets may be created according to algorithmic rules without an issuer entity in the conventional or legal sense. Such crypto-assets may not necessarily represent a financial claim or liability on any natural or legal person, and may not necessarily represent rights such as a proprietary or possessory right against an entity. Other types of crypto-assets are created with the involvement of an entity or entities that could be considered issuers. For example, this could include international organisations, corporations (both financial and non-financial entities) and, in some cases, individuals. Crypto-assets created by an issuer may, but do not necessarily, include a financial claim or liability on the issuer.
- The **users** of crypto-assets. While some crypto-assets are available for any user to purchase, other categories of crypto-assets could be limited to a defined user base. For example, some crypto-assets could be restricted solely for intra-group payments or could be limited to participants from a specific industry. In addition, for certain crypto-asset markets, a small group of holders could own a significantly large proportion of crypto-assets (so called 'whales'); the behaviour of such holders could significantly impact the market value of the relevant crypto-assets.
- The **validators** of crypto-assets. Crypto-assets may rely on a public ('permissionless') ledger, whereby the validation of transactions can be done by any participating actor, or distributed among several actors or intermediaries, which could be unknown to the user base. In contrast, a private ('permissioned') ledger restricts and pre-defines the scope of validators, with the validating entities known to the user base. For certain crypto-assets, the validation could be carried out predominantly by a small group of validators; the behaviour of these validators could potentially significantly impact the value of relevant crypto-asset.
- The **legal regime** applied to the crypto-asset ecosystem. The extent to which the various providers of services associated with the crypto-asset (eg exchanges, payment platforms, wallet providers, etc.) are subject to, or comply with, the appropriate laws and regulations (eg consumer protection, data privacy, anti-money laundering and the combatting of terrorist financing) as specified by a jurisdiction may affect the marketability of the crypto-asset and its associated risks.
- The **transparency** related to key crypto-asset market data, including the timely availability, price discovery, market capitalisation and valuation of crypto-assets, their underlying assets (where applicable), and the degree to which these are subject to regular external audits.

Q4. What additional factors affect the risk profile of different crypto-assets which are relevant in the context of determining a prudential treatment?

Chapter 3: Designing a potential prudential treatment of crypto-assets

The current Basel framework does not specify the prudential treatment for banks' exposures to crypto-assets, given their relative novelty. The Committee is considering whether to specify a global prudential standard. To help inform its thinking, this chapter starts by outlining a set of general principles that could help guide the design of a potential treatment. It then identifies the potential direct and indirect channels by which banks could be exposed to crypto-assets. Based on these considerations, the chapter then:

- (i) provides an illustrative example of capital and liquidity requirements for banks' exposures to high-risk crypto-assets; and
- (ii) seeks views related to the potential prudential treatment for other types of crypto-assets.

General principles

In considering how to specify a prudential treatment for crypto-assets, the Committee has been guided by the following general principles:

- **Same risk, same activity, same treatment:** A crypto-asset and a 'traditional' asset that are otherwise equivalent in their economic functions and the risks they pose should not be treated differently for prudential purposes. The prudential framework should not be designed in a way to explicitly advocate or dissuade specific technologies related to crypto-assets, but it should account for any additional risks resulting from the unique features and other factors of crypto-assets relative to traditional assets.
- **Simplicity:** As noted above, crypto-assets are currently a relatively small asset class globally and are not widely used, but there is the potential for certain types of crypto-assets to become systemically important. The design of the prudential treatment of crypto-assets should therefore be simple and flexible in nature. For example, complex internally-modelled approaches should not be used to calculate regulatory requirements. And, where appropriate, the prudential treatment should build on the existing framework, especially for crypto-assets with equivalent economic functions and risks as other asset classes. In addition, there may be merit in starting with specifying the prudential treatment for the types of crypto-assets that could be considered as 'high-risk' due to their characteristics, some of which have been in existence for several years, while continuing to assess the risk profile and appropriate treatment for other types of crypto-assets based on ongoing developments.
- **Minimum standards:** Any specified prudential treatment of crypto-assets by the Committee would constitute a minimum standard. Jurisdictions would be free to apply additional and/or more conservative measures if warranted. As such, jurisdictions that currently prohibit their banks from having any exposures to crypto-assets would be deemed compliant with any potential global prudential standard.

Q5. Do you agree with these general principles in guiding the design of a potential prudential treatment of crypto-assets? Are there additional principles that should be considered?

Channels of bank exposures to crypto-assets

While banks currently have limited direct exposures to crypto-assets, there may be a number of channels, both direct and indirect, by which they could be exposed to the risks from crypto-assets. The range of potential bank exposures depends in part on the type of crypto-asset, and the scope of permitted activities under applicable laws and regulations within a jurisdiction. While the Committee is not endorsing specific

types of crypto-asset exposures, possible examples of ways in which banks could be directly or indirectly exposed to crypto-assets could include the following channels:

- (i) issuing crypto-assets directly;
- (ii) validating crypto-asset block transactions (eg 'mining' transactions through proof of stake or proof of work);
- (iii) owning crypto-assets directly (eg as an investment);
- (iv) owning products with underlying crypto-assets (eg taking a long position on an exchange-traded fund);
- (v) lending to individuals, corporates or financial institutions to allow them to invest in crypto-assets;
- (vi) lending and taking crypto-assets as collateral;
- (vii) lending to other entities dealing directly with crypto-assets (eg crypto-asset exchanges, fund managers of crypto-asset exchange-traded funds, etc.);
- (viii) proprietary trading of crypto-assets / crypto-asset derivatives;
- (ix) trading crypto-assets / crypto-asset derivatives on behalf of clients;
- (x) clearing crypto-asset futures / crypto-asset derivatives;
- (xi) underwriting initial coin offerings;
- (xii) providing custody / wallet services for crypto-assets;
- (xiii) where permitted, taking deposits of crypto-assets, or extending loans denominated in crypto-assets;
- (xiv) undertaking securities financing transactions involving crypto-assets;
- (xv) exchanging crypto-assets for fiat currency, and vice-versa;
- (xvi) providing insurance against the theft and/or loss of crypto-assets;
- (xvii) using crypto-assets for internal or inter-bank operational processes; and/or
- (xviii) acting as a custodian or taking deposits from a reserve backing crypto-assets.

Q6. Are there additional channels other than those listed above by which banks could be directly or indirectly exposed to crypto-assets? Which channels could potentially be the most material for banks? How do these exposure channels vary by different types of crypto-assets? What are the benefits and risks associated with banks' crypto-asset exposures through these different channels?

Q7. Are any exposure channels likely to change in response to ongoing or envisaged developments in crypto-asset markets?

Risks arising from crypto-asset exposures

As noted by the Committee in its March 2019 newsletter this year, crypto-assets have thus far typically exhibited a high degree of volatility and are considered an immature product given the lack of standardisation and constant product evolution. Moreover, the behaviour of crypto-assets during periods of financial stress has yet to be fully tested. Accordingly, depending on the characteristics of the crypto-

asset, the Committee is of the view that crypto-assets may potentially present a number of financial risks for banks, including:

- **Liquidity risk:** Banks that hold crypto-assets may not be able to convert them into fiat currency at little or no loss of value in private markets, thereby exposing them to market liquidity risk. In addition, banks that issue their own crypto-assets or, if permitted in their jurisdiction, accept deposits of crypto-assets may be subject to funding liquidity risk in times of stress.
- **Market risk:** The high degree of volatility in the valuation and pricing of crypto-assets could expose banks to mark-to-market losses. More generally, there may be structural impediments to the price discovery process of crypto-assets (eg due to disjointed trading platforms).
- **Credit and counterparty credit risk:** Both direct and indirect exposures to crypto-assets may be subject to credit risk. For crypto-assets that constitute a legal obligation between an issuer and the holder of the asset (eg the crypto-asset represents a liability of the issuer), banks holding such crypto-assets may be subject to credit risk arising from those crypto-assets which provide a claim on the issuer. In addition, banks lending to entities that invest in crypto-assets or that form part of a crypto-asset ecosystem may find it difficult to adequately price the risk of the borrower defaulting on the loan due to the lack of historical data on crypto-assets.

In addition, banks could potentially be exposed to a number of non-financial risks as a result of their direct or indirect exposures to crypto-assets and related services, including:

- **Cyber and operational risks:** Banks with exposures to crypto-assets, or banks that provide related services, could be subject to a number of operational-related risks. These include risks stemming from technological vulnerabilities and limitations of crypto-assets (eg cyber-attacks), network governance issues (eg 'forks' that result in a split in the crypto-assets), and broader risks related to maintaining operational reliability and capability. A large-scale cyber attack could leave banks' customers unable to access or recover crypto-asset funds. It could also have knock-on implications for indirect exposures if trust in the safety and value of crypto-assets is shaken.
- **Legal risks:** Uncertainties related to the legal status of crypto-assets and their broader ecosystem could expose banks to a number of legal risks, potentially including consumer protection, the safeguarding of client crypto-assets, misconduct related to anti-money laundering and the combatting of terrorist financing, other relevant regulations (eg securities and commodities regulations) and cross-border legal framework differences regarding the regulation of crypto-assets.
- **Reputational risks:** Banks that promote or enable the use of crypto-assets could face reputation risk in the event of any losses incurred by crypto-asset holders, misconduct by any service provider involved in the crypto-asset ecosystem, or broader vulnerabilities that emerge in the network.
- **Third-party risks:** Banks that rely on third parties to develop and/or support crypto-asset related activities could potentially be exposed to the risk of disruptions in the operations and services provided by such counterparties. These risks could be further exacerbated to the extent that banks collectively rely on a small or common set of third parties.
- **Implementation risks:** Banks' role within a crypto-asset ecosystem may require internal changes to systems and controls, which could be subject to implementation risks. Furthermore, these implementation changes may need to be reversed or decommissioned if the relevant crypto-asset ceases to be viable.

Q8. Which risks would be the most material with respect to banks' exposures to crypto-assets? Are there additional risks other than those listed above which banks could be exposed to as a result of holding direct or indirect exposures to crypto-assets, or providing related services? To what extent do these

risks differ based on the type and design of crypto-assets, and how do they differ to traditional asset classes?

Illustrative example of capital and liquidity requirements for high-risk crypto-assets

This section provides an illustrative example of a potential capital and liquidity treatment for high-risk crypto-assets, building on the general principles discussed earlier. The treatment would apply to any direct exposures (eg direct holdings) and indirect exposures (eg derivatives) to high-risk crypto-assets characterised by the following features:

- they are digital assets that are recorded on a distributed ledger technology platform and are secured cryptographically;
- they are not issued by a jurisdictional authority or another identified issuer;
- they have no intrinsic value and are not explicitly and directly linked to, or backed by, assets with intrinsic values; and
- holdings of the assets do not give rise to a contract between the holder and another identified issuer.

While this example focuses on the prudential treatment, a robust regulatory framework would require effective regulations and standards related to crypto-asset exchanges and platforms, and other service providers involved in the ecosystem (eg wallet providers).

Capital and liquidity requirements for high-risk crypto-assets and liabilities: Illustrative example

Under the illustrative example below, outright or direct holdings of crypto-assets would be allocated to the banking book, and indirect exposures (eg net short positions or derivatives) would be assigned to the trading book:

- **Banking book treatment:** bank exposures to crypto-assets would be subject to a full deduction from Common Equity Tier 1 capital. This treatment reflects the high degree of uncertainty about the positive realisable value of crypto-assets in times of stress;
- **Trading book treatment:** crypto-asset exposures held in the trading book would be subject to the equivalent of a full deduction treatment for market risk and credit valuation adjustment (CVA) risk (ie a 100% risk weight for delta, vega and curvature risk, with no diversification benefits permitted). In addition crypto-asset exposures in the trading book that bear residual risks would be subject to the residual risk add-on. For counterparty credit risk, the exposure at default would be calculated based on the current replacement cost and a simple and conservative approach for potential future exposure (50% of the notional value of the underlying crypto-asset), with the alpha factor of the standardised approach for measuring counterparty credit risk applied alongside any appropriate adjustments for credit risk mitigants (eg margining and netting). Banks would not be permitted to use the internally-modelled approaches for any crypto-asset exposures when calculating market risk, counterparty credit risk and CVA risk capital requirements;
- **Credit risk mitigation:** crypto-assets would not be eligible to serve as financial collateral for the purpose of the credit risk mitigation framework;
- **Liquidity risk treatment:** crypto-assets would not be eligible as high-quality liquid assets (HQLA) for the purpose of the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). Crypto-assets would be subject to a 0% inflow for the LCR, while crypto-asset liabilities would be subject to a 100% outflow. Crypto-assets would be subject to a 100% required stable funding

factor for the NSFR, while crypto-asset liabilities with a residual maturity of less than one year would be subject to a 0% available stable funding factor.

In addition, banks' exposures to crypto-assets would be included in the leverage ratio exposure measure, and would be subject to the large exposure limits set out in the Committee's large exposures framework.

Q9. What are your views on the illustrative example of a prudential treatment for high-risk crypto-assets? Which crypto-assets would classify as high-risk based on the criteria set out above? What other features could be considered in specifying the scope for such a potential treatment?

Supervisory review process

As noted in the Committee's March 2019 newsletter, banks with direct or indirect exposures to any form of crypto-assets exposures or services should be subject to the full set of supervisory review principles set out in the Basel framework. If banks are authorised, and decide, to acquire crypto-assets or provide related services, they should manage the risks stemming from such exposures in a conservative manner.

For example, banks are expected to have a rigorous process for assessing the risk profile of all of their crypto-asset exposures, including by conducting comprehensive due diligence and having the relevant and requisite technical expertise to assess the risk stemming from such exposures. Banks are also expected to have a clear risk management framework to mitigate the risks stemming from crypto-assets, including under stress situations. This should include the active involvement of a bank's board and senior management.

Banks are expected to inform their supervisory authorities of actual and planned crypto-asset exposures or activities in a timely manner and to provide assurances that they have fully assessed the permissibility of such activities, the associated risks and how they have mitigated such risks.

As set out in the Basel framework, supervisors are expected to take appropriate action if they are not satisfied with the bank's own risk assessment and capital allocation related to their crypto-asset exposures and services.

In addition, the Committee expects supervisors to review the non-financial risks that are unique to banks' exposures to crypto-assets and related services, such as operational risk, legal risk, reputational risk, third-party risk and implementation risks (as discussed above). The Committee may consider developing supervisory principles to mitigate these risks.

Q10. What further supervisory measures could be considered in specifying a potential prudential treatment for crypto-assets?

Pillar 3 disclosure requirements

Banks would be required to disclose granular information on any material crypto-asset holdings on a quarterly basis, which would include information on: (i) the exposure amounts of different direct and indirect crypto-asset exposures (eg based on the exposure channels outlined above); (ii) the capital requirement for such exposures; and (iii) the accounting treatment of such exposures.

Q11. What are your views on the disclosure requirements related to banks' crypto-assets? Should additional information related to banks' crypto-asset exposures be disclosed?

General considerations for the prudential treatment of other types of crypto-assets

The illustrative example discussed above applies to high-risk crypto-assets. The Committee seeks the views of stakeholders on whether bank exposures to other types of crypto-assets could warrant a different prudential treatment than the illustrative example discussed above, and the extent to which the risk profile should be differentiated among different types of other crypto-assets. Examples of these crypto-asset types include:

- **Crypto-assets for intra- and inter-bank settlements:** Crypto-assets that are used exclusively for intra-group and inter-bank settlements and which are fully backed by fiat currency may also have a different risk profile compared to high-risk crypto-assets.
- **Crypto-assets that use stabilisation tools linked to other assets:** Another type of crypto-asset that may have a different risk profile compared to high-risk crypto-assets are those that represent a claim on an underlying asset and are fully, irrevocably and verifiably backed by other tangible assets. The specific risk profile of such types of crypto-assets would depend in part on the controls and governance in place to ensure valuation stability (eg regular disclosure of the availability and valuation of the underlying assets, regular external audits, etc.).

The Committee seeks the views of stakeholders on: (i) the extent to which these types of crypto-assets should be subject to a different prudential treatment than the illustrative example outlined above; (ii) the extent to which the treatment for some or all of these crypto-asset types could build on the existing framework (eg to the extent that they are economically equivalent to existing asset classes); and (iii) the specific conditions and criteria that would need to be met for such crypto-asset types to be subject to a different prudential treatment.

- Q12. What are your views on the appropriate prudential treatment of these types of crypto-assets? Are there additional types of crypto-assets that would warrant a different treatment to the illustrative example outlined in this paper?
- Q13. What are your views on the potential prudential treatment of specific types of crypto-assets that bear economically equivalent risks to traditional asset classes? To what extent could the prudential treatment of such crypto-assets build on the existing framework?
- Q14. What specific conditions and criteria are needed for different types of crypto-assets to be subject to a different treatment to the illustrative example discussed in this paper?
- Q15. Do you have other suggestions regarding the design of a potential prudential treatment of crypto-assets?

Chapter 4: Feedback on the discussion paper

The Committee welcomes comments from interested stakeholders – including academics, banks, central banks, finance ministries, market participants, payment system operators and providers, supervisory authorities, technological companies and the general public – on the different elements covered in this discussion paper by 13 March 2020. The purpose of this paper is to elicit comments and feedback from a broad range of interested stakeholders. The Committee particularly welcomes feedback on the following questions:

- Q1. What features of crypto-assets should be considered in the context of developing any potential prudential regulatory definition? Please describe the features and their relevance for the prudential treatment of crypto-assets.
- Q2. What are the main economic and related functions and potential sources of value of crypto-assets that are relevant in the context of developing a prudential treatment? To what extent do these functions and potential sources of value affect the relative prudential risks of different crypto-assets for banks? Are there other potential sources of value that are relevant in designing a prudential treatment for crypto-assets?
- Q3. What benefits do crypto-assets provide for the banking system, and the provision of financial services more generally?
- Q4. What additional factors affect the risk profile of different crypto-assets which are relevant in the context of determining a prudential treatment?
- Q5. Do you agree with these general principles in guiding the design of a potential prudential treatment of crypto-assets? Are there additional principles that should be considered?
- Q6. Are there additional channels other than those listed above by which banks could be directly or indirectly exposed to crypto-assets? Which channels could potentially be the most material for banks? How do these exposure channels vary by different types of crypto-assets? What are the benefits and risks associated with banks' crypto-asset exposures through these different channels?
- Q7. Are any exposure channels likely to change in response to ongoing or envisaged developments in crypto-asset markets?
- Q8. Which risks would be the most material with respect to banks' exposures to crypto-assets? Are there additional risks other than those listed above which banks could be exposed to as a result of holding direct or indirect exposures to crypto-assets, or providing related services? To what extent do these risks differ based on the type and design of crypto-assets, and how do they differ to traditional asset classes?
- Q9. What are your views on the illustrative example of a prudential treatment for high-risk crypto-assets? Which crypto-assets would classify as high-risk based on the criteria set out above? What other features could be considered in specifying the scope for such a potential treatment?
- Q10. What further supervisory measures could be considered in specifying a potential prudential treatment for crypto-assets?
- Q11. What are your views on the disclosure requirements related to banks' crypto-assets? Should additional information related to banks' crypto-asset exposures be disclosed?
- Q12. What are your views on the appropriate prudential treatment of these types of crypto-assets? Are there additional types of crypto-assets that would warrant a different treatment to the illustrative example outlined in this paper?
- Q13. What are your views on the potential prudential treatment of specific types of crypto-assets that bear economically equivalent risks to traditional asset classes? To what extent could the prudential treatment of such crypto-assets build on the existing framework?
- Q14. What specific conditions and criteria are needed for different types of crypto-assets to be subject to a different treatment to the illustrative example discussed in this paper?
- Q15. Do you have other suggestions regarding the design of a potential prudential treatment of crypto-assets?