Global Stablecoin Initiatives

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Global stablecoin initiatives

Executive Summary

Global stablecoin initiatives may, depending on their structure, present features that are typical of regulated securities or other regulated financial instruments or services. This paper identifies possible implications that global stablecoin proposals could have for securities market regulators.

The content includes some background to the genesis and development of the paper, together with an overview of different stablecoin designs (Section 2), and a hypothetical case study ("Hypothetical Case Study") (Section 3). The paper then explores how existing IOSCO Principles and Standards could apply to global stablecoin proposals like the Hypothetical Case Study (Section 4). Finally, the paper undertakes an assessment of the broader implications for securities regulators (Section 5). In parallel, together with the CPMI, IOSCO has carried out a separate preliminary analysis (hereinafter termed "CPMI-IOSCO Analysis") on the application of the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMI), which is available at Annex 1. The CPMI-IOSCO Analysis concludes that the PFMI apply to global stablecoin arrangements where such arrangements perform systemically important payment system functions or other FMI functions that are systemically important; and could therefore apply to the Hypothetical Case Study.

In addition, IOSCO members conclude that the IOSCO Policy Recommendations for Money Market Funds (MMF Recommendations), the IOSCO Principles for ETFs, the Final Report on Crypto-Asset Trading Platforms and IOSCO work on Market-Fragmentation, Cyber Resilience, and Client Assets could apply to global stablecoins such as the Hypothetical Case Study. Ultimately, the applicability of any IOSCO Principles or Standards to global stablecoin proposals, including those similar to the Hypothetical Case Study, will depend on their specific design and their legal and regulatory characteristics and features, which need to be determined on a case-by-case basis, taking into account the domestic legal and regulatory frameworks and approaches in each jurisdiction.

IOSCO has established a Stablecoin Working Group within its Fintech Network to consider and evaluate global stablecoin proposals from securities market regulators' perspectives. This report is IOSCO's first published contribution to the ongoing public debate at international organisations and standard-setting bodies on global stablecoin proposals (e.g. the G7 and the FSB.)[1] The Stablecoin Working Group will continue to assess key issues arising from the analysis in this paper and emerging stablecoin proposals. IOSCO encourages a globally coordinated cross-sector response to the international regulatory challenges posed by global stablecoin proposals.

[1] See https://www.fsb.org/wp-content/uploads/P181019.pdf

1. Introduction

Overview

Early crypto-assets, including Bitcoin, designed as a means of payment, have typically suffered from high volatility with respect to established fiat currencies. In order to harness the potential benefits of payments using a form of crypto-asset, various private entities have since endeavoured to design a more suitable low-volatility crypto-asset – a so-called 'stablecoin'. These initiatives include proposals with potential global reach and adoption; so-called 'global stablecoins', likely to be issued by large incumbent global technology firms.

This paper discusses potential issues that may arise from stablecoins with potential global reach and adoption. This paper includes a Hypothetical Case Study that raises many global financial regulatory issues. Any discussion of such a Hypothetical Case Study is not intended as guidance or conclusions as to any potential stablecoin project. As described in more detail below, the Hypothetical Case Study is a stablecoin which could act as a global currency and potential financial infrastructure used for domestic and cross-border payments, that uses a reserve fund and intermediaries as a means to achieve a stable price.

The paper sets out the Hypothetical Case Study and how it could interact with the perimeter of securities-market regulators' remits and discusses, at a high level, how some of the relevant IOSCO Principles and Standards could apply. This paper does not provide an account of how any particular jurisdiction's domestic regulation might apply to global stablecoin proposals.

2. Stablecoins

This paper uses the term 'crypto-asset' rather than 'cryptocurrency' as it is a more neutral term that captures a broader range of tokens. Use of the term cryptocurrency could be regarded as unhelpful since these assets do not in general fulfil the core economic criteria of money – as a unit of account, a stable store of value and efficient means of exchange[2].

'Stablecoins' are often considered to be a type of crypto-asset. The term stablecoin is a broad term, which encompasses a variety of different types of assets, including assets that may be considered securities in certain jurisdictions. It has no legal or agreed definition itself. Stablecoins are marketed as having less price volatility than other crypto-assets and, it is argued, are more appropriate for certain use cases. Stablecoin initiatives often aim to create a store of value and means of exchange that is global, efficient and accessible. While stablecoins seek to reflect a set of characteristics (i.e. price stability) they do not form a self-contained type of crypto-asset. Stablecoins could be pegged to and/or backed by particular assets, algorithmically controlled, or their value can float freely. It should be noted that several currently-traded stablecoins are not "backed" by reference assets and stablecoin holders are not entitled to redemption (at face value).

A stablecoin can take many forms and can reference the following assets:

1) **Fiat currencies**. A crypto-asset can be related to one or more fiat currencies. Those fiat currencies may or may not be safeguarded in deposit.
2) **Other real-world assets.** A crypto-asset can be related to real-world assets such as securities, commodities, real-estate, financial instruments and/or other assets.

[2] https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference

3) **Other crypto-assets.** A crypto-asset can be related to one or more other crypto-assets.
4) **Algorithmically controlled.** A crypto-asset can use an algorithm that attempts to mimic monetary policy. For instance, the stablecoin may employ an algorithm to achieve specific crypto-asset-monetary targets by adjusting the supply of tokens to match demand.

Even where there is an "algorithm" that seeks to ensure the stability, there may be a central managing entity with the ability to intervene in the operation of the algorithm with a view to maintaining price stability.[3]

A stablecoin's features or the way it is used could mean that it falls under several categories at any one time or at different points in its lifecycle. Stablecoins can exhibit a wide range of different features. This means that stablecoins can, depending on their structure, fall within or outside a variety of different regulatory frameworks for financial instruments or services.

Similarly, despite their label, many so-called stablecoins are neither "stable" nor "coins" in the true sense of either word. So, whilst stablecoin is a marketing term that has been widely adopted by industry, more neutral terms, may be more accurate starting points for regulatory analysis in many instances. For the purposes of this paper, the term stablecoin will be used with the above caveat.[4]

The Hypothetical Case Study

A company ("Company") has determined to design a platform using distributed ledger technology to issue a crypto-asset ("Coin") that is intended to act as a stablecoin. This stablecoin is intended to act as a means of exchange on the Company's designed platform and accessible also by third parties. The Company and third-party participants in the platform intend to offer goods and services in exchange for Coin. Company also anticipates that unaffiliated third parties developers will create use cases for Coin.

Company has stated that Coin will be backed by assets that are held in accounts at a number of global financial institutions (collectively, the "Reserve Fund") that is managed by the Company pursuant to policies set by its governance board and that Coin's market value will be maintained in line with the value of the assets held in the Reserve Fund.

Under Company's proposed ecosystem, the Company will operate a permissioned blockchain that will use a consensus mechanism, for keeping a record of transactional and ownership information of the Coin.

Company has stated that the Reserve Fund will be managed with the goal of value preservation and liquidity. The Reserve Fund will be composed of low volatility currencies, bank deposits

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[3] It should be noted that this is not a full set of monetary policy tools.

[4] We note that other initiatives are currently considering emerging stablecoin initiatives and developing definitions for the term "stablecoin". For example, the Financial Stability Board has said that *"A 'stablecoin' can be defined as a crypto-asset designed to maintain a stable value relative to another asset (typically a unit of currency or commodity) or a basket of assets. These may be collateralised by fiat currency or commodities or supported by algorithms. The term is used to describe a particular set of crypto-assets with certain design characteristics or stated objectives, but the use of this term should not be construed as any endorsement or legal guarantee of the value or stability of these tokens"* (https://www.fsb.org/wp-content/uploads/P181019.pdf).

and sovereign debt instruments. Company expects that the financial instruments held in the Reserve Fund will be stable and liquid, and the value of which will be reflected in the total value of the outstanding number of Coins, through the Authorised Participant mechanism.

Company expects that there will be a number of other participants who will play a role in the ecosystem and the Coin. These include intermediaries such as market makers, liquidity providers, and other authorised participants ("Authorised Participants"), who will play a central role in creating and redeeming the Coin and making deposits to and receiving payments from the Reserve Fund. The role of these Authorised Participants would be for a stated purpose of maintaining the trading price of the Coin at a value close to the value of the assets held in the Reserve Fund, through the use of arbitrage.

The initial price for the Coins paid by the Authorised Participants will be determined by the Company based on the initial amount of assets held in the Reserve Fund and the price for subsequent purchases and sales by such Authorised Participants to and from the Reserve Fund will depend on the value of the assets in the Reserve Fund and the trading price on various crypto-asset trading platforms. Due to the role of Authorised Participants the value of the Coin may be dependent on a notional composition of the basket or as a share of the value of the assets in the reserve. Only Authorised Participants will be able to purchase or redeem Coins from the Reserve Fund through the Company.

Crypto-asset wallets will permit users to send, receive and store the Coin. Coins will be transferred both through crypto-asset trading platforms as well as in peer to peer transactions. Crypto-asset trading platforms will purchase and sell the Coin to and from Authorised Participants and end-users in exchange for fiat currency or other crypto-assets. In most cases involving crypto-asset trading platforms, the Coins would be held in an omnibus wallet of the crypto-asset trading platform with transfers between and among its customers recorded only on the books of the crypto-asset trading platform, i.e., such transfers of the Coin would not be recorded on the Company blockchain. Transfers through a crypto-asset trading platform will be reflected on the blockchain only if they are moved in or out of the crypto-asset trading platform's omnibus wallet. Peer to peer transfers will be reflected on the Company's blockchain.

3. Relevant IOSCO Principles and Standards

Global 'stablecoins' can be designed in a way that mimics traditional financial markets regulated by securities regulators. As such, global stablecoins and associated activities could be subject to IOSCO Principles and Recommendations. The following analysis provides an overview of the potentially relevant IOSCO work and explains how IOSCO Principles and Recommendations might apply to the Hypothetical Case Study or a similarly structured stablecoin.

Global stablecoins could touch IOSCO's remit and interplay with existing principles and recommendations. As such, the Hypothetical Case Study combines various characteristics of different financial services. For example, it replicates – in some areas – traditional financial market designs, e.g. by using Authorised Participants or exchanges (through crypto-asset trading platforms).

Any stablecoin proposal should be viewed holistically, considering its substance over its form, and considering the economic realities of the proposal. While IOSCO has an interest in the

entirety of the stablecoin proposal, there are particular aspects that raise questions from a financial infrastructure and securities standpoint. Therefore, the Hypothetical Case Study is structured to highlight issues in two important aspects:

- The "front-end" of the Hypothetical Case Study, which would allow users to make payments using the Coin, could amount to banking, a payment system or service, or to another type of financial infrastructure service. Therefore, the CPMI-IOSCO Principles for Market Infrastructures could apply as already mentioned in the CPMI-IOSCO analysis.

- The "back-end" of the Hypothetical Case Study involves the management and structuring of the Reserve Fund. This includes the role and relationship of the Authorised Participants in the creation, distribution and redemption of the Coin, as well as their role in keeping the Coin price in line with the value of the reserve basket. Depending on how this is done in practice, including the legal relationships and operational processes, the combination of the Coin and the Reserve Fund has the potential to represent or be similar to some common types of investment structure. For example, the Coin might be viewed as a share or unit in a collective investment scheme, resembling (1) an MMF in some aspects of its portfolio construction; and/or (2) an ETP in the mechanisms in place to create and redeem Coins. Alternatively, it could also represent some other type of security or securitised investment product.

First, this section of the paper analyses the 'front-end' of the Hypothetical Case Study, before moving on to consider the 'back-end' of the Hypothetical Case Study.

Application of IOSCO's Principles and Recommendations to the "Front-End"

CPMI-IOSCO Principles for Financial Market Infrastructures (PFMI, 2012)[5]

The Hypothetical Case Study would suggest that users could make payments using the Coin. These activities could potentially amount to regulated payment and banking activities or even regulated payment systems. If adopted at a large scale it could become systemically important.

Financial market infrastructures (FMIs) facilitate the clearing, settlement and recording of monetary or other financial transactions, such as payment, securities, and derivatives contracts. They therefore play an essential role in the global financial system and the broader economy. If not properly designed and operated, FMIs can be sources of financial shocks such as liquidity dislocations and credit losses, or a major channel through which these shocks are transmitted among domestic and international financial market participants.

Broadly, the PFMI are designed to apply to all FMIs determined to be systemically important by national authorities. The PFMI define an FMI as a "*multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling or recording payments, securities, derivatives, or other financial transactions*".[6] In particular, the PFMI apply to central counterparties (CCPs), trade repositories (TRs), central securities depositories (CSDs), securities settlement systems (SSSs), and systemically important payment systems. Generally speaking, regarding payment systems, *"…a payment system is systemically*

5 https://www.bis.org/cpmi/publ/d101a.pdf

6 Paragraph 1.8 PFMI.

important if it has the potential to trigger or transmit systemic disruptions; this includes, among other things, systems that are the sole payment system in a country or the principal system in terms of the aggregate value of payments; systems that mainly handle time-critical, high-value payments; and systems that settle payments used to effect settlement in other systemically important FMIs."[7]

If the Hypothetical Case Study or any part thereof were to amount to an entity considered a systemically important FMI, as described above, then it would be expected to comply with the PFMI. The PFMI are made up of 24 principles and 5 Responsibilities that apply to differing degrees to systemically important FMI.

The CPMI-IOSCO Analysis concludes that the PFMI apply to global stablecoin arrangements where such arrangements perform systemically important payment system functions or other FMI functions that are systemically important; and could therefore apply to the Hypothetical Case Study. Further work will now be required by CPMI-IOSCO to supplement this preliminary analysis before a definitive statement on applicability of each of the individual PFMI principles to stablecoin arrangements can be made. For further details regarding the application of the PFMI to global stablecoin arrangements, please refer to the CPMI-IOSCO Analysis at Annex 1.

Application of IOSCO's Principles and Recommendations to the Hypothetical Case Study's 'Back-End'

The Reserve

Turning to the "back-end" of the Hypothetical Case Study, the Reserve Fund and interests or obligations stemming from the Reserve Fund, could amount to various types of securities products, depending on the structure and function of the Reserve Fund and the rights and obligations of intermediaries, including Authorised Participants, and Coin holders.

IOSCO Policy Recommendations for Money Market Funds (2012)

Under the Hypothetical Case study, the Reserve Fund as well as the rights of market participants, such as Authorised Participants, as described in the Hypothetical Case Study may have features that resemble a collective investment scheme, a securitised product, or other type of security. Based on certain characteristics, the Hypothetical Case Study structure shares similarities with a money market fund, particularly with respect to portfolio construction, and market intermediaries may be considered to be acquiring a debt instrument.

IOSCO's *Policy Recommendations for Money Market Funds* report (2012 MMF Report)[8] includes 15 recommendations regarding the regulation and management of money market funds (MMFs). Although definitions may vary among jurisdictions, the report notes that MMFs "may generally be defined as investment funds that seek to preserve capital and provide daily liquidity, while offering returns in line with money market rates." Additionally, the report makes MMF recommendations regarding valuation, liquidity management, use of ratings, disclosure to investors, and repos.

The 2012 MMF Report provides a useful point of reference in evaluating the Hypothetical Case Study and its similarities to an MMF. This is based on the following facts as described above:

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7 Paragraph 1.20 PFMI.

8 The 2012 MMF Report is available at http://www.iosco.org/library/pubdocs/pdf/IOSCOPD392.pdf.

- The Reserve Fund will be comprised of high-quality investments of short-term government bonds and bank deposits. This is similar to MMFs that tend to invest in government debt and short-term deposits only.
- The Coin (see section 3), sold in exchange for fiat currency to Authorised Participants entitle them to a proportionate, beneficial interest in the Reserve Fund.
- Authorised Participants will be able to redeem their Coin upon demand from the Reserve Fund. This makes the structure similar to VNAV money market funds, although the variability of the "NAV" would likely be low.

It is also worth noting there are significant differences between the Reserve Fund and an MMF, most notably that holders of Coin would not receive any returns generated by the Reserve Fund. However, certain types of funds aim to maintain a Constant Net Asset Value (CNAV) rather than generate profits.

On this basis, certain recommendations in the MMF Report might be useful to consider in relation to the Hypothetical Case Study, including the following:

- *Recommendation 1:* The report recommends that jurisdictions implement regulations explicitly defining MMFs.
- *Recommendation 3*: Regulators should closely monitor the development and use of other vehicles similar to MMFs (collective investment schemes or other types of securities).
- *Recommendation 9*: MMFs should have tools in place to deal with exceptional market conditions and substantial redemptions pressures.
- *Recommendation 13*: MMF documentation should include a specific disclosure drawing investors' attention to the absence of a capital guarantee and the possibility of principal loss.
- *Recommendation 14*: MMFs' disclosure to investors should include all necessary information around the funds' practices in respect of valuation and applicable procedures in times of stress.

<u>Recommendations Regarding the Protection of Client Assets (2013)</u>

Any third party participants in global stablecoin proposals, where those amount to securities, need to assess whether they are also providing regulated activities, including safeguarding activities. For example, elements of the Hypothetical Case Study, such as the Coin, the Reserve Fund, or the rights of the Authorised Participants with respect to the Reserve Fund, might be considered a security, and ecosystem participants would need to assess, for example where they are carrying out safeguarding activities or whether they are providing regulated activities. In the case that the stablecoins similar to the Hypothetical Case Study were to amount to an MMF, other CIS, or other security, the Recommendations Regarding the Protection of Client Assets would apply.[9]

[9] Even if the proposals did not amount to any of the above listed assets, domestic or international rules around Client Assets could still apply.

In 2013, IOSCO published its *Recommendations Regarding the Protection of Client Assets,*[10] that resulted in the establishment of eight Principles. This was followed by a thematic review[11] of the adoption of these Principles in 2017.

Whilst client asset protection regimes may vary across jurisdictions, many have rules and regulations governing client assets. It is first and foremost the intermediary's responsibility to ensure compliance with the rules.

While intermediaries are 'going concerns' client assets held by them could be at risk in the event of a default, resolution or insolvency scenario. Therefore, intermediaries and other firms (such as investment firms, custodians, banks, payment services, e-money or trust companies) that hold or control client assets as part of their regulated business need to follow specific rules that aim to protect client assets.

The thematic review found that typically, firms responsible for protecting client assets are required to meet rules and regulations aligned to the eight IOSCO Principles a selection of which are listed below:

- Principle 3 – An intermediary should maintain appropriate arrangements to safeguard the clients' rights in client assets and minimise the risk of loss and misuse.

- Principle 4 – Where an intermediary places or deposits client assets in a foreign jurisdiction, the intermediary should understand and take into account the foreign regime to the extent necessary to achieve compliance with applicable domestic requirements.

- Principle 7 – Regulators should oversee intermediaries' compliance with the applicable domestic requirements to safeguard client assets.

- Principle 8 – Where an intermediary places or deposits client assets in a foreign jurisdiction, the regulator should, to the extent necessary to perform its supervisory responsibilities concerning applicable domestic requirements, consider information sources that may be available to it, including information provided to it by the intermediaries it regulates and/or assistance from local regulators in the foreign jurisdiction.

Principle 4, in particular, might be relevant to the Hypothetical Case Study as there could be challenges in supervising intermediaries' compliance with the applicable domestic rules, given the inherent cross-border reach of global stablecoins. If there is a geographically-distributed network of custodians within a stablecoin ecosystem, additional challenges might arise if the intermediaries were to hold assets of the stablecoin holder in a chain of custody through multiple jurisdictions. The intermediary has a responsibility to understand the client asset protection arrangements in every jurisdiction in which unit holders' assets are kept.

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[10] Recommendations Regarding the Protection of Client Assets Consultation Report https://www.iosco.org/library/pubdocs/pdf/IOSCOPD401.pdf; Final Report http://www.iosco.org/library/pubdocs/pdf/IOSCOPD436.pdf.

[11] Thematic Review of the Adoption of the Principles set forth in IOSCO's Report: Recommendations Regarding the Protection of Client Assets Final Report https://www.iosco.org/library/pubdocs/pdf/IOSCOPD577.pdf.

The Role of Intermediaries in the Hypothetical Case Study ecosystem

As noted above, the Hypothetical Case Study involves activities that have the potential to bring the participants within the scope of some of the above recommendations as intermediaries (i.e. a securities firm that is subject to supervision by a regulatory authority).

Digital wallets used in stablecoin propositions might for instance be seen as fulfilling an intermediary role by facilitating payments and currency exchange operations. Intermediaries acting as Authorised Participants may be engaging in functionally-similar activities to traditional intermediaries (broker-dealers, investment banks or trading platforms), transacting large amounts of fiat currency and the Coin in and out of the Reserve Fund. The intermediaries could also include the trading platforms and other entities which are involved in management of the Coin and the Reserve Fund.

Further information on how the Hypothetical Case Study is designed would be needed to determine exactly which part(s) of or whether any participants in its ecosystem would serve an intermediary role. The Company and any participants might need to pay due regard to relevant IOSCO Recommendations (for example, IOSCO Principles for Market Intermediaries[12]) alongside relevant domestic rules and regulations.

Primary Market Mechanism

Principles for the Regulation of Exchange Traded Funds (2013)[13]

As described above, certain features of the reserve fund exhibit characteristics that could be considered similar to those of Exchange Traded Funds (ETFs) and other Exchange Traded Products (ETPs).

There are features of the Hypothetical Case Study which exhibit certain characteristics of an ETF, or an ETP structure more generally – although ETFs and other ETPs explicitly hold themselves out as investment vehicles. For instance, the Hypothetical Case Study describes the use of intermediaries acting as Authorised Participants to effect transactions of fiat currency and the Coin with respect to the Reserve Fund and the creation and redemption of the Coin, and provide liquidity to holders of the Coin.

The role of the Authorised Participants includes establishing the demand for the Coin and distributing the Coin received through third party platforms to customers, including retail. This is akin to the role of authorised participants (APs) that purchase and redeem ETF shares and distribute ETF shares to the public.

IOSCO's Principles for the Regulation of Exchange Traded Funds make a number of observations on the role of APs and set out 9 Principles that Regulators should consider for ETFs. These could be relevant in the consideration of stablecoin initiatives if they were to amount to ETF or incorporate elements thereof.

Principle 8 could be of particular relevance, stating:

"*Regulators should assess whether the securities laws and applicable rules*

12 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf

13 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD414.pdf.

of securities exchanges within their jurisdiction appropriately address potential conflicts of interests raised by ETFs."

IOSCO's Committee 5 is currently undertaking work to assess whether the 2013 Principles may need updating in light of market developments. The existing 2013 Principles, and outputs from this work would also need to be taken into account, to the extent the stablecoin structure shared features in common with an ETF.

Secondary Market - Trading the Coin

The above has outlined considerations relating to the primary market mechanism for stablecoins, including the Coin. There are issues with respect to secondary market trading of stablecoins, including the Coin.

Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms (2020)

Crypto-asset trading platforms (CTPs) could play an important role in trading stablecoins, including the Coin. Under the Hypothetical Case Study, the Coin distribution will occur through Authorised Participants that directly interact with the Reserve Fund (to mint or burn the Coin according to demand) and such Authorised Participants may use trading platforms to buy and sell the Coin, i.e. possibly CTPs.

Under the Hypothetical Case Study, CTPs could be the main secondary market where the Coins are bought and sold by Coin Users. In February 2020, IOSCO published a Final Report on Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms.[14]

Where a regulatory authority has determined that a crypto-asset or an activity involving a crypto-asset falls within its jurisdiction. the basic principles or objectives of securities regulation should apply. The Final Report therefore states that the IOSCO Principles and Methodology provide useful guidance for regulatory authorities considering the identified issues and risksin relation to stablecoins. The Final Report defines CTPs as a facility or system that brings together multiple buyers and sellers of crypto-assets for the purpose of completing transactions, or trades.

The Final Report describes some of the issues and risks associated with the trading of crypto-assets on CTPs. It describes key considerations and provides related toolkits for each consideration. These considerations and toolkits are intended to assist regulatory authorities who may be evaluating CTPs within the context of their regulatory frameworks. The key considerations relate to:

- Access to CTPs;
- Safeguarding participant assets;
- Conflicts of interest;
- Operations of CTPs;
- Market integrity;
- Price discovery; and
- Technology.

[14] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD649.pdf

Under the Hypothetical Case Study, Authorised Participants would participate and, as such, they might be engaging in market-making activities through direct interactions with the Reserve Fund. Through these activities, Authorised Participants could be operating in a manner that could be compared to 'dark' pools of liquidity. This could give rise to concerns around conflicts of interest and market abuse (both of which are discussed in further detail below).

CTPs may need to be regulated as trading venues and meet relevant domestic requirements and international standards.

Some considerations (alongside those mentioned elsewhere in this paper) that may be relevant could include:

- ***Financial Resources***:
  Where a CTP holds participant assets, a key consideration for regulatory authorities is whether prudential mechanisms are in place to support the operations of the CTP.
- ***Conflicts***:
  A key consideration for regulatory authorities is the extent to which conflicts of interest exist due to the internal structure and organization of a CTP and, if so, how they are managed.
- ***Market Integrity:***
  A key consideration for regulatory authorities is the applicability of existing rules relating to market abuse and the capacity of CTPs to prevent and/or detect market abuse.
- ***Transparency of Operations of CTPs:***
  Due to the prevalence of non-intermediated access to CTPs, a key consideration for regulatory authorities is the extent to which information about how CTPs operate is available to their participants.
- ***Cyber:***
  A key consideration for regulatory authorities is how a CTP addresses cyber security and resilience.

Principles for Financial Benchmarks (2013)[15]

In 2012, IOSCO's Board established a Task Force to identify and consider benchmark-related issues (including transparency, methodology, governance, oversight and factors to be considered in transition to an alternative benchmark); and develop principles to support the quality and resilience of benchmarks.

The Task Force produced a paper outlining principles for financial benchmarks in 2013. These principles provide a helpful and potentially relevant reference for regulators in evaluating stablecoin structures.

Should any stablecoin pricing or the value of any assets that is intended to be linked to the stablecoin be used in the future to price or be the basis for the price of certain financial instruments, including those traded on a regulated venue (such as a fund or derivatives), there is the possibility the stablecoin or the value of the linked assets could become a benchmark. In

[15] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf

turn, depending on the jurisdiction, the administrator of the benchmark might need to be authorised or could be carrying out regulated activity.

Whether or not any stablecoin were to ultimately become a benchmark, the principles outlined in this work are useful as a starting point to understand the areas of risk and key mitigants to address inherent risks in relation to calculating and publishing prices.

The 2013 IOSCO work describes three main factors to be taken into account when assessing the risk of a benchmark: submissions to benchmarks, content and transparency, and governance processes. It then sets out the below four main areas of principles (including governance, quality of the benchmark, quality of methodology, and accountability) designed to address these inherent risks in benchmarks.

If the Coin or Reserve Fund were to meet the definition of a benchmark, these principles could apply given how the price of the Coin is described above as being determined (using a basket of currencies and other sovereign financial instruments), and the potential for conflicts of interest to exist in this process. The activities of creating and publishing benchmarks bring with them various inherent risks that need to be mitigated. A lack of transparency can result in abusive conduct occurring to influence benchmark determination, and the possibility of manipulation.

As such the principles provide an understanding of the specific areas of risk that need to be addressed, and a set of expectations against which to assess stablecoin proposals. Some of these principles might still apply whether or not a stablecoin ultimately became a benchmark.

Principles for the Regulation and Supervision of Commodity Derivatives Markets

IOSCO's work on derivatives products may be relevant in two distinct ways. First, the Coin itself could potentially be regarded as a derivative of some sort, deriving its value from an underlying basket of financial assets, i.e. the Reserve Fund. Secondly, future derivatives products could be introduced that would use the Coin as the underlying asset from which they derive their value.

IOSCO Committee 7 focuses on issues related to all types of derivatives products and markets, and has carried out G20-mandated projects including producing "Principles for the Regulation and Supervision of Commodity Derivatives Markets."[16]

The Bank for International Settlements (BIS) describes a derivatives contract as one "whose value depends on the value of one or more underlying reference assets, rates or indices, on a measure of economic value or on factual events."[17]

Bitcoin futures derivatives trade on the Chicago Mercantile Exchange and the Intercontinental Exchange in the United States. Depending on the worldwide acceptance and growth of a stablecoin, it is possible that similar futures or non-exchange traded derivatives could come to exist with stablecoins as the underlying asset.

The following three IOSCO principles on commodity derivatives are potentially relevant:

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16 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD358.pdf

17 https://www.bis.org/cpmi/publ/d00b.htm?&selection=28&scope=CPMI&c=a&base=term 18
https://www.iosco.org/library/pubdocs/pdf/IOSCOPD649.pdf

- Economic Utility - Contracts should meet the risk management needs of potential users and promote price discovery of the underlying commodity. The design and/or review of commodity derivatives contracts should include a determination that the contract can meet the risk management needs of potential users of the contract and/or promote price discovery of the underlying commodity. The determination of economic utility may be supported by surveys of potential contract users or may be implied - for example, from an analysis of the physical market.
- Transparency - concerning a physical commodity derivatives contract's terms and conditions, Information as well as other relevant information concerning delivery and pricing, should be readily available to Market Authorities with respect to all derivatives transactions within its jurisdiction and to market participants in organised derivatives markets.
- Review of Evolving Practices - Market Authorities should have, or contribute to, a process to review the perimeter of regulation to ensure that they have the power to address evolving trading practices that might result in a disorderly market. Exchanges and self-regulatory organisations play a critical and complementary role with governmental regulators in identifying such practices.

The above principles provide a helpful reference for competent authorities considering stablecoin proposals in respect of the risks and relevant considerations inherent to derivatives.

Possible Exposure to Investment Funds

C5 has undertaken a Regulatory Risk Review, examining the exposure of investment funds to crypto-assets. Where investment funds are investing in these instruments, the Review looks at possible issues around custody, valuation, liquidity, underlying asset trading, financial promotions, and disclosure and transparency. To the extent that investment funds may invest in stablecoins in the future, these considerations may also be relevant.

Overarching Considerations

IOSCO Principles relating to cooperation and mitigating market fragmentation

Global stablecoins, both in structure and ambition, have the potential to be global and cross-border soon after launch.

In that context, there may be some similarities between stablecoin trading and other types of crypto-asset trading. IOSCO's report on crypto-asset trading platforms[18] notes that "*Crypto-asset trading takes place 24 hours a day with investors, participants, intermediaries and platforms from around the world*" and gives rise to risks "*of regulatory arbitrage, the risk that an unregulated CTP operates and provides access to participants and the risk that a CTP provides access to participants in a jurisdiction in which this is not permitted*." These risks are also present in stablecoin trading, including the Hypothetical Case Study.

In evaluating regulation of stablecoin structures and activities, it will be important that securities regulators collaborate, amongst themselves and with other financial supervisors, to reduce the risk of regulatory arbitrage through fragmentation and, in doing so, protect investors while ensuring market integrity.

[18] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD649.pdf

Authorities will need to assure themselves that they have the appropriate regulatory cooperation tools in place, both with other securities regulators and with banking and payments regulators to protect their domestic investors and ensure stablecoin market transparency.

The IOSCO Principles relating to cross-border cooperation (Principles 13, 14 and 15) could be important when assessing global stablecoins, encouraging a broad range of cooperation and information sharing. The relevant principles are:

- IOSCO Principle 13 - The Regulator should have authority to share both public and non-public information with domestic and foreign counterparts.
- IOSCO Principle 14 - Regulators should establish information sharing mechanisms that set out when and how they will share both public and non-public information with their domestic and foreign counterparts.
- IOSCO Principle 15 - The regulatory system should allow for assistance to be provided to foreign Regulators who need to make inquiries in the discharge of their functions and exercise of their powers.

Many jurisdictions have applied these Principles by establishing bilateral Memoranda of Understanding (MOU). These types of agreements may need to be explored for stablecoins as well to the extent necessary. In this context, IOSCO's Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information (IOSCO MMoU) and the Enhanced Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information (EMMoU) will also be relevant and may facilitate exchange of relevant information amongst members with respect to enforcement.

In the future, members may wish to explore to what extent it may be appropriate to rely on one another more deeply. The toolkit established by IOSCO's Task Force on Cross-Border Regulation[19] is relevant here.

Due to their inherently cross-border nature, global stablecoins are likely to raise challenges in terms of supervision. In this respect, it will be essential that regulatory and supervisory authorities ensure a necessary level of cooperation and coordination in the supervision of global stablecoins and the associated ecosystem participants. Further, global stablecoins raise issues that go beyond the sole remit of securities and markets authorities (e.g. data protection, cyber-risks, AML-CFT). Coordination at the international level with the sectoral authorities in charge of these issues should also be considered.

Guidance on cyber resilience for financial market infrastructures (2016)

In June 2016, IOSCO jointly published with the CPMI Guidance on cyber resilience for financial market infrastructures (FMIs).[20]

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19 IOSCO Task Force on Cross-Border Regulation Final Report.

20 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD535.pdf.
This guidance is supplementary to the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMI), primarily in the context of governance (Principle 2), the framework for the comprehensive management of risks (Principle 3), settlement finality (Principle 8), operational risk (Principle 17) and FMI links (Principle 20).

According to the PFMI the term "FMI" refers to systemically important payment systems, central securities depositories (CSDs), securities settlement systems (SSSs), central counterparties (CCPs) and trade repositories (TRs).

The safe and efficient operation of FMIs is essential to maintaining and promoting financial stability and economic growth. The level of cyber resilience can be a decisive factor in the overall resilience of individual firms, the financial system and the broader economy.

This guidance outlines five primary risk management categories:

- Governance (cyber resilience framework and strategy with clear personal responsibilities);
- Identification (identify and classify critical business processes and external dependencies);
- Protection (effective security controls to protect confidentiality, integrity and availability of assets and services);
- Detection (effective monitoring and process tools to detect cyber incidents); and
- Response and recovery (safe resumption of critical operations within two hours of a disruption).

It further highlights three overarching components (testing; situational awareness; and learning and evolving) that should be addressed across a cyber resilience framework.

Further, IOSCO's Cyber Task Force (established in 2017) published its final report in June 2019 providing a perspective on the landscape of Cyber regulations among IOSCO member authorities, focusing its review on the "Core Standards".[21] The Core Standards are three prominent and widely respected Cyber frameworks: the above discussed IOSCO Cyber guidance, the National Institute of Standards and Technology (NIST) Cybersecurity and the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) Framework. The report concludes that a new cyber framework is not necessary at this stage given the existence of already prominent Cyber frameworks developed by experts in this space. The Cyber Task Force will focus on gaining a better understanding of where potential gaps of the framework or IOSCO member adoption lie.

Given the nascent state of distributed ledgers and stablecoin structures, it will be key to ensure a clear understanding of associated cyber risks and relevant mitigation strategies. Although this guidance is aimed at FMIs, this guidance will assist regulatory authorities to assess cyber risk mitigation strategies of various actors within the particular stablecoin structures.

Were the Hypothetical Case Study to involve a stablecoin governing board or entity separate from the governing body of the Company, that entity and any participants in the ecosystem would, in addition to the Company, also need to ensure that they meet relevant standards around cyber security.

4. Implications for Securities Regulators

IOSCO's three core objectives are protecting investors, ensuring that markets are fair, efficient and transparent, and reducing systemic risk.

This section sets out key potential issues that arise for the Hypothetical Case Study and would arise in the context of other global stablecoins.

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[21] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD633.pdf

The issues are grouped into four broad categories, the first three of which map onto IOSCO's objectives (systemic risks, market integrity and resilience, consumer and investor protection). Given the broad implications of potential stablecoin structures such as the Hypothetical Case Study, other relevant risk categories are also assessed at a high level below. In these areas, the more detailed work of relevant standard-setting bodies should be considered.

Systemic risks[22]

Through its work, IOSCO seeks to, amongst other aims, address systemic risks - risks that impact the stability of the financial system which in turn can have knock-on effects to the real economy. It is important that the channels through which such risks might evolve are assessed and properly understood since complex systems, while appearing stable, can hide unknown or poorly understood instabilities. Stablecoin structures, such as the Hypothetical Case Study, that are readily scalable to a large existing global user base could increase the potential severity and velocity of systemic risks should they materialise. In addition, if such stablecoins or any ecosystem participants were to have a large user base, the amplifying nature of a successful network (i.e. the more users of the network, the more applications for the platform would be developed for use on it), could result in new risks.

The Hypothetical Case Study also could have the potential to replicate existing financial products and services with the Coin as a new payment medium. For example, financial service providers may develop services for consumers to spend, save, send, borrow, and invest through a stablecoin ecosystem, including with these services accessible via mobile phone applications.

Liquidity

The Hypothetical Case Study would have the Coin issued and redeemed through intermediaries acting as Authorised Participants. If these Authorised Participants were to act as buyers of last resort, in the absence of other guarantees, the ability of the Reserve Fund to have sufficient assets to repay the Authorised Participants upon redemption of the Coin, would be contingent on the assets held in the Reserve Fund preserving their value, and the ability of to sell the assets in the Reserve Fund quickly enough to pay the Authorised Participant.

By using the Reserve Fund to assure price stability through the redemption mechanism, decisions made in managing the Reserve Fund could have significant consequences.

Another consideration is the extent to which Authorised Participants would be committed to meeting spikes in demand for the Coin. It is conceivable that in a market with a volatile currency, Authorised Participants could lose the appetite to hold stock of, and sell, the Coin to consumers as it would expose them to fiat currency volatility. This could have severe repercussions if a large share of transactions within an economy were to use the Coin.

Monetary Policy

All countries

Monetary policy has been instrumental in many countries around the world in battling the effects of the last financial crisis in 2007-8. It works through adjusting the opportunity cost of

[22] Systemic and monetary policy risks are being considered in detail by the G7 stablecoin group and this analysis will later be discussed at the G20. However, it is important for this paper to highlight some key considerations and risks to ensure a high-level understanding, and as it relates to stablecoins.

holding money, i.e. the interest rate. High interest rates encourage consumers to invest their money, while low interest rates encourage consumers to borrow and spend.

Assuming the success of the Hypothetical Case Study structure, the Hypothetical Case Study could affect the effectiveness of monetary policy tools used by countries. Worldwide adoption of such stablecoins could decrease liquidity and transaction volumes in domestic currencies. This would likely have a bigger impact in countries with volatile currencies or a higher un-/under-banked population. It could also increase the likelihood and effects of events such as capital flight, which could in turn result in devaluation of a domestic currency.

As the Coin is not a sovereign currency of a sovereign entity there would not be the same objective as countries' central banks to maintain price stability and economic growth. The Hypothetical Case Study also would not be concerned with domestic economic outcomes of individual countries which, for those countries, macroeconomic policy tools could be reduced to fiscal policy only.

The systemic challenges that the Hypothetical Case Study could raise are likely to be magnified in emerging economies, which could be affected more than other economies. International Standard setters like IOSCO will provide an important venue for the creation of an internationally coordinated view and approach.

Countries whose sovereign bonds could be in the Reserve Fund

The Hypothetical Case Study reserve management could pose a risk to stable economies if the Reserve Fund became a sizeable holder of government bonds for a handful of selected stable economies. Large scale purchases and sales of government bonds or changes in the composition of the assets in the Reserve Fund could impact the price (and therefore yield) of government bonds.

As government bond yields are the benchmark for private sector credit, this would in turn impact the domestic interest rates of these economies for both consumers and corporations. Adjustments in the Reserve Fund would likely be countercyclical, thereby intensifying the impact on domestic monetary policy.

While, hypothetically, the balance of assets in the Reserve Fund could be adjusted to take advantage of interest rate movements, it is unlikely these adjustments would be large enough to impact interest rates significantly, since any large movement in bond prices would change the value of the Reserve Fund and potentially the Coin.

Market Integrity and Resilience

Well-functioning markets that are fair, efficient and transparent are important for market confidence and to deliver good outcomes for users of those markets. Market abuse-style activities pose risks to market integrity and the proper functioning of markets, and often lead to investor losses or damage market confidence. Similarly, cyber risks can threaten the resilience of crypto-assets and related markets.

A set of contributing factors also exist that give rise to concerns about market integrity including: market immaturity, illiquidity and a lack of available and reliable information for participants.The Hypothetical Case Study and Coin are inherently susceptible to the types of

market integrity risks described above. The Hypothetical Case Study presents a number of potential market integrity risks, considered below.

Trading platforms or intermediaries, often referred to as "on ramps," where consumers could transact in Coin/fiat currency pairs could be a target of potential abusive behaviour. As a result, the effectiveness of the systems and controls of the relevant intermediaries are paramount to protect consumers and market integrity. In addition, a potential lack of price transparency of the Coin or other stablecoins between different Authorised Participants using different local fiat currencies could inhibit consumers' ability to make well-informed decisions.

Depending on how conflicts of interest are managed by intermediaries, an Authorised Participant could possess market-sensitive information that it could use to front-run large orders from consumers to buy or sell the Coin. Such Authorised Participants could also be incentivised to show larger trading volumes than exist in order to increase revenues. Such activity has already been noted in existing crypto-asset-markets by platforms seeking to attract customers and the listing of tokens. It might be in the interest of trading platforms to gain a dominant market position.

The systems and controls of crypto-asset trading platforms remain relatively basic and often insufficient when compared to the sophistication of those in place in more established markets. There is a significantly increased risk of operational issues occurring with unregistered and unsupervised trading platforms. If the Coin or another stablecoin were to trade on such underdeveloped trading infrastructures in the future, where sufficiently robust systems and controls were not in place, these platforms may become unstable when usage surpasses their system capacity and may be subject to market abuse that could damage market integrity.

Risks around market integrity are important since poorly functioning markets can lead to persistently poor outcomes for users of those markets. For example, if Coin purchasers were to overpay for their Coins, and there were a sudden loss of confidence in the stablecoin ecosystem, it could result in a dislocation of prices between the Coin and the Reserve Fund assets backing it, causing large devaluations in consumers' Coin holdings. Additionally, non-compliance with exchange regulation, if the Coin were a security, would be another risk.

Investor and Consumer Protection

The nature and extent of issues and risks for investors and consumers depends on various factors, including the type of product in question. Ultimately, the degree of protection available to investors and consumers will be highly dependent on the nature of the product and the regulatory regime that applies.[23] In light of the potential reach and uptake of stablecoin proposals, significant investor and consumer protection risks could arise.

This section assesses what types of protection investors might benefit from if a stablecoin initiative were to amount to a regulated crypto-asset (e.g., a security). However, if a stablecoin initiative were to amount to an unregulated crypto-asset, not falling under any regulatory

[23] For example, if the Hypothetical Case Study or other stablecoin were to amount to the issuance of electronic money in a European Union Member State, the measures contained in the Second Electronic Money Directive, as implemented by national law, would likely apply to the proposal, including initial capital requirements, safeguarding obligations, information requirements and regulatory reporting and notification obligations.

regimes, it would not confer the protections associated with these regimes on the token holder and substantial investor and consumer protection risks may arise as a result.

The following table sets out a selection of the types of investor protection safeguards that a stablecoin initiative would likely need to have in place if it were subject to a jurisdiction's regulatory requirements for securities.

Regulatory requirements	**Detail**
Pre- and Post-trade obligations	Market operators of financial instruments and participants of a trading venue are subject to various pre- and post-trade obligations. These ensure that the market can accurately assess the demand and supply of an instrument to derive a market clearing price. By ensuring that the price accurately reflects the prevailing market demand for such an instrument, investors obtain the best price possible.
Financial Promotions	Many jurisdictions impose requirements for the promotion or advertising of financial products and services. For example, the UK financial promotion regime sets out rules that govern the marketing of financial services and products. The purpose of the regime is to protect consumers from inappropriate marketing. The financial promotions regime is primarily structured around: - restrictions on people who are not authorised under the Financial Services and Markets Act 2000 (FSMA); and - conduct of business rules for firms who are authorised under FSMA. Under section 21 of FSMA, if an unauthorised person was to communicate, in the course of business, a financial promotion which does not fall within an exemption and the content of which has not been approved by an authorised person, they would be committing a criminal offence. Before an authorised firm approves a financial promotion for communication by an unauthorised person, they must confirm that it complies with FCA rules on financial promotions. This includes ensuring that the financial promotions which they approve are fair, clear and not misleading regardless of the media type.
Disclosure requirements	In many jurisdictions, issuers of regulated securities are required to disclose various types of information, including prospectuses. The provision of this type of information is designed to ensure that investors have sufficient information, based on which to make informed decisions.
Regular and event-driven regulatory reporting	Regulated entities are subject to a broad range of regular reporting requirements. These ensure that regulators can supervise regulated businesses effectively.

	Examples include regular reports regulated firms must submit to EU Member State National Competent Authorities under EU Directives such as the Second Payment Services Directive and Electronic Money Directive. Similarly, regulated entities must notify regulators of certain incidents. Under EU legislation, this includes the obligation for payment service providers to notify national competent authorities of major operational and security incidents. These reporting requirements ensure that competent authorities supervising regulated entities can monitor and, where appropriate, enforce against legal and regulatory obligations. They ensure that consumers and investors can expect regulated entities to comply with various obligations (including as they relate to prudential management, operational resilience, etc) or face enforcement action from competent authorities. This enables greater investor confidence in the appropriate management of regulated entities.
Complaint management and resolution	Various domestic complaint management requirements set out obligations for regulated entities to handle complaints, report complaints statistics to regulators and also set out consumers' rights to complain to regulators about how regulated entities handle complaints.
Retail investor protection	In many jurisdictions, recommendations and advice related to retail investment products must be suitable for investors and based on a consideration of the consumer's needs and capacity for loss. Crypto-asset based retail products would be no exception to the general retail investment protection requirements already in place.
Deposit Protection Schemes	Whilst deposit protection schemes do not cover investor losses with regards to (activities around) securities, they cover deposits that consumers might regard as 'investment'. Many jurisdictions feature a deposit protection scheme whereby depositors are guaranteed a certain amount of their deposit which is held with a regulated institution in case that deposit-taking institution is unable to pay out a claim against it. These schemes act as a lender of last resort for depositors. Generally, what constitutes a deposit is well defined in every jurisdiction and a set of requirements might need to be met to trigger a compensation pay-out.

Scams

Various stablecoin structures may encourage scams, which would also impact investor and consumer protection. These include scams offering 'pre-sale' tokens i.e. fake versions of stablecoins. Scams also use fake ads, accounts, pages and groups on other social media platforms.

Cyber risk and operational resilience

As with all digital technologies, including crypto-assets and stablecoins, there is a risk of cyber-crime. The fast-evolving and digital nature of blockchain technology means that its users,

whether consumers or firms, can be vulnerable to various types of cyber threats – most notoriously, hacking. Key actors within the broader crypto-asset ecosystem, such as wallet providers and crypto-asset trading platforms, have previously experienced high-profile hacks and thefts – for instance, Coincheck ($540 million stolen in January 2018), MtGox (almost $500 million stolen in February 2014) and Bithumb ($32 million stolen in June 2018).

The nascent nature of the technology is not just a risk in isolation. Firms dealing in crypto-assets have lost assets due to mismanagement or lack of operational controls, security strategies and procedures, in other words, poor operational resilience. As such, stablecoin issuers should be able to explain how they will act to mitigate operational resilience risks, including internal vulnerabilities and threats. Issuers should be able to articulate the strategic operational risk model for both their own organisation as well as the ecosystem more broadly, as well as what plans they have in place should a breach, such as a hack or data loss, occur.

One of Canada's largest crypto-asset trading platforms, Quadriga, closed earlier this year after its chief executive reportedly died in possession of the sole access to over 100,000 customers' crypto-assets, which demonstrated the firm's lack of effective governance or risk management controls. It is worth noting that the CPMI-IOSCO PFMI provide, amongst other things, that FMIs have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.[24]

Crypto-assets are highly customisable and not uniform, and different crypto-assets present different risks. Any given stablecoin's specific cyber risk profile will therefore be related to its underlying properties such as the technology used, the underlying stabilisation mechanism and the set of users that can interact with it. For instance, crypto-assets, including privacy-enhanced crypto-assets (which allow anonymous transactions) can be particularly difficult to trace in the event of a hack, making effective enforcement difficult.

Any aspirant stablecoin issuer should, therefore, consider how cyber risks can arise from the use of their specific crypto-asset, by both themselves, other firms or their customers. In particular, developers should be able to explain how they can protect themselves and the public from a range of cyber threats, including hacking, fraud, extortion, phishing and ransomware.

Governance, Culture, Competition and Market Access, Data and Ethics

An effective governance structure and healthy culture are important for all firms; getting these 'right' can provide a solid foundation for control and success, but equally they can be a substantial source of risk when they do not exist or operate effectively. Issues such as conflicts of interest, and the checks and balances that exist in traditional firm governance and risk management structures should be considered.

Poor culture and poorly constructed incentive models in firms can act as a driver of poor conduct. Entities involved in prospective or existing stablecoin proposals should evaluate their policies to assure meaningful standards relating to governance and culture and to avoid potential poor conduct among participants.

The effects of a particular stablecoin and its sponsors on competition is another important consideration, including potentially harmful effects on competition in products and services,

[24] PFMIs Principles 3 and 17 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD377-PFMI.pdf

including digital wallets and the involvement of any third parties in the stablecoin ecosystem with the effect of the potential exclusion of others. Ineffective competition risks a wide range of possible consumer harms, including negative effects on consumers through price, quality, product suitability, consumer choice and consumer access.[25]

Domestic competent authorities are carrying out work to consider the potential implications of the emergence of Big Technology companies in financial services, including the UK's Competition and Markets Authority and the German Bundeskartellamt.[26]

How data is collected, stored, used and shared could raise issues and risks for consumers as well.

Uncertainty on how new technology, including artificial intelligence and machine learning might be leveraged to interrogate information received and generated by any stablecoin or other technology ecosystem, raises concerns around appropriate consumer access to services, given the potential that individuals may be blocked or banned from the ecosystem.

Anti-money laundering and counter-terrorist financing

While DLT provides an immutable record, certain crypto-assets can offer potential anonymity or pseudo-anonymity and the ability to move money between jurisdictions and individuals. Emerging crypto-laundering typologies make detection more challenging, and more illicit actors are using crypto-assets, particularly stablecoins. This lack of transparency and regulatory oversight, as well as complexity in number and type of market participants means that there are risks from financial crime, including money laundering and the financing of terrorism.

Europol estimates that £3-4 billion is laundered each year using crypto-assets in Europe alone.[27] While this remains a relatively small proportion of total funds being laundered in Europe (around £100 billion), the Financial Action Taskforce, the global standard setter for AML/CTF, estimates that suspicious transaction reporting related to crypto-assets is growing globally.[28]

In June 2019, the Financial Action Task Force (FATF) adopted Guidance on the application of the risk-based approach to crypto-assets and crypto-asset service providers.[29] The Guidance is aimed at both national authorities to developed regulatory and supervisory responses to crypto-asset activities, and the private sector to improve their understanding on AML/CTF obligations.

Particular consideration needs to be placed on areas of acute financial crime harm where stablecoins are exchanged for fiat currency. For instance, through exchanges, peer to peer networks, crypto-asset ATMs and custodian wallet providers.

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25 See for example, Our Mission, the UK Financial Conduct Authority, 2017, for a description of types of harm.

26 https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study; https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html

27 https://www.bbc.com/news/technology-43025787

28 http://www.fatfgafi.org/media/fatf/documents/reports/FATF-Report-G20-FM-CBG-July-2018.pdf

29 https://www.fatf-gafi.org/publications/fatfrecommendations/documents/public-statement-virtual-assets.html

Market participants need to ensure that effective financial crime controls are in place and accurate risk tolerances are set. This includes taking steps to identify their customers (customer due diligence or sometimes referred to as KYC). It also includes monitoring transactions, identifying and reporting suspicions transactions, as well as having clear structures in place in terms of who is responsible for the financial crime systems and controls. Market participants also need to consider the risks of different customer categories, the use of different types of stablecoin, and the distribution channel they are delivering these tokens through. The type, complexity, speed and volume of transactions can also influence the likelihood of financial crime taking place, and/or being detected.

There needs to be consideration of which bodies will regulate and supervise this area in an impartial and independent manner. This could be conduct regulators, prudential regulators, AML/CFT supervisors, central banks or other independent authorities.

FATF has determined that global stablecoins and their service providers would be subject to the FATF standards. These standards apply to activities conducted by participants that are defined as a 'Virtual Asset Service Providers'. These activities include exchange between virtual assets and fiat currencies; exchange between one or more forms of virtual assets; transfer of virtual assets; safekeeping and/or administration of virtual assets or instruments enabling control over virtual assets; and participation in and provision of financial services related to an issuer's offer and/or sale of a virtual asset.

However, the FATF guidance does not apply to peer-to-peer transactions (where no 'Virtual Asset Service Provider' is involved) or non-custodian wallets (which are essentially software that makes it easier for the user to send transactions, but where the user still has ultimate control of the asset). The growth of peer to peer transactions may have detrimental impact on compliance with AML/KYC requirements.

6. Conclusion

A widely adopted global stablecoin has significant potential to create benefits to market participants including consumers and investors, but also to exacerbate existing risks and create new risks in financial markets. Stablecoin proposals could, in the long-term, replicate existing financial products and services with the stablecoin ecosystem as a new payment medium or core component of market infrastructure.

This paper has set out risks across a range of areas including consumer protection, market integrity, transparency, conflicts of interest, financial crime, systemic implications and economic impacts. The use of stablecoins in financial services could entail significant changes to how financial markets work, and therefore could generate risks that would need to be managed by participants in stablecoin arrangements and would require careful consideration by regulators and standard setters.

Given the potential cross-border and cross-agency reach of existing and new stablecoin structures, IOSCO and its members intend to help coordinate a global approach, as necessary. IOSCO stands ready to work with other international bodies and standard setters to have a consistent understanding of the stablecoin proposals and risks. IOSCO will seek to provide a venue for regulators to discuss issues relevant to the supervision of a stablecoin ecosystem that is global and widely adopted.

Committee on Payments and Market Infrastructures

BANK FOR INTERNATIONAL SETTLEMENTS

OICV-IOSCO

ANNEX 1: CPMI-IOSCO Analysis

Application of the PFMI to stablecoin arrangements – Preliminary analysis

Key points

- CPMI-IOSCO have undertaken a preliminary analysis of the applicability of the Principles for Financial Market Infrastructure (PFMI)[30] to stablecoin arrangements.
- The PFMI are designed to apply to all systemically important Financial Market Infrastructures (FMI). The PFMI are based on a functional approach and allow for a wide range of organisational forms, institutional designs, and arrangements.
- Stablecoin arrangements can be designed to cover a range of functions and those functions will determine the standards that will be applied. Some stablecoin arrangements will be designed to settle payments via a transfer mechanism, providing a core function that meets the definition of a payments system, as defined in Annex D of the PFMI.[31] However, other stablecoin arrangements may perform a variety of different FMI functions. Some of these arrangements may be systemically important, having the potential to trigger or transmit systemic disruption. **Where stablecoin arrangements perform systemically important payment system functions or other FMI functions that are systemically important (hereafter "systemically important stablecoin arrangements"), the PFMI apply to such arrangements.**
- **To the extent that systemically important stablecoin arrangements perform additional functions not covered by the PFMI, they will be subject to relevant standards for those functions in addition to the PFMI**. These standards may have interdependencies. For example: the PFMI (Principle 9) state that systemically important FMIs should use a settlement asset with little or no credit or liquidity risk, and where commercial bank money is used this relies on the Basel standards for commercial banks.[32] Further work may be needed to explore and lay out clearly the interdependencies of the PFMI with other international standards, including how each addresses the risks associated with a systemically important stablecoin arrangement's stabilisation activities.
- Regulatory or supervisory principles around consumer and investor protection, data privacy, Anti-money laundering (AML) and market integrity are also likely to be crucial elements of the overall regulatory framework that would apply to a systemically important stablecoin arrangement. Cross border regulatory cooperation will be important given the potential for regulatory arbitrage.

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30 PFMI are available on the CPMI and IOSCO websites: www.bis.org/cpmi/publ/d101a.pdf and www.iosco.org/library/pubdocs/pdf/IOSCOPD377-PFMI.pdf.

31 Annex D of the PFMI states: "A payment system is a set of instruments, procedures, and rules for the transfer of funds between or among participants; the system includes the participants and the entity operating the arrangement." (See also paragraph 1.10 of the PFMI).

32 Principle 9 (Money settlements) is applicable to systemically important payment systems, securities settlement systems and CCPs.

- The PFMI are technology neutral. It may be challenging for some systemically important stablecoin arrangements to comply with the high standards of the PFMI, particularly for those systemically important stablecoin arrangements that are partially or highly decentralised. **Nevertheless, systemically important stablecoin arrangements will need to adapt to meet them.**
- **Some clarification or interpretation may help explain how systemically important stablecoin arrangements may comply with the PFMI, but such clarification or interpretation would not change the underlying principles that apply to a systemically important FMI.** Such clarification or interpretation would seek to explain how the PFMI apply to organisations providing novel but systemically important FMI functions and to help such organisations understand what observing the PFMI, at minimum, will require of their design choices. **CPMI-IOSCO envisage further work to explore the need for such clarification or interpretation.**

1. Introduction

The Principles for Financial Market Infrastructures (PFMI) are designed to apply to all systemically important Financial Market Infrastructures (FMI).[33] FMIs facilitate the clearing, settlement and recording of monetary or other financial transactions, such as payment, securities, and derivatives contracts. They play an essential role in the global financial system and the broader economy. If not properly managed, FMIs can be sources of financial shocks, such as liquidity dislocations and credit losses, or a major channel through which these shocks can be transmitted across domestic and international financial markets. Responsibility E of the PFMI provides the framework for cooperation among central banks, market regulators, and other authorities for promoting the safety and efficiency of systemically important FMIs.

This note describes CPMI-IOSCO's preliminary analysis of how the PFMI[34] are relevant and applicable to systemically important stablecoin arrangements. Stablecoin arrangements can be complex, consisting of multiple entities, possibly located in several jurisdictions and possibly performing a mix of different FMI functions. Ultimately, how the PFMI are applied to a particular systemically important stablecoin arrangement would depend on the arrangement's specific design, characteristics, and features, which would have to be addressed on a case-by-case basis.

Preliminary analysis suggests that the PFMI provide relevant international standards for authorities to take into account in (1) considering regulatory approaches that may be appropriate for systemically important stablecoin arrangements, (2) promoting their safety and efficiency, and (3) cooperating in fulfilling their respective functions. While no need for an amendment of the PFMI is identified at this point in time, it is noted that proposed and prospective systemically important stablecoin arrangements may encounter challenges in meeting some of the relevant PFMI standards.

Certain functions of stablecoin arrangements may involve the application of other regulatory/supervisory frameworks in addition to the PFMI. Moreover, related work is already

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[33] The PFMI define an FMI in a broad sense as a "*multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling or recording payments, securities, derivatives, or other financial transactions*". In particular, the PFMI apply to systemically important payment systems (SIPS), central counterparties (CCPs), central securities depositories (CSDs), securities settlement systems (SSSs), and trade repositories (TRs).

[34] The PFMI are made up of 24 principles that apply to one or more types of systemically important FMIs. Furthermore, five Responsibilities apply to authorities supervising or overseeing such FMIs. In particular Responsibility E addresses cooperation among central banks, market regulators, and other authorities. Annex F applies to critical service providers of FMIs.

in progress in regulatory fora other than CPMI-IOSCO.[35] Thus, for systemically important stablecoin arrangements, observing the PFMI for their payment system function will be necessary, but might not be sufficient for the overall arrangement.

CPMI-IOSCO envisage conducting additional work to analyse how particular aspects of the PFMI may be applied to systemically important stablecoin arrangements. If this further analysis reveals any gaps or the need for clarifications, they would need to be addressed, but this will not amount to a derogation or disapplication of the underlying principle. CPMI-IOSCO will coordinate with other international bodies to share perspectives and avoid duplication of work.

2. Rationale for PFMI application to stablecoin arrangements

The PFMI are expected to be applied to systemically important FMIs. The PFMI are based on a functional approach[36] and allow for a wide range of organisational forms, institutional designs, and arrangements of payment processes. The key features of stablecoin arrangements may, to a large extent, be comparable to those of payment systems, as defined in Annex D of the PFMI.[37] In particular, most stablecoin arrangements appear to be inherently designed, at a minimum, to settle payments via a transfer mechanism, where "money settlement"[38] occurs, e.g. when a "token" transfer is recorded on the arrangement's "ledger".[39] In such an arrangement, the core activity of stablecoin arrangements may be a payment system function.

A stablecoin arrangement is also designed to enhance confidence in the value of the issued "tokens". Therefore, often "tokens" purportedly are "backed" by funds, such as central bank deposits, commercial bank deposits, and/or other assets such as securities.[40] This is one means by which a stablecoin arrangement may provide a stabilisation function.

Some stablecoin arrangements may also have a user interface function (interfaces may differ across stablecoin arrangements) that provides access points for users, e.g. wallets.

More broadly, some stablecoin arrangements may also be designed to provide services ancillary to typical payment system services (e.g. some Delivery versus Payment (DVP) or CSD/SSS type services) and may thus be of a "hybrid" FMI nature.

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35 A stablecoin arrangement, or particular parts thereof, may be classified as a different type of regulated entity (ie, not only as a payment system) or a different type of regulated activity. Other regulatory/supervisory frameworks include IOSCO frameworks on Money Market Funds, Protection of Client Assets, and Crypto-Asset Trading Platforms, among others.

36 The PFMI emphasise the service provided, not the design choice: "*FMIs can differ significantly in organisation, function, and design. FMIs can be legally organised in a variety of forms, […] may be owned and operated by a central bank or by the private sector, […] may also operate as for-profit or not-for-profit entities, […] can be subject to different licensing and regulatory schemes within and across jurisdictions. […] There can be significant variation in design among FMIs with the same function."* Paragraph 1.9 of the PFMI.

37 "*A payment system is a set of instruments, procedures, and rules for the transfer of funds between or among participants; the system includes the participants and the entity operating the arrangement.*" Paragraph 1.10 and Annex D of the PFMI.

38 Principle 9 (Money Settlements) is directly applicable to this key function, since it covers the situation when "an FMI conducts money settlements on its own books".

39 See Graph A.1 in Annex A of the G7 Working Group on Stablecoins (October 2019), *Investigating the impact of global stablecoins* (available at https://www.bis.org/cpmi/publ/d187.pdf). Graph A.1 provides a functional view of the stablecoin ecosystem along three functions: Issues and stability mechanism, Transfer mechanism, User interface.

40 Principle 16 (Custody and investment risks) is directly applicable to this key aspect of a stablecoin arrangement, since it addresses the need for an FMI to "safeguard its own and its participants' assets" and to address the credit, market, and liquidity risks associated with the custody and investment of these assets.

Given that some stablecoin arrangements are designed to be used as means of payment, CPMI-IOSCO believe that, for purposes of this preliminary consideration of the application of the PFMI, the existence of functions within a stablecoin arrangement not directly linked to payments does not weigh against using payment systems as an appropriate proxy for categorising stablecoin arrangements.

For the purpose of assessing the application of the PFMI to stablecoin arrangements, three high-level forms of stablecoin arrangements have been considered. These forms attempt to capture different potential approaches to the governance of the arrangement as a whole, the design of the "ledger" itself, and the unit of account the settlement asset represents. The three forms are:

1. Centralised stablecoin arrangements that aim to fix the price of the token to a particular fiat currency, have a central governance for all functions of these arrangements, and use a private and permissioned distributed ledger.

2. Partially-distributed stablecoin arrangements that have their own unit of account, the value of which is derived from a pool or basket of assets and do not necessarily have a fixed exchange rate to a fiat currency. There is a central governance entity for the issue, stabilisation and transfer mechanism, and the arrangement is based on a private permissioned distributed ledger. However, the user interface is usually provided by independent third party entities.

3. Highly-distributed stablecoin arrangements[41] that have their own unit of account, the value of which is derived from a pool or basket of assets and does not necessarily have a fixed exchange rate to a fiat currency. A central entity may govern the issue and stabilisation mechanism. The transfer function is performed on a public un-permissioned distributed ledger meaning that no responsible entity can be identified. The user interface is provided by independent third party entities.

3. Systemic importance of stablecoin arrangements

As noted above, the PFMI are expected to be applied to systemically important FMIs, and they provide guidance for relevant authorities to assess the systemic importance of payment systems.[42] Relevant authorities have also usually developed a set of qualitative and quantitative factors to assess whether an FMI is systemically important in their own jurisdictions which could inform the assessment of the systemic importance of a stablecoin arrangement for the purpose of PFMI application. Several authorities may be relevant for the purposes of assessing the systemic importance of a stablecoin arrangement due to the number of functions a stablecoin arrangement may carry out and the number of jurisdictions in which it may operate. Additional considerations could help in capturing specificities of stablecoin arrangements including oversight implications of different levels of decentralisation.

[41] Such arrangements seem to be theoretical at this stage.

[42] The PFMI state that "…*a payment system is systemically important if it has the potential to trigger or transmit systemic disruptions; this includes, among other things, systems that are the sole payment system in a country or the principal system in terms of the aggregate value of payments; systems that mainly handle time-critical, high-value payments; and systems that settle payments used to effect settlement in other systemically important FMIs."* Paragraph 1.20 of the PFMI.

4. Stablecoin arrangements and the application of PFMI principles

Proposed and prospective developers of stablecoin arrangements may face challenges in meeting some of the PFMI standards and may need to consider potential design changes in order to ensure that the PFMI are observed.

Based on a preliminary analysis, the most relevant principles for systemically important stablecoin arrangements would appear to be Principles 1-5, 7- 9, 11-12, 15-23, and Annex F, given that stablecoin arrangements may perform functions that cut across a variety of FMI classifications. Preliminary analysis suggests that all of these may be of general application to any systemically important stablecoin arrangement. However, there are some principles which may be more challenging for systemically important stablecoin arrangements to meet either due to the uncertainty around what PFMI observance would look like in practice for any stablecoin arrangement or because of certain design choices associated with partially and highly-distributed stablecoin arrangements. The more decentralised the arrangements are, the higher the challenges may be.

CPMI-IOSCO's preliminary analysis suggests that systemically important stablecoin arrangements would face varying degrees of difficulty in observing the principles. While this is likely to create challenges primarily for the entities themselves, it could also pose challenges for authorities when it comes to their consideration of a stablecoin arrangement's consistency with the PFMI.

As an initial matter, for most of the principles, CPMI-IOSCO preliminarily note that observance would be challenging for both partially distributed and highly distributed stablecoin arrangements. Further, CPMI-IOSCO have identified several principles that likely would be challenging to observe for all types of stablecoin arrangements. For these particular principles, the precise application or interpretation may not always be straightforward.

For example, Principle 1 states that "*an FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions*". Because the legal qualification of stablecoins often is uncertain, stablecoin arrangements may face challenges in establishing the required (domestic and cross border) sound legal underpinnings. Moreover, protections under existing legislation, including payments law, settlement finality provisions and conflict of laws regimes in local jurisdictions, were not written with stablecoin arrangements in mind, and in some jurisdictions may not necessarily extend to such arrangements, leading to possible legal uncertainties in the absence of guidance. These challenges are expected to be even greater for partially-distributed or highly-distributed stablecoin arrangements as it may require a heterogeneous set of distributed entities (operating, for example, the transfer mechanism or parts of the user interface) potentially being located in multiple jurisdictions to function according to a common and unified set of rules consistent with Principle 1.

Further, Principle 9 states that "an FMI should conduct its money settlements in central bank money *where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.*" Stablecoin arrangements will still be expected to strictly minimise and control the credit and liquidity risk arising from their chosen settlement asset, including when a stablecoin arrangement provides settlement on its own books. However, the characterisation of the settlement asset in stablecoin arrangements (eg as commercial bank money or not) may not always be straightforward. Further consideration would also be useful to clarify how the PFMI address stablecoin arrangements when a settlement asset carries risk in addition to credit and liquidity risk (i.e. market risk).

Table 1 summarises the preliminary analysis (subject to change and ongoing CPMI-IOSCO review) on the application of the most relevant principles and Annex F to three high-level cases of stablecoin arrangements.

Stablecoin arrangements and the application of the PFMI – Preliminary analysis subject to change and review

Table 1

	Centralised stablecoin arrangement	Partially distributed stablecoin arrangements	Highly distributed stablecoin arrangements
Principles			
1 Legal basis	Applicable but challenging to observe	Applicable but challenging to observe	Applicable but challenging to observe
2 Governance	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
3 Framework for comprehensive management of risks	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
4 Credit risks	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
5 Collateral	Applicable	Applicable	Applicable
7 Liquidity risks	Applicable	Applicable	Applicable but challenging to observe
8 Settlement finality	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
9 Money settlements	Applicable but challenging to observe	Applicable but challenging to observe	Applicable but challenging to observe
11 CSD	Applicable (to the extent that the arrangements are designed for asset settlements) but challenging to observe	Applicable (to the extent that the arrangements are designed for asset settlements) but challenging to observe	Applicable (to the extent that the arrangements are designed for asset settlements) but challenging to observe
12 Exchange-of-value settlement systems	Applicable (to the extent that the arrangements are designed for to Payment versus Payment (PVP) or DVP settlements) but challenging to observe	Applicable (to the extent that the arrangements are designed for to PVP or DVP settlements) but challenging to observe	Applicable (to the extent that the arrangements are designed for to PVP or DVP settlements) but challenging to observe
15 General business risk	Applicable	Applicable	Applicable
16 Custody	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
17 Operational risk	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
18 Access and participation requirements	Applicable but challenging to observe	Applicable but challenging to observe	Applicable but challenging to observe
19 Tiered participation arrangements	Applicable but challenging to observe	Applicable but challenging to observe	Applicable but challenging to observe
20 Links	Applicable but challenging to observe[43]	Applicable but challenging to observe	Applicable but challenging to observe
21 Efficiency	Applicable	Applicable	Applicable
22 Communication procedures and standards	Applicable	Applicable	Applicable but challenging to observe

[43] To the extent that entities within stablecoin arrangements interact with other FMIs.

23 Transparency	Applicable	Applicable but challenging to observe	Applicable but challenging to observe
Annex F	Applicable	Applicable but challenging to observe	Applicable but challenging to observe

Table 1 is intended to provide a high-level summary of the issues that CPMI-IOSCO have identified to date based on its preliminary analysis. CPMI-IOSCO do not intend for this summary table to constitute guidance or legal advice on which developers of stablecoin arrangements should rely when considering potential design choices. Going forward, CPMI-IOSCO envisage analysing further how particular systemically important stablecoin arrangements may comply with the PFMI. Some clarification or interpretation may help explain how systemically important stablecoin arrangements may comply with the PFMI, but such clarification or interpretation would not change the underlying principles that apply to a systemically important FMI. Such clarification or interpretation would seek to explain how the PFMI apply to organisations providing novel but systemically important FMI functions and to help such organisations understand what observing the PFMI, at minimum, will require of their design choices.

5. Application of Responsibility E to stablecoin arrangements

The PFMI Responsibilities are also applicable to authorities responsible for stablecoin arrangements. In particular, Responsibility E provides that "central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs." Responsibility E, together with its Key Considerations, provides a strong basis for cooperation among relevant authorities for the regulation, supervision and oversight of systemically important stablecoin arrangements.

As a stablecoin arrangement may have other features and provide services in addition to those of a payment system, and the services may be provided on a cross-border basis, a wider range of authorities may have an interest or responsibility vis-a-vis the stablecoin arrangement than only payment system supervisors and oversight authorities. In addition, partially distributed or highly distributed stablecoin arrangements may pose additional challenges. Therefore, it is important to identify and engage the potentially broader set of relevant authorities. Hence the range of authorities that should cooperate could be wider. CPMI-IOSCO envisage analysing further whether additional considerations would be helpful to achieve appropriate cooperation among relevant authorities.