FSB FINANCIAL STABILITY BOARD

Addressing the regulatory, supervisory and oversight challenges raised by "global stablecoin" arrangements

Consultative document

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Addressing the regulatory, supervisory and oversight challenges raised by global stablecoin arrangements

Background

The G20 called on the FSB in June 2019 to examine regulatory issues raised by "so- called global stablecoin" (GSC) arrangements and to advise on multilateral responses as appropriate, taking into account the perspective of emerging market and developing economies (EMDEs).

This consultative document
(i) describes GSCs and how they may differ from other crypto-assets and other stablecoins;
(ii) analyses the potential risks raised by GSCs;
(iii) considers existing regulatory, supervisory and oversight approaches to GSCs and
(iv) identifies issues that regulators, supervisors and oversight authorities may need to address;
(v) considers the specific challenges arising in a cross-border context, including the need for cross-border cooperation and coordination; and
(vi) makes high-level recommendations for regulatory, supervisory and oversight responses, including multilateral actions.

The FSB is inviting comments on this consultative document and the questions set out below. Responses should be sent to fsb@fsb.org by 15 July 2020. Responses will be published on the FSB's website unless respondents expressly request otherwise.

1. Do you agree with the analysis of the characteristics of stablecoins that distinguish them from other crypto-assets?

   In practice, the Austrian supervisor mainly deals with cases with regard to asset-linked stablecoins. In general, we agree with the characteristics of "stablecoins" mentioned in section 1. Especially, we welcome that the use of the term "stablecoin" *is not intended to affirm or imply that its value is in practice necessarily stable*, as we believe this is not automatically the case only because the value is linked to a specified asset, or a pool or basket of assets. In this respect, the term "stablecoin" could pose risks for investors. Regarding the term "global" we agree with the mentioned approach, however, the fact that it refers to a potential reach and adoption across multiple jurisdictions does not exclude that "stablecoins" pose specific legal and regulatory challenges (see remark below, at section 1).

   With regard to stabilisation mechanisms we would like to highlight that the redemption right against the issuer or direct claim is of utmost importance in order to obtain regulatory clarity on the "stablecoin" arrangement with regard to the current regulatory framework.

   Referring to the Table 1 (Issuance, redemption and stabilisation of value of coins, managing reserve assets), we are not quite sure if the typical "stablecoin" is "backed" by other crypto-assets. Empirical experience shows that crypto-assets tend to be volatile, whereas most providers of "stablecoin" actively try to avoid similar volatility. The "backing" through

other crypto assets as a stabilisation mechanism is also mentioned in Annex 1. Pooling of crypto-assets in a basket might mitigate their volatility, nevertheless national currencies and similar (by nature) less volatile assets seem to be the primary candidates to be used for "backing" if low volatility and storage of value are the main goals.

The criteria in determining a GSC through use as a means of payment or store of value on a global scale seems to be reasonable.

2. Are there stabilisation mechanisms other than the ones described, including emerging ones, that may have implications on the analysis of risks and vulnerabilities? Please describe and provide further information about such mechanisms.

We generally agree with the FSB's stabilisation classification. Technically, we also see the main technical distinction of stablecoin types between „asset-collateralized stablecoins" and „non-collateralized stablecoins" (or also „algorithmically balanced stablecoins"). Moreover, we would suggest to also include a "hybrid" stablecoin category.

Asset-collateralized stablecoins, in their generally supposed function to tokenize underlying assets, could be further differentiated into currency-based, financial instrument-based, commodity-based and crypto-based stablecoins. Currency-based stablecoins (or fiat-based stablecoins) are pegged to another official currency or a basket of currencies, mostly USD and usually on a 1:1 basis (e.g.: IBM Stronghold USD). Financial instrument-based stable coins are pegged to, e.g., an underlying stock index or ETF. Commodity-based stablecoins (sometimes also called metal-based stablecoins) are cryptocurrencies backed by physical commodities oriented on long-term stability like gold (e.g.: AurumCoin, AssetBase). Crypto-based stablecoin models are usually backed by a basket of crypto-tokens.

Non-collateralized stablecoin models (algorithmic stable coin model, seignorage supply stablecoin model) are balancing their volume via an algorithm, which keeps equilibrium by automatically expanding and contracting the supply of the non-collateralized currency to keep a stable value. An example would be a smart contract, which automatically buys and sells stablecoin contingents on the basis of its value (therefore algorithmically deriving supply and demand of the digital asset and regulating it to keep its price stable). In cases of insufficient liquidity, some models also envisage the possibility of automatically issuing stablecoin bonds for regulating the stablecoin value (which could in effect classify cryptotokens as securities in the regulator's eye). The stablecoin concept basis would be an example for such a model.

Hybrid-stablecoin models, as last catch-all category, may combine elements of both, asset-collateralized and non-collateralized stablecoins, in any possible way. While this is as of now not yet a widespread stabilization mechanism, we would suggest including it in order to ensure a future-proof classification.

We also share the observation that customers often do not have direct access to their tokens. The currently popular business model among cryptocoin providers (as it is, for instance, the case with Facebook's Libra, which intends to use an intermediate licensed agent layer model) confers only an indirect claim on the crypto-asset. The enforceability of such claims recovered from insolvent assets is often unclear. In case of a GSC provider's solvency, this could result in a significant systemic consumer rights challenge.

3. Does the FSB properly identify the functions and activities of a stablecoin arrangement? Does the approach taken appropriately deal with the various degrees of decentralisation of stablecoin arrangements?

Yes.

4. What criteria or characteristics differentiate GSC arrangements from other stablecoin arrangements?

In the EC public consultation process regarding a EU regulatory framework for crypto-assets, the Austrian Financial Market Authority (FMA), Oesterreichische Nationalbank (OeNB) and the Austrian Ministry of Finance characterized global stablecoins with the following criteria:

- Global distribution (stablecoins encompassing several jurisdictions)
- Business/reserve model (size and risk of reserve, interconnectedness with the financial system)
- Potential large number of users
- BigTech involvement
- Perceived reliability as store of value
- Redemption value linked to multiple currencies
- Redemption value linked to foreign currencies
- Systemic relevance (potential to trigger or transmit systemic shocks)
- Potentially substantial cross border usage in payments and remittance

(See: *Österreichische Finanzmarktaufsicht*, Joint Statement of FMA / OeNB / BMF to the EC consultation regarding a EU regulatory framework for crypto-assets, Answer Question 24 (English Version), https://www.fma.gv.at/fma/fma-stellungnahmen/)

Although it is possible to differentiate between stablecoins and global stablecoins depending on various characteristics, we believe that most of these characteristics and the potential reach and adoption across multiple jurisdictions applies to almost all stablecoins.

5. Do you agree with the analysis of potential risks to financial stability arising from GSC arrangements? What other relevant risks should regulators consider?

We agree with the identified systemic risks. Especially, regarding emerging markets, we see very realistic scenarios of economic and monetary disruption by GSC activities.

Moreover, we also see additional challenges and potential problems arising especially from GSC providers.

Because welfare of society may not be one of the main goals for a privatized GSC, the need for profits may affect users in a number of unfavorable ways (e.g.: financial exclusion, individualized fees, high interest rates, etc.). Also, the amount of information a global GSC provider may gain on customers in terms of personal financial data, can have major impacts reaching from violation of privacy rights up to manipulation of customer behavior on a massive scale. In particular, if BigTechs (e.g., GAFAs) accumulate these data, they could dramatically enrich their knowledge of individuals' preferences by combining them with their already existing wealth of data. This might lead to oligopolistic/monopolistic market structures on a mid- to long-term basis which are harmful from a financial stability as well as from a competitive standpoint.

On the other hand, referring to the argument on fluctuations of the GSCs value, one should not implicitly assume similarities to current crypto-asset behavior. One of a GSCs most basic functions is to keep a stable price (e.g., achieved via an underlying sovereign currency basket), which in itself may be similar to official money policies. With a disseminated and massive global user base backed up by a performant infrastructure as well as smartly designed balancing mechanisms, there might be a legitimate chance that the GSC (especially if from a global BigTech provider with balance sheets comparable to minor states) would not necessarily result in an unstable virtual currency.

6. Do you agree with the analysis of the vulnerabilities arising from various stablecoin functions and activities (see Annex 2)? What, if any, amendments or alterations would you propose?

We fully agree and find FSB's analysis comprehensive. However, we would propose adding reputational risks due to its highly probable impact on the GSCs' value.

7. Do you have comments on the potential regulatory authorities and tools and international standards applicable to GSC activities presented in Annex 2?

In general, we believe that the regulatory tools and international standards applicable to GSC activities presented in Annex 2 are comprehensively well balanced. If the power to wind down or resolve a GSC arrangement refers to a fully-fledged recovery and resolution framework, we are not sure yet if it would be appropriate to construct this framework before legal clarity is provided with regard to the supervision of GSC arrangements. Regarding managing reserve assets we would like to highlight the importance of disclosure of investment policies as this is key for investors.

Also, complementing the suggested ability to regulate and supervise the GSC arrangement in a holistic manner, we would advise to aspire audit rights for GSC providers and address risks posed by relevant third-parties (e.g.: technology or infrastructure provider, etc.). In this respect, supervised companies should be concerned to provide full cooperation with authorities and sufficient auditability of its infrastructure and technology.

8. Do you agree with the characterisation of cross-border issues arising from GSC arrangements?

Yes, we believe that the challenges and risks associated with the cross-border nature of stable coins have been adequately addressed. Nevertheless, we would like to point out that these findings are already partly the case, especially since they apply to all types of crypto-assets as well as to AI applications or other cross-border digital services or products. Thus, there are no new challenges, but rather, it is a reflection of the process that has been taking place for decades in an interconnected financial market that is becoming more and more global.

9. Are the proposed recommendations appropriate and proportionate with the risks? Do they promote financial stability, market integrity, and consumer protection without overly constraining beneficial financial and technological innovation?

Are domestic regulatory, supervisory and oversight issues appropriately identified?

a. Are cross-border regulatory, supervisory and oversight issues appropriately identified?

b. Do the recommendations adequately anticipate and address potential developments and future innovation in this sector?

Yes, whereby the practice regarding stablecoins in general shows that recommendations 3, 5, 8, 9 and 10 are important in particular.

10. Do you think that the recommendations would be appropriate for stablecoins predominately used for wholesale purposes and other types of crypto-assets?

Generally, yes - however, this depends on the design of the specific crypto-asset. Recommendations 1, 2, 4, 6 and 10 seem to be applicable to all types of crypto-assets, whereas in 5, 7, 8 and 9 we would rather see specific recommendations for stablecoins.

11. Are there additional recommendations that should be included or recommendations that should be removed?

As a general remark and as mentioned above we support that term “stablecoin” is not intended to affirm or imply that its value is in practice necessarily stable. In this respect, we believe that it could be misleading and consequently, could lead to disadvantages for investors. This context could be presented more prominently.

12. Are there cost-benefit considerations that can and should be addressed at this stage?

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Executive summary

So-called "stablecoins", like other crypto-assets, have the potential to enhance the efficiency of the provision of financial services, but may also generate risks to financial stability, if they are adopted at a significant scale. While such financial stability risks are currently limited by the relatively small scale of these arrangements, this could change in the future. Stablecoins are an attempt to address the high volatility of "traditional" crypto-assets by tying the stablecoin's value to one or more other assets, such as sovereign currencies. They have the potential to bring efficiencies to payments (including cross-border payments), and to promote financial inclusion. If widely adopted, however, a stablecoin could become systemically important in and across one or many jurisdictions, including as a payments infrastructure. Ensuring the appropriate regulatory approach within jurisdictions and internationally will therefore be important.

Against this background, the G20 mandated the FSB in June 2019 to examine regulatory issues raised by ''global stablecoin" arrangements (GSCs) and to advise on multilateral responses as appropriate, taking into account the perspective of EMDEs. In February 2020, the G20 reiterated the importance of evaluating and appropriately addressing the risks of GSC arrangements before they commence operation and supported the FSB's efforts to develop regulatory recommendations with respect to these arrangements.

In response to these requests, this consultative document proposes 10 high-level recommendations that are addressed to authorities at jurisdictional level to advance consistent and effective regulation and supervision of GSC arrangements. This document also highlights key international financial regulatory standards from BCBS, FATF, CPMI and IOSCO that could apply to GSCs. These recommendations focus on financial regulatory and supervisory issues relating to privately-issued GSCs predominately intended for retail use. Wider issues such as monetary policy, monetary sovereignty, currency substitution, data privacy, competition, and taxation issues are beyond scope.

Through a stocktake of a broad mix of jurisdictions, the FSB finds that existing regulatory, supervisory and oversight regimes generally apply in whole or in part to stablecoin arrangements and address at least some of the risks they generate. Regulatory coverage is reported to be less comprehensive in many EMDEs.

The activities associated with GSCs and the risks they may pose can span across banking, payments, and securities/investment regulatory regimes both within jurisdictions and across borders. These potential risks may change over time, and so challenge the effectiveness of existing regulatory, supervisory and oversight approaches. GSCs also introduce specific vulnerabilities. For example, depending on the facts and circumstances, the decentralised nature of GSC arrangements could pose governance challenges; stabilisation mechanisms and redemption arrangements could pose market, liquidity, and credit risks; and, the infrastructure and technology used for recording transactions, and accessing, transferring and exchanging coins could pose operational and cyber-security risks.

Authorities expect stablecoin arrangements to adhere to all applicable regulatory standards and address risks to financial stability before commencing operation, and to construct systems and products that can adapt to new regulatory requirements as necessary. Authorities agree on the need to apply supervisory and oversight capabilities and practices under the "same business, same risk, same rules" principle to address the emerging business models and technologies

employed by a GSC and other crypto-assets. In some jurisdictions, however, the bundling of different attributes of a GSC could mean that not all of a GSC's functions fit within regulatory frameworks designed to apply by sector, such that existing approaches might need clarification, adjustment, or new regulation. In addition, a GSC could potentially substitute for domestic currencies, particularly in some EMDEs with volatile domestic currencies.

The performance of some functions of a GSC arrangement may have important impacts across borders. This requires authorities to take a holistic approach to regulation, supervision and oversight, and close international cooperation and information sharing.

Relevant authorities should, where necessary, clarify regulatory powers and address potential gaps in their domestic frameworks to adequately address risks posed by GSCs. This is critical to achieving common regulatory outcomes across jurisdictions and reducing opportunities for cross-sectoral and cross-border regulatory arbitrage, and enabling appropriate regulation and supervision of GSC arrangements as a whole.

To assist the authorities in developing a robust regulatory and supervisory response towards GSCs, this document:

(i) maps the vulnerabilities arising from various stablecoin functions and activities against the relevant regulatory authorities, tools and international standards (Annex 2);

(ii) analyses potential risks to financial stability arising from stablecoin arrangements (Section 2); and

(iii) outlines 10 high-level recommendations to advance consistent and effective regulation, supervision and oversight of GSC arrangements as well as effective cross-border cooperation and information sharing (Section 5).

These recommendations are motivated by GSCs predominantly intended for retail purposes that may pose financial stability risks, but could also apply to stablecoins or other crypto-assets that pose similar risks. The recommendations seek to address the particular governance challenges of a GSC arrangement. They call for regulation, supervision and oversight that is proportionate to the risks, and stress the need for flexible, efficient, inclusive, and multi-sectoral cross-border cooperation, coordination, and information sharing arrangements that take into account the evolution of GSC arrangements and the risks they may pose over time.

The FSB invites comments on the consultative document by 15 July 2020 and will issue a final report in October 2020.

FSB High-Level recommendations to address the regulatory, supervisory and oversight challenges raised by GSCs arrangements

1. Authorities should have and utilise the necessary powers and tools, and adequate resources, to comprehensively regulate, supervise, and oversee a GSC arrangement and its multi-functional activities, and enforce relevant laws and regulations effectively.
2. Authorities should apply regulatory requirements to GSC arrangements on a functional basis and proportionate to their risks.
3. Authorities should ensure that there is comprehensive regulation, supervision and oversight of the GSC arrangement across borders and sectors. Authorities should cooperate and coordinate with each other, both domestically and internationally, to foster efficient and effective communication and consultation in order to support each other in fulfilling their respective mandates and to facilitate comprehensive regulation, supervision, and oversight of a GSC arrangement across borders and sectors.
4. Authorities should ensure that GSC arrangements have in place a comprehensive governance framework with a clear allocation of accountability for the functions and activities within the GSC arrangement.
5. Authorities should ensure that GSC arrangements have effective risk management frameworks in place especially with regard to reserve management, operational resiliency, cyber security safeguards and AML/CFT measures, as well as 'fit and proper' requirements.
6. Authorities should ensure that GSC arrangements have in place robust systems for safeguarding, collecting, storing and managing data.
7. Authorities should ensure that GSC arrangements have appropriate recovery and resolution plans.
8. Authorities should ensure that GSC arrangements provide to users and relevant stakeholders comprehensive and transparent information necessary to understand the functioning of the GSC arrangement, including with respect to its stabilisation mechanism.
9. Authorities should ensure that GSC arrangements provide legal clarity to users on the nature and enforceability of any redemption rights and the process for redemption, where applicable.
10. Authorities should ensure that GSC arrangements meet all applicable regulatory, supervisory and oversight requirements of a particular jurisdiction before commencing any operations in that jurisdiction, and construct systems and products that can adapt to new regulatory requirements as necessary.

Glossary[1]

Algorithm-based stablecoins

A stablecoin that purports to maintain a stable value via protocols that provide for the increase or decrease of the supply of the stablecoins in response to changes in demand.

[1] The glossary is for the purposes of this document and does not replace other existing taxonomies.

Asset-linked stablecoin

A stablecoin that purports to maintain a stable value by referencing real or financial assets or other crypto-assets.

Crypto-asset

A type of private digital asset that depends primarily on cryptography and distributed ledger or similar technology.

Digital asset

A digital representation of value which can be used for payment or investment purposes. This does not include digital representations of fiat currencies.

Global stablecoin (GSC)

A stablecoin with a potential reach and adoption across multiple jurisdictions and the potential to achieve substantial volume.

Stablecoin (or coin)

A crypto-asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets.

Stablecoin arrangement

An arrangement that combines a range of functions (and the related specific activities) to provide an instrument that purports to be used a means of payment and/or store of value. When discussing a stablecoin arrangement, reference is made to:

- **Activity**

  Typical activities in a stablecoin arrangement are: (i) establishing rules governing the stablecoin arrangement; (ii) issuing, creating and destroying stablecoins; (iii) managing reserve assets; (iv) providing custody/trust services for reserve assets; (v) operating the infrastructure; (vi) validating transactions; (vii) storing the private keys providing access to stablecoins (wallet); and (viii) exchanging, trading, reselling, and market making of stablecoins.

- **Function**

  Functions in a stablecoin arrangement are: (i) governing the arrangement; (ii) issuance, redemption and stabilisation of the value of coins; (iii) transfer of coins; and (iv) interaction with users for storing and exchanging coins.

- **Governance body**

  A body responsible for establishing the rules governing the stablecoin arrangement which would cover, among other issues, the types of entities that could be involved in the arrangement, the protocol for validating transactions, and the manner in which the value of the stablecoin is "stabilised".

- **Provider of function/activity**

  An entity that provides a particular function or activity associated with that function in a stablecoin arrangement

- **User**

  A person or entity that uses a stablecoin as a means of payment or store of value.

- **Validator node**

  An entity on a network which validates transactions. In the context of distributed ledger technology, a node will commit transaction blocks to the ledger once they are validated.

- **Wallet**

  An application or device for storing the private keys providing access to stablecoins

Introduction

So-called "stablecoins" are a type of crypto-asset or, more broadly, digital asset.[2] Stablecoins may be used for different purposes. Some stablecoin projects have the ambition to facilitate payments, especially cross-border retail payments, which have remained relatively slow and expensive. A stablecoin, particularly if linked to a fiat currency or a basket of currencies, may become a widely used store of value. The use of stablecoins could also evolve over time, particularly so that a stablecoin initially intended to be used as means of payment could also be increasingly used as a store of value.

While the introduction of so-called GSCs has the potential to contribute to developing new global payment arrangements they could present a host of challenges to the regulatory, supervisory, oversight and enforcement authorities. This is because such instruments may have the potential to pose systemic risks to the financial system and significant risks to the real economy, including through the substitution of domestic currencies. Risks may relate to
(i) challenges for financial stability; (ii) consumer and investor protection; (iii) data privacy and protection; (iv) financial integrity, including compliance with rules governing anti-money laundering and countering the financing of terrorism and proliferation (AML/CFT); (v) tax evasion; (vi) fair competition and anti-trust policy; (vii) market integrity; (viii) sound and efficient governance; (ix) cyber security and other operational risks; (x) the safety, efficiency and integrity of financial market infrastructures (FMIs) (e.g. payment systems); and (xi) resolution and recovery considerations.[3] No existing, operational stablecoins or other crypto-assets currently appear to have reached a scale that could pose financial stability risks. However, existing stablecoins or those at the development or testing stage could potentially scale quickly if such stablecoins were offered to and used by a large, existing customer base, though the factors and conditions that could drive such potential mass adoption may require further analysis.

Against this backdrop, the G20 mandated the FSB in June 2019 to examine regulatory issues raised by GSCs and to advise on multilateral responses as needed, taking into account the perspective of EMDEs. In line with the G20 mandate, this consultative document:

1. describes GSCs and how they may differ from other crypto-assets and other stablecoins (Section 1);
2. identifies the potential risks raised by GSCs (Section 2);
3. considers existing regulatory, supervisory and oversight approaches to GSCs and identifies issues that regulators, supervisors and overseers may need to address (Section 3);
4. considers the specific challenges arising in a cross-border context, including the need for cross-border cooperation and coordination (Section 4); and
5. proposes high-level recommendations for regulatory supervisory and oversight responses, including the need for multilateral actions (Section 5).

The focus of this consultative document is on financial regulatory, supervisory and oversight issues relating to privately-issued GSCs primarily used for retail purposes, as defined in Section 1 but it may also be relevant for other types of stablecoin or crypto-asset arrangements, including wholesale

[2] This consultative document refers to stablecoins as a category of crypto-assets rather than using the broader reference to digital assets. The reference to crypto-assets was chosen for consistency with the FSB's prior publications.

[3] For a high-level overview of the risks posed by stablecoins, see the October 2019 G7 Report, "Investigating the impact of global stablecoins." https://www.bis.org/cpmi/publ/d187.pdf

stablecoins. The document draws on the analysis undertaken within the FSB of potential financial stability risks and on a comprehensive survey of regulatory, supervisory and oversight approaches to stablecoins amongst FSB members and non-FSB members represented on FSB Regional Consultative Groups (RCGs).

In line with the mandate of the FSB, the document does not address the data privacy, competition, and taxation issues related to GSCs. The wider monetary policy, monetary sovereignty and currency substitution questions, the issue of public versus private provision of digital money and payment services and issues related to central bank digital currencies are also outside the scope of the analysis.

Along with the work done by the FSB, the G20 asked the IMF to consider the macroeconomic implications including monetary sovereignty issues in IMF member countries, taking into account country characteristics, and the Financial Action Task Force (FATF) to consider AML/CFT issues. This consultative document will not focus on AML/CFT considerations to avoid duplication of the work the FATF is leading. The FSB has been working closely with the IMF, the FATF as well as the other standard-setting bodies (SSBs) to ensure that the work underway is coordinated and mutually supportive. The FSB, the Committee on Payments and Market Infrastructures (CPMI), the FATF, and the International Organization of Securities Commissions (IOSCO), among others, are also monitoring market developments on an ongoing basis.

1. Characteristics of global stablecoins

The term *stablecoin* commonly refers to a crypto-asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets. In turn, the value of these assets typically determines or affects the market value of a stablecoin. A stablecoin may also employ algorithmic or other means to stabilise or impact its market value by, for example, automatically adjusting its supply in response to changes in demand.

The term stablecoin does not necessarily denote a distinct legal or regulatory classification. Importantly, the use of the term "stablecoin" in this document is not intended to affirm or imply that its value is in practice necessarily stable.[4] Rather, the term is used here to ensure consistency, as the term stablecoin is commonly employed by market participants. Similarly, the attribute *global* refers to a stablecoin with a potential reach and adoption across multiple jurisdictions and the potential to achieve substantial volume, thus posing financial stability risks, rather than a specific legal or regulatory concept.

In the absence of a universally agreed, precise definition of stablecoin, it is important to identify the characteristics that may distinguish a GSC from other crypto-assets and other stablecoins, and the materiality of such distinctions. This section highlights three such characteristics. The first two (the existence of a stabilisation mechanism and a specific combination of multiple functions and activities) distinguish stablecoins from other crypto-assets. The third, the potential reach and adoption across multiple jurisdictions, differentiates GSCs from other stablecoins.

1.1. Stabilisation mechanism

A stablecoin arrangement seeks to stabilise the value of the stablecoin through the use of a stabilisation mechanism. Stablecoin designs currently reflect two broad types of stabilisation

[4] In fact, alternative terms such as private asset-linked tokens may characterise more accurately the technical nature of such instruments

mechanisms: asset-linked and algorithmic, with some approaches being a hybrid of the two:

- Asset-linked stablecoins purport to maintain a stable value by referencing real or financial assets or other crypto-assets. For example, many stablecoins attempt to achieve stability through a "peg" to a single fiat currency.[5] The mechanism by which the stablecoin's value is maintained in relation to the referenced asset may vary and includes the use of creation and redemption structures, arbitrage, and direct rights to receive underlying reserve assets. Depending on the structure, stablecoin holders may or may not have a redemption right against the issuer or direct claim on the reserve assets. Reserve assets may or may not be available to be used in case of a redemption request and may or may not benefit from consumer and investor protection arrangements or other guaranty schemes. Additionally, there may not be any assets in reserve if the stablecoin merely references another asset as a peg.
- Algorithm-based stablecoins attempt to maintain a stable value via protocols that provide for the increase or decrease of the supply of the stablecoins in response to changes in demand. While the amount to be increased or decreased may be based on an algorithm, the actual issuance or destruction may not be automatic.

1.2. Combination of multiple functions and activities

To be useable as a means of payment and/or store of value, a stablecoin arrangement typically provides three core functions:[6]

(i) issuance, redemption and stabilisation of the value of the coins;

(ii) transfer of coins;

(iii) interaction with coin users for storing and exchanging coins.

Considering these functions, stablecoins could share functional similarities with payment systems or financial services or products, such as deposit liabilities or securities (including collective investment schemes), and therefore be subject to the same risks. However, they may also pose new risks, depending on the design of the stablecoin arrangement.

Each of these functions involves a number of constituent activities. For instance, the issuance, redemption and stabilisation of the value of the coins typically involves creating and destroying coins, as well as managing the corresponding reserve assets and providing custody/trust services for those assets. The transfer of coins typically entails the operation of a suitable infrastructure and a mechanism for validating transactions. The interaction with users typically occurs through devices or applications that operate as "wallets", which store the private keys providing access to stablecoins, as well as applications that enable the exchange of coins against fiat currencies or other crypto-assets. Considering this range of activities performed, a *stablecoin arrangement* is generally understood as an arrangement comprised of different, interrelated functions and activities that can be provided by one or several entities.

The operating model employed may differ considerably across stablecoin arrangements (see Annex 1 for examples). The core system is typically a book of records that registers ownership of coins and changes therein. This is typically a shared ledger, which operates in a decentralised way, for example by using distributed ledger technology (DLT). Based on the design, transactions can be processed

[5] Other examples anchor to a mix of currencies, a combination of currencies and government bonds, and commodities, like gold.

[6] G7 (2019), https://www.bis.org/cDmi/Dubl/d187.Ddf.

without the need for a trusted third party. Depending on the operating model, one or more entities may perform the activities, or design protocols or codes to perform them. Moreover, other variants and ways to perform the activities are emerging. In particular, technological innovation, such as developments in DLT, may enable the increased use of decentralised processes. Table 1 summarises, in a stylised manner, how the core functions of a stablecoin arrangement relate to activities and operational design elements.

Table 1: Functions and activities in a stablecoin arrangement		
Functions	**Activities**	**Operational design elements**
Governance of the arrangement	Establishing rules governing the stablecoin arrangement	The rules covering, among other issues, the types of entities that could be involved in the arrangement, the protocol for validating transactions, the mechanism for stabilising the value of the stablecoin, and the arrangements for the management and ownership of the reserve assets. Generally, a governance body is essential to a stablecoin arrangement and also may have a role in promoting adherence to common rules across the stablecoin arrangement.
Issuance, redemption and stabilisation of value of coins	Issuing, creating and destroying stablecoins	The mechanism through which stablecoins may be issued or created, and subsequently destroyed by one or more entities or software protocols designed by these entities.
	Managing reserve assets	The activity of managing the assets that are "backing" the value of a stablecoin, where a stablecoin fully or partially maintains its value or confidence in its value based on real or financial assets or other cryptoassets. This may involve buying and selling assets based on an investment policy. The activity may also be undertaken by using software protocols that adjust the composition of the reserve through smart contracts and algorithmic decision-making.
	Providing custody/trust services for reserve assets	The activity of holding the assets that are "backing" the value of a stablecoin. The entity or entities issuing the stablecoin or other entities may hold the reserve assets.
Transfer of coins	Operating the infrastructure	A DLT protocol determining roles in and access to the system. Access may be permissioned (access, including the ability to hold and transfer stablecoins, is controlled with defined access conditions) or permissionless (anyone can access and transfer the stablecoins peer-to-peer, directly to other wallets).
	Validating transactions	Mechanism by which a transaction is authorised and validated by validator nodes.
Interaction with users	Storing the private keys providing access to stablecoins (wallet)	Cryptographic wallets storing private and public keys which are used to digitally sign transaction instructions performed by the stablecoin arrangement. Wallets can be custodial, where a third party operates the wallet and holds the private keys on behalf of the users, or noncustodial, where the users hold the private keys directly. Multiple different parties can develop wallets, based on a set of specifications provided by the stablecoin arrangement.
	Exchanging, trading, reselling, and market making of stablecoins	The activity of purchasing/exchanging a stablecoin with fiat currencies, or a stablecoin with other stablecoins or crypto-assets.

1.3. Potential reach and adoption across multiple jurisdictions

As with many financial services that utilise the internet, the technological infrastructure underlying stablecoin arrangements is not limited in its geographic scope. If a stablecoin arrangement combines such infrastructure with features that may be attractive to a broad range of users across multiple jurisdictions, its user base may rapidly grow, i.e. it may become a GSC.

A potential reach and adoption across multiple jurisdictions and the potential to achieve substantial volume would differentiate a GSC from other stablecoins. A framework to identify a GSC

arrangement could seek to measure the global systemic importance that the arrangement could pose (Annex 5 presents potential elements that could be used to determine whether a stablecoin qualifies as a GSC). The criteria to be considered in determining a GSC should take into account the potential extent of the stablecoin's use as a means of payment or store of value in multiple jurisdictions.

Individual jurisdictions on their own may not be able to adequately monitor stablecoin adoption and materiality of risks. For example, a stablecoin that may not pose systemic risk in any one jurisdiction may nonetheless pose such risk globally if it has a presence across many jurisdictions and therefore has a high linkage to the global financial system. This may create a case for monitoring of stablecoin use at the global level.

2. Risks and vulnerabilities raised by global stablecoins

Financial stability risks from the current use of stablecoins are currently contained. This is largely due to the relatively small scale of these arrangements. However, the use of stablecoins as a means of payment or a store of value might significantly increase in the future, possibly across multiple jurisdictions. In addition, the different activities within a stablecoin arrangement, in particular those related to managing the reserve assets, may considerably increase linkages to the existing financial system. Such developments could change the current assessment.

Understanding how stablecoins, particularly GSCs, may create risks to financial stability is necessary to support effective regulation, supervision and oversight. To this end, this section first sets out the channels through which the use of GSCs may adversely affect financial stability. The second part of the section discusses how the specific activities performed by a GSC arrangement, and their interaction, may affect these channels. Linking these activityspecific risks to the financial stability outcomes provides the basis for considering which functions and activities of a GSC arrangement may warrant particular attention by regulators, supervisors and oversight authorities.

2.1. Potential risks to financial stability from a GSC

GSCs could pose financial stability risks through some key channels:

First, if a GSC were used as a common store of value, even a moderate variation in its value might cause significant fluctuations in users' wealth. Such wealth effects may be sizeable enough to affect spending decisions and economic activity. Wealth effects may be particularly pronounced in EMDEs where the likelihood of GSCs becoming a mainstream store of value may be higher than in advanced economies (AE).

Second, if widely used for payments, any operational disruption in the GSC arrangement might have significant impacts on economic activity and financial system functioning. If users relied upon a stablecoin to make regular payments, significant operational disruptions could quickly affect real economic activity, e.g. by blocking remittances and other payments. Large-scale flows of funds into or out of the GSC could test the ability of the supporting infrastructure to handle high transaction volumes and the financing conditions of the wider financial system.

Third, exposures of financial institutions might increase in scale and change in nature - particularly if financial institutions played multiple roles within a GSC arrangement (for example as resellers, wallet providers, managers or custodians/trustees of reserve assets). This may be a source of market, credit and operational risks to those institutions.

In addition, the large-scale use of GSCs might magnify confidence effects. A greater sensitivity to

confidence effects could also reflect the extent of the use of a GSC as a store of value and/or means of payment. Moreover, closer linkages to financial institutions might also expose a GSC to adverse confidence effects, such as when a financial institution that acts as reseller/market maker of the GSC arrangement comes under financial distress. The reverse may also be true - the potential failure of a GSC might expose the financial institutions involved in the GSC arrangement to adverse confidence effects.

These channels may also interact. For example, disruption to payments may cause further decline in confidence, which in turn could prompt further redemptions and decline in the GSC's value, compounding wealth effects.

Macrofinancial risks may arise particularly if, over time, households and businesses in some economies (e.g. EMDEs) come to hold substantial portions of their wealth in GSCs, rather than in local currencies. During periods of stress, households in some countries might come to regard GSCs as a safe store of value over existing fiat currencies and exacerbate destabilising capital flows. Volatile capital flows can have a destabilising effect on exchange rates and on domestic bank funding and intermediation.

The significance of these channels and their impact on financial stability depend on how widely and for what purpose a GSC is used, and whether linkages to the financial system increase. For example, if a GSC were adopted as a widespread means of payment, but not as a store of value, its potential implications for financial stability may be narrower. If, however, a GSC also became adopted as a significant store of value by some of its users, other channels - including those pertaining to confidence effects, interlinkages to financial institutions and macroeconomic stability - may become more prominent.

2.2. Vulnerabilities arising from the functions and activities of a GSC arrangement

While the significance of the individual channels discussed above depends on what a GSC is used for and how widely it is used, the vulnerability of the GSC itself to shocks depends on how the functions and activities of the GSC arrangement are designed and performed. A scenario analysis conducted by the FSB identifies three main types of vulnerabilities. This scenario analysis focuses on asset-linked GSCs that have reserve assets and where the user has the ability to redeem the GSCs.

The first type of vulnerability relates to traditional financial risks - market, liquidity and credit risk - in a GSC arrangement. Of key importance in this regard is the choice and management of the GSC reserve assets, particularly the degree to which they could be liquidated at or close to prevailing market prices. Otherwise, large-scale GSC redemptions might result in “fire sales” of reserve assets that could reduce the “stable” value of the GSC relative to the reserve assets absent secondary guarantees. Such loss of value could impair user confidence in the resilience of the GSC arrangement as a payment mechanism, the financial institutions and the markets in which such assets were invested. Large-scale redemptions of GSCs might lead to large-scale sales of other assets and stress transmitted to wider financial markets. Also, significant changes in the composition of the reserve assets, in the absence of large-scale redemption of GSCs, might trigger spillover effects to the wider financial system.

The ability of GSC arrangements to sell reserve assets in large volume at (or close to) prevailing market prices would depend on the duration, quality, liquidity and concentration of the GSC's reserve assets. The degree of transparency as to the nature, sufficiency and liquidity of these reserve assets might also affect confidence in the GSC.

Other design features of a GSC arrangement may add to financial stability risks. For instance, the withdrawal of liquidity provision by resellers/market makers might cause a sharp reduction in the liquidity of the GSC and dislocation in its price, which might in turn undermine user confidence and prompt further redemption. Moreover, users' loss of confidence could be more pronounced for GSCs which are not fully backed by reserve assets.

A second type of vulnerability concerns potential fragilities in the governance, operation and design of the GSC arrangement's infrastructure, including its ledger and the manner of validating users' ownership and transfer of coins. This vulnerability could crystallise for example due to an operational incident at a custodian or a compromised ledger resulting from a design defect, a cyber incident, or a failure of validator nodes. A lack of network capacity to validate - and subsequent delays in processing - large volumes of transactions might amplify users' loss of confidence, and trigger further redemption requests.

In the event of a disruption in the GSC arrangement, ambiguity about rights and protection afforded to users could amplify confidence effects. In particular, if users do not have redemption rights or a direct claim on the underlying assets, confidence could be undermined.

The degree of vulnerability would be impacted by the effectiveness of the GSC arrangement's governance and controls. The clarity of the roles and responsibilities of the GSC arrangement's governance body - including in respect of setting and enforcing the rules on establishing the GSC's value and on the functioning of the infrastructure - could affect users' confidence.

The third vulnerability relates to the applications and components on which users rely to store private keys and exchange coins. Such vulnerabilities could crystallise due to an operational incident at a wallet or exchange, for example. The scope of affected users might depend on the market share of the associated provider, and the degree to which it, for example, serves users in different jurisdictions.

The degree of vulnerability would depend on the operational resilience arrangements for wallets and exchanges, including stand in and fall-back arrangements that ensure continuity of service to users, and of the continued liquidity of the secondary market for coins.

Table 2 summarises, in a stylised way, the above types of vulnerabilities, their main determinants, and the functions and activities of a GSC arrangement that are particularly relevant in this regard.

Table 2: Examples of vulnerabilities and related functions and activities in a GSC arrangement (stylised presentation)		
Type of vulnerability	**Main determinants**	**Functions and activities primarily concerned**
Financial exposures in the GSC arrangement, giving rise to market, liquidity and credit risks.	• Choice, composition and management of the GSC reserve assets • Robustness of liquidity provision by GSC resellers/market makers • Ability of actors in the GSC arrangement to employ leverage	• Governing the GSC arrangement • Issuing, creating and destroying GSCs • Managing reserve assets • Exchanging, trading, reselling and market making of stablecoins
Weaknesses in the GSC infrastructure, giving rise to operational risk (including cyber risks) and risk of loss of data.	• Reliability and resilience of the GSC's ledger and validation mechanism, including validator nodes • Capacity of network to validate and process large volumes of transactions • Reliability of custodians/trustees	• Governing the GSC arrangement • Operating the infrastructure • Validating transactions • Providing custody/trust services for reserve assets
Vulnerabilities in those parts of the GSC arrangement on which users rely to store, exchange and trade GSCs, including operational or fraud risk	• Effectiveness of governance in preventing fraud • Operational resilience • Clarity about the nature of claims that users have • Robustness of liquidity provision by GSC resellers/market makers	• Governing the GSC arrangement • Storing of private keys providing access to GSCs • Exchanging, trading, reselling, and market making of GSCs

The interlinkages that exist between the various functions and activities in a GSC arrangement may add to vulnerabilities. For instance, a design failure in the validation process used for coin transfers could undermine confidence in the payment mechanism, but also in the performance of GSCs as a store of value and eventually of the GSC arrangement as a whole. As a consequence, the resilience of the arrangement may depend on the proper functioning of a range of different activities and processes.

3. Existing regulatory, supervisory and oversight approaches and challenges

3.1. Findings from the FSB Stocktake

To take stock of existing regulatory, supervisory, and oversight approaches, the FSB surveyed FSB and RCG members. The survey included questions on current approaches with respect to the regulatory classification of stablecoins and stablecoin arrangements and activities, as well as potential regulatory gaps (see Annex 3 for more details). A total of 51 jurisdictions completed the survey, including 25 FSB and 26 RCG jurisdictions.

The survey findings highlight that most jurisdictions do not currently have regulatory regimes

specific to crypto-assets in general or stablecoins in particular. However, in most jurisdictions, existing regulatory, supervisory and oversight approaches, while not specific to crypto-assets or stablecoins, would apply in whole or part and would address some of the risks associated with stablecoins or with entities that are part of the stablecoin arrangement. The most common approach is to identify the activity performed by a stablecoin arrangement and the participants involved, and apply the relevant existing regulation for that activity or entity according to the *"same business, same risks, same rules'"* principle.

Most respondents note that stablecoins could be classified under more than one regulatory category, and that the classification could change as the nature and use of a stablecoin evolves. Which existing regulatory regime applies typically depends on the specific design features and characteristics of a stablecoin or of the entities that are part of the stablecoin arrangement. The application of existing regulatory regimes is therefore subject to a case-by-case assessment. For instance, whether a "stablecoin" qualifies as e-money may depend on the nature of the claim of a stablecoin holder against the stablecoin issuer or its assets. Stablecoins that do provide a claim may also fall under the definition of a collective investment scheme or deposit. A change in the features of the stablecoin or the activities of the stablecoin arrangement over time may lead to a change in the applicable regulatory and supervisory regime.

The extent to which existing regulations may be applied to the activities of GSC arrangements differ by jurisdiction. Some survey responses indicate that some jurisdictions may require clarifications or new regulatory authorities to fully capture GSC activities. Activities are often, at least partly, covered by multiple relevant regulations in AEs, while some of the activities are not covered by any regulations in EMDEs. In general, the functions and activities that are most frequently covered include the issuance and redemption of stablecoins; managing reserve assets; providing custody/trust services for stablecoin reserve assets; exchanging and trading stablecoins (including reselling to retail users) and storing the private keys providing access to stablecoins (wallets). The survey indicates that jurisdictions were less likely to regulate the governance over the whole stablecoin arrangement, the operation of the infrastructure of a stablecoin arrangement and the validation of transactions.

The type of regulatory coverage of stablecoin activities varies. Survey results indicate that many jurisdictions have AML/CFT regulations that seem to apply more generally to stablecoin activities. The results also indicate that fewer jurisdictions have other types of financial regulation, such as market integrity, investor and consumer protection regulations, that may apply to stablecoin activities like issuance, exchanging and trading of stablecoins. See also the table in Annex 2 on potential vulnerabilities arising from stablecoin activities and the regulatory authorities and potential tools to address such vulnerabilities.

3.2. International standards that could apply to GSC arrangements

Several international financial standards could potentially be applicable to the activities of a stablecoin arrangement, including standards for prudential regulation as well as AML/CFT regulation depending on the specific design of the stablecoin arrangement and regulatory regime of each jurisdiction. Standard-setting bodies - BCBS, FATF, CPMI, and IOSCO - are undertaking work to review whether and how existing international standards can apply to stablecoin arrangements.

Basel Committee on Banking Supervision (BCBS)

Banks could be subject to a range of direct and indirect exposure channels in a GSC arrangement, including as an issuer, investor, lender, custodian / wallet provider and market maker of stablecoins.

Such exposures would in principle be subject to prudential capital and liquidity requirements.

However, the current Basel framework does not specify the prudential treatment for banks' exposures to crypto-assets at large or crypto-assets that make use of stabilisation tools. The BCBS is considering the appropriateness of a global prudential standard and other approaches. The BCBS issued a discussion paper that outlines a set of general principles and considerations to guide the design of a prudential treatment of banks' exposures to crypto-assets, including an illustrative example of potential capital and liquidity requirements for exposures to high-risk crypto-assets. The BCBS is continuing to assess the appropriate prudential treatment for such types of crypto-assets, and will consult on any specific measures.[7]

Banks having a role in a GSC arrangement could be subject to cyber, fraud, and other operational risks as well as legal, third-party and implementation risks. The BCBS Principles for the Sound Management of Operational Risk should help address those risks by calling a strong control environment, appropriate internal controls and business resilience and continuity plans.[8]

Moreover, as noted in the March 2019 BCBS statement on crypto-assets, one of the first steps in analysing the impact of crypto-assets on banking institutions is to assess the permissibility of a banking institution to engage in such activity.[9] [10] [11]

Financial Action Task Force (FATF)

The FATF, as the global standard setter for AML/CFT, set out in June 2019 how the FATF standards should apply to virtual asset activities and Virtual Asset Service Providers (VASPs).[10,11] It set out recommendations that require countries to assess and mitigate the money laundering and terrorist financing risks associated with virtual asset activities and VASPs; license or register such providers; subject them to supervision or monitoring; and require that they implement all of the AML/CFT preventive measures under the FATF recommendations just like other financial institutions, including customer due diligence, record-keeping, suspicious transaction reporting, and screening all transactions for compliance with sanctions.

In October 2019, the FATF clarified that both global "stablecoins" and their service providers would be subject to the FATF standards either as virtual assets and VASPs or as traditional financial assets and their service providers, and that stablecoins should "never be outside of the scope of anti-money laundering controls."[12] Accordingly, the FATF has made clear that countries should effectively implement the FATF standards as part of their domestic regulatory and supervisory regimes for virtual assets, including stablecoins and VASPs.

The FATF is currently reviewing the money laundering (ML) and terrorism financing (TF) risks associated with stablecoins and other virtual assets and whether these are adequately mitigated. The particular ML/TF risk associated with stablecoins would be amplified by any potential for mass adoption, but a large part of these risks could be mitigated when the stablecoins are intermediated by

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7 See www.bis.org/bcbs/publ/d490.pdf.

8 See www.bis.org/publ/bcbs195.pdf.

9 See www.bis.org/publ/bcbs nl21.htm.

10 On 21 June 2019, the FATF issued an Interpretive Note to Recommendation 15 on New Technologies (INR. 15) that clarifies the FATF's previous amendments to the international Standards relating to virtual assets and describes how countries and obliged entities must comply with the relevant FATF Recommendations to prevent the misuse of virtual assets for money laundering and terrorist financing and the financing of proliferation.

11 The terms "virtual asset" and "virtual asset service provider" are used by FATF according to the definitions available at http://www.fatf-gafi.org/glossary/u-z/.

12 FATF, October 2019, https://www.fatf-gafi.org/publications/fatfgeneral/documents/statement-virtual-assets-global-stablecoins.html.

either financial institutions or VASPs that are effectively regulated and supervised in a manner consistent with the FATF standards. There may be material residual risks if the stablecoin enables large-scale anonymous peer-to-peer transactions without an intermediary, where additional clarifications may be needed. The FATF will undertake further work to review the business models of stablecoins to identify any gaps and significant residual risks, to consider further clarifications on how the FATF standards apply to global "stablecoins" and their service providers, as well as whether further updates are necessary, and report on this to the G20 in July 2020.

Committee on Payments and Market Infrastructures (CPMI) and International Organization of Securities Commissions (IOSCO)

The CPMI and IOSCO have carried out a preliminary analysis on the application of the Principles for Financial Market Infrastructures (PFMI) stablecoin arrangements and their activities. The PFMI include 24 high-level principles applicable to systemically important FMIs. Principles include the existence of a well-founded legal basis, clear governance promoting safe and efficiency and supporting stability of the broader financial system, risks management, and operational resilience. 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.

In this preliminary analysis, the CPMI-IOSCO established that the PFMI apply to systemically important stablecoin arrangements that perform systemically important payment system functions[13] or other financial market infrastructure (FMI) functions that are systemically important. 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.

The CPMI-IOSCO considered that, while it may be challenging for systemically important stablecoin arrangements, in particular for those that are partly or highly decentralised, to comply with the standards of the PFMI, systemically important stablecoin arrangements need to adapt to comply with them. In this regard, CPMI-IOSCO is considering the need for some clarification or interpretation to 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 systemically important stablecoin arrangements. 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.

International Organization of Securities Commissions (IOSCO)

IOSCO is reviewing the applicability of IOSCO standards and principles to GSC initiatives and published a report on 23 March 2020.[14] The report assesses the implications that global stablecoin proposals could have for securities market regulators. It concludes that GSCs may, depending on their structure, present features that are typical of regulated securities or other regulated financial instruments or services. It then engages in a lifecycle analysis of a hypothetical stablecoin used for domestic and cross-border payments. The hypothetical stablecoin uses a reserve fund and intermediaries to try to achieve a stable price vis-a-vis a basket of low volatility currencies.

The report concludes that several principles and standards could apply to the hypothetical stablecoin

[13] The PFMI note that 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." The instruments could potentially be the tokens issued by a stablecoin issuer, the procedures could be the payments made between token holders (or to participating retailers), and the rules would likely be set out by the stablecoin issuer (and codified on the blockchain).

[14] See https://www.iosco.org/library/pubdocs/Ddf/IQSCQPD650.Ddf.

offering. These include (i) IOSCO's 2012 Recommendations on Money Market Funds; (ii) Issues, Risks and Regulatory Considerations for Crypto-asset Trading Platforms (2020); (iii) the 2013 Principles for the Regulation of ETFs; and (iv) the IOSCO work on Market-Fragmentation including the 2015 Cross Border Regulation Task Force Report and the work of the Follow-Up Group to address potential regulatory arbitrage as well as IOSCO work on Cyber Resilience and Client Assets. These findings may equally apply to stablecoin arrangements other than the hypothetical stablecoin offering, subject to a facts and circumstances assessment of the individual proposal at hand. The report also sets out considerations of broader issues of relevance to securities market regulators and contains the CPMI-IOSCO's preliminary analysis of the applicability of the PFMI to GSCs. A more detailed summary of the report's findings along with the CPMI-IOSCO analysis are both set out in Annex 4.

Future IOSCO work will expand the functional analysis in the published report to look at other structures of GSCs offerings and how they might interact with the perimeter of securities markets regulation, as well as supplementing the analysis with any relevant additional information, if and when GSC proposals come to market.

3.3. Potential issues to consider

The analysis of jurisdictions' existing regulatory, supervisory and oversight approaches and of the applicability of existing international standards raises some issues that national authorities should consider

Clarity about the applicability of existing regulatory regimes and powers

There is a broad consensus among survey respondents that existing regulatory authority over the activities and risks of stablecoins needs to be clarified. Most authorities reported that they planned to clarify how existing regimes apply to stablecoins and their providers, and that some adaptation of their regulation may be necessary. Some jurisdictions have already provided guidance on how to apply existing regulation to crypto-assets and/or stablecoins. This guidance has typically sought to help firms understand which regulatory requirements apply and how to ensure compliance. Others are currently developing new legislation or regulation to address the risks posed by crypto-assets, including stablecoins. Some jurisdictions have chosen to issue warnings to the public, highlighting the risks of these investments and/or that some of these activities are not licensed or regulated. In a few cases, jurisdictions have chosen to prohibit crypto-assets.

Potential gaps in existing regulatory frameworks

Some authorities identified potential gaps in existing regimes that need to be addressed. One source of gaps may be an unanticipated *bundling* of attributes that conventional regulations, in particular those designed to be applied by sector, may not fully capture. For instance, legal frameworks in some jurisdictions may not allow stablecoins to fall under multiple regulatory classifications, so certain activities may not be captured at present (a simple example being that if a GSC falls exclusively under securities regulation in such jurisdiction, activities related to the transfer of coins may not be covered). Another source of gaps may be the *unbundling* of activities in a stablecoin arrangement. As a consequence, some of the activities in a GSC arrangement may fall outside of traditional regulatory boundaries. Survey responses suggest that potential gaps in existing frameworks at domestic level may include:

(i) potentially incomplete implementation and coverage of FATF standards for all activities of a GSC arrangement; (e.g. peer-to-peer transfers of stablecoins may not be addressed);

(ii) inability to effectively supervise and oversee a GSC arrangement if the legal

classification of a stablecoin falls outside an existing regulation framework (e.g. emoney or a security);

(iii) partial regulatory coverage of the functions and activities under a GSC arrangement that are economically similar to those that would fall under the remit of existing regulation, but as a result of their particular design, do not engage the perimeter of existing regulation (e.g. exchange and trading, wallet services used for storing keys) with a range of risks not or not fully addressed (e.g. market integrity, consumer protection);

(iv) insufficient risk mitigation tools within a regulatory framework applicable to a given activity (e.g. no specific capital or liquidity requirements for issuing stablecoins or managing the reserve assets, incomplete measures addressing cyber security and

operational risks of the underlying technology used for operating the infrastructure, validating transactions or storing keys in wallets).

Considerations on classifications for individual jurisdictions

As with many other financial instruments, there is currently no common and consistent regulatory classification of the nature, functionality, structure and rights associated with stablecoins across jurisdictions. In different jurisdictions, a stablecoin could fall within one or multiple regulatory classifications, depending on the design of the stablecoin and how it is offered and sold. In AE jurisdictions, stablecoins were most frequently classified as e-money and a collective investment scheme (CIS), followed by deposits, a security other than CIS and derivatives. For EMDEs, the most common classifications were e-money and payment instrument.

Individual jurisdictions may assess the effectiveness of their current regulatory, supervisory and oversight approaches by referring to Annex 2 in conjunction with Section 5. The table in Annex 2 maps the activities in a stablecoin arrangement to the associated vulnerabilities and highlights appropriate regulatory, supervisory and oversight tools as well as international standards that could be relevant.

While different classifications (and regulatory approaches) may be taken in individual jurisdictions, these different approaches should adequately address the risks posed by GSC activities, and gaps, if any, should be closed. Functions and activities of a GSC arrangement are typically distributed over multiple jurisdictions (discussed further in Section 4 below). Differentiated regulatory, supervisory and oversight arrangements across jurisdictions, if they do not work broadly towards the same outcomes, could therefore result in less comprehensive regulatory coverage or give rise to regulatory arbitrage.

4. Cross-border regulation, supervision and oversight

4.1. Cross-border challenges

Cross-border challenges are inherent to GSC arrangements. The ease with which stablecoin arrangements and entities providing various functions and activities within the arrangements can operate across borders and reorganise or relocate their activities challenges the effectiveness of regulation, supervision, oversight and enforcement at jurisdictional levels. A stablecoin issued in one jurisdiction may be easily accessible online to users in another jurisdiction. Operational and cyber security risks related to the technology and infrastructure used in a stablecoin arrangement may affect multiple jurisdictions. The governance arrangements over operations and infrastructure should

therefore be of interest to regulators across the jurisdictions where the stablecoin arrangement has activities in.

Differentiated jurisdictional approaches could give rise to regulatory arbitrage and fragmentation without close coordination and a common set of standards. Jurisdictions generally seek to apply their rules and regulations to activities taking place in their jurisdiction, including in situations where stablecoins are offered to local users from abroad. However, the effective application and enforcement of a jurisdiction's rules may be difficult as users access services on the Internet and authorities cannot easily locate the provider of the services. It may be further complicated by the fact that different regulatory classifications of stablecoins and hence different regulatory, supervisory and oversight approaches are adopted across jurisdictions.

These cross-border challenges may be particularly significant for EMDEs. The use of stablecoins as a means of payment and/or store of value may be more widespread in EMDEs, for example due to the substitution of local currency, than in AEs with developed financial systems. At the same time, the activities of a stablecoin arrangement may typically be performed by entities that are located outside EMDE jurisdictions. Taken together, EMDEs may face a combination of relatively high systemic relevance of a stablecoin and constraints in regulating and supervising the arrangement.

4.2. Issues for cross-border cooperation and coordination

Addressing the cross-border challenges requires effective cross-border cooperation, coordination and information sharing amongst the relevant authorities to ensure sufficient cross-border supervision and oversight of the stablecoin arrangement.

Existing cooperation mechanisms between sectoral authorities would help support cooperation and coordination, possibly with some adaptations (e.g. through Memorandums of Understanding (MoU)). However, challenges could arise around the ability to supervise and oversee a stablecoin arrangement holistically, rather than in a piecemeal framework based on individual functions and activities.

Implementing effective cooperation requires an understanding of how a specific stablecoin arrangement is organised and operates and how the individual activities are connected and generate contagion channels. Based on this understanding, authorities need to determine the scope of application of their respective regulatory frameworks and how the regulations of multiple jurisdictions may interact so as to avoid any regulatory underlap or gap and ensure an effective holistic oversight.

The level and nature of cross-border cooperation needed may depend on:

- *Use and systemic importance* - what the GSC is used for and where users are located;
- *Governance* - where the decisions across the GSC arrangement are made and policies set and enforced;
- *Issuance and redemption of coins, reserve management* - where the issuance and redemption of coins and the management of reserve assets occurs; the jurisdiction whose currency or assets (e.g. government bonds) are included in reserve assets;
- *Transfer mechanisms* - how transfer mechanisms are operated and how stablecoins are exchanged, traded and resold, for example, whether or not these are centralised processes operated by a designated entity or decentralised processes operated by multiple entities; where data and records are located (whether transaction records and other data are

centralised or decentralised);

- *User-facing elements* - where wallet and platform providers are located, whether they operate cross-border, and whether there is vertical integration between operators of the functions and activities of the GSC arrangement.

There are different approaches for cross-border supervision and oversight. For prudentially regulated financial institutions, cross-border cooperation builds on principles for comprehensive consolidated supervision.[15] The "home supervisor', that is the supervisor in the jurisdiction where the head office or parent entity of a financial institution is headquartered, is responsible for the supervision of the group of related institutions on a consolidated basis. In this case, effective consolidated supervision requires the home supervisor to cooperate with supervisors in jurisdictions where subsidiaries or branches are located ("host supervisors").

In the case of FMIs, a FMI's competent authority ("lead overseer" which could be compared to the "home supervisor") is designated as the coordinator of the cooperation arrangement. A wide set of relevant authorities is identified and engaged in the cooperation, taking into account the features and the services that the FMI provides on a cross-border basis.

In both cases, the objective of the "home supervisor" and of the "lead overseer" is to gain sufficient knowledge of the operations of the financial group or FMI, both domestic and foreign, as a whole so as to monitor and assess risks and vulnerabilities faced by the group or FMI. Host supervisors may have different interests in relation to the supervision of the group or FMI as a whole, depending on whether the group or FMI has material risk exposures in the host jurisdiction and whether it poses a systemic risk to the host jurisdiction.

A stablecoin arrangement could be different from a financial group or FMI. Unlike a financial group, a stablecoin arrangement may be a network of unrelated entities conducting different functions and activities usually from various jurisdictions that may only be held together by common policies, standards and agreements about their respective roles. At the same time, a stablecoin arrangement may involve functions that extend beyond those of a traditional financial group or FMI. Each part, whether entity, policy, process, or technology, of a stablecoin arrangement can affect the other parts. Depending on the specific features of the stablecoin arrangement, there is a risk that a stablecoin arrangement is not subject to sufficiently robust governance and controls that are enforced through policies, standards, and contractual obligations over its entire network of functions, activities and participants.

Whereas the objectives of comprehensive consolidated supervision are relevant in the context of a GSC arrangement, the concepts of "home" and "host" cannot in certain cases be easily transposed to GSC arrangements that are operated through a loose network of entities and dispersed ownership and control structures. This is the case in particular if there is no entity responsible for the governance of the GSC arrangement or if the back-end core functions (governance, issuance of coins, stabilisation mechanism, or transfer mechanism) of the GSC arrangement are performed by different entities in different jurisdictions. There may also be different options for determining a "home jurisdiction".[16] Given these inherent limitations to the "home-host" concept, certain cross-border supervisory and oversight models existing outside the consolidated supervision context may be more

[15] See for example Basel Committee, Minimum standards for the supervision of international banking groups and their crossborder establishments, 28 July 1992.

[16] For example, the FATF standards require licensing or registration of virtual asset service providers where they are incorporated and leave individual jurisdictions to decide whether it should also be required where the service provider has management, back office presence, or a substantial customer base

relevant, as discussed further below.

4.3. Role of existing standards on cooperation, coordination and information sharing

Despite the particularities of GSC arrangements, existing international standards and principles governing cooperation, coordination and information sharing amongst authorities should help inform cross-border cooperation for GSC arrangements. Given the multi-functional and multi- jurisdictional nature and "loose network structure" of GSC arrangements, new forms of cooperation may need to be established or adapted from existing approaches.

In addition to the overarching international standards referred to in Section 3.2 that could apply to GSC arrangements, existing international standards and principles that focus on cross-border cooperation, coordination and information sharing may also be adapted to apply to GSC arrangements. These include principles related to cooperation, which underscore the importance of collaboration and information-sharing, such as:

- *Responsibility E of the PFMI* which 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 authorities responsible for oversight at cross-border level. Where a stablecoin arrangement may have other features and provide services in addition to those of an FMI, Responsibility E also foresees that overseers identify and engage with potentially broader set of authorities. CPMI-IOSCO is currently considering whether additional considerations would be helpful to achieve appropriate cooperation among relevant authorities.
- *BCBS standards relating to cross-border supervisory cooperation:* Supervisors overseeing international banking groups involved in GSC arrangements would build on the Committee's principles related to supervisory cooperation, which underscore the importance of collaboration and information-sharing.[17] These include the Basel Concordat[18], the Core Principles for effective banking supervision, home-host information sharing arrangements, and the Principles for effective supervisory colleges.
- *FATF standards:* The FATF standards on AML/CFT apply whether GSCs are classified as virtual assets or as other traditional assets. The FATF standards on virtual assets finalized in June 2019 require licensing or registration of virtual asset service providers in at least the jurisdiction where they are created if a legal person or where they are located, if a natural person. The standards also include optional further licensing and registration in jurisdictions where service providers operate. The FATF standards further require various forms of cross-border cooperation among authorities, include mutual legal assistance and information sharing.
- *The IOSCO Principles[19] covering Cooperation in regulation* (Principles 13 to 15), *IOSCO's Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information[20], the Enhanced Multilateral MoU Concerning Consultation*

[17] See respectively, https://www.bis.org/publ/bcbsc312.Ddf, https://www.bis.org/publ/bcbs230.pdf, https://www.bis.org/publ/bcbs125.pdf, and www.bis.org/Dubl/bcbs287.Ddf".

[18] See httDs://www.bis.org/Dubl/bcbsc312.Ddf.

[19] See https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf.

[20] See https://www.iosco. org/about/? subsection=mmou.

and Cooperation and the Exchange of Information[21]*, the IOSCO Principles regarding Cross-Border Supervisory Cooperation of May 2010* and the cross-border regulatory and supervisory cooperation aspects of the IOSCO 2015 Cross-Border Regulation Task Force Report as well as of the work of the FollowUp Group to address potential regulatory arbitrage; and

- The cross-border regulatory and supervisory cooperation aspects of the *Joint Forum Principles for the Supervision of Financial Conglomerates* (2012).

In addition, bespoke oversight arrangements, such as the arrangement governing the international cooperative oversight of SWIFT[22] or of CLS[23], may provide a reference point for establishing cooperative arrangements that can help ensure comprehensive oversight and supervision of a GSC arrangement operating across sectors and borders.

5. High-Level Recommendations for effective regulatory, supervisory, and oversight approaches to GSCs

This section sets out 10 high-level recommendations that seek to promote consistent and effective regulation, supervision, and oversight of GSCs. The recommendations aim to mitigate the potential risks with the use of GSCs as means of payment and/or store of value, both at the domestic and international level, while supporting responsible innovation and providing sufficient flexibility for jurisdictions to implement domestic approaches.

Objectives and scope

The objective of the recommendations is to help authorities to determine their regulatory, supervisory and oversight approaches to mitigate potential risks to financial stability and market integrity, and risks for users (consumers) that GSCs may pose, while also being supportive of responsible financial innovation. In order to appropriately mitigate financial stability risks that may arise, the recommendations focus on reinforcing and underscoring existing standards and regulations; identifying and addressing potential regulatory gaps; and mitigating potential regulatory arbitrage. The recommendations are intended to be high-level and flexible so that they can be incorporated into the wide variety of regulatory frameworks potentially applicable to GSCs around the world.

The recommendations do not represent a complete framework that addresses all the risks and responsibilities of GSC arrangements. They do not address certain important issues such as data privacy, competition policy, taxation, monetary policy, monetary sovereignty, currency substitution, and other macroeconomic concerns. They also do not comprehensively cover AML/CFT requirements, which should be covered by the FATF standards, although the recommendations contain no contradictions with regard to the FATF's work in this area; they also do not address risks that financial institutions may face in relation to GSC arrangements.

In general, public policy goals are meant to be technology neutral. The recommendations therefore

[21] See https://www.iosco.org/about/?subsection=emmou.

[22] The National Bank of Belgium, as the lead overseer, conduct the oversight of SWIFT in cooperation with the other G10 central banks, i.e. Bank of Canada, Deutsche Bundesbank, European Central Bank, Banque de France, Banca d'Italia, Bank of Japan, De Nederlandsche Bank, Sveriges Riksbank, Swiss National Bank, Bank of England and the Federal Reserve System (USA), represented by the Federal Reserve Bank of New York and the Board of Governors of the Federal Reserve System. The relationship between the NBB and those other cooperating central banks has been laid downs in bilateral MoUs.

[23] Similarly, a cooperative oversight arrangement is established for the oversight of CLS, which is conducted by the Federal Reserve System, which includes both the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York, in cooperation with the G-10 and other central banks of issue of CLS-settled currencies. A protocol for cooperation has been established (see https://www.federalreserve.gov/paymentsystems/cls protocol.htm).

aim to promote a regulatory, supervisory and oversight framework that is technology neutral and focuses on underlying activities and risks, thereby accommodating innovation in the provision of financial services as technology changes.

The recommendations apply to any GSC in any jurisdiction and help authorities to address activities and services within GSC arrangements that may fall outside the traditional regulatory perimeter. Consistent application of these recommendations by all relevant authorities in jurisdictions in which GSC arrangements are active may help to ensure comprehensive regulatory coverage and reduce the scope for regulatory arbitrage. How these recommendations apply to the activities of specific GSC arrangements could vary depending on how the transfer mechanism is operated, how stablecoins are structured, exchanged, traded and resold, and whether or not these are centralised processes operated by a designated entity or decentralised processes.

While focusing on GSCs that may be widely used as a means of payment and/or store of value for consumers and businesses, the recommendations could also be relevant for:

- stablecoin arrangements that may pose risks to financial stability only in some countries or regions;
- stablecoin arrangements used only for wholesale transactions among financial institutions;
- stablecoin arrangements that are anticipated to become GSC arrangements; and
- other crypto assets that could pose risks similar to some of those posed by GSCs because of comparable international reach, scale and use.

The recommendations are addressed to financial regulatory, supervisory and oversight authorities. They should be read to apply at the jurisdictional level and therefore are only applicable to a particular authority to the extent that the recommendations fall within an authority's remit.

Grounded in an assessment of a GSC arrangement's economic function and the principle of "same business, same risk, same rules", and focused on regulatory objectives and outcomes, authorities should apply and, if necessary, develop effective regulatory, supervisory and oversight approaches and cross-border cooperation mechanisms within their respective mandate and legal frameworks.

At the same time, the recommendations set out expectations for providers of services and activities within the GSC arrangements and can serve as a basis for authorities' active engagement with stakeholders on GSC-related risks and how these are addressed.

The recommendations complement international sectoral standards. Authorities should rely on sectoral standards and principles for cross-border cooperation relevant to the supervision and oversight of GSC arrangements, where they perform the same economic function as existing regulated activities covered by these standards. These include, for example, the IOSCO Principles regarding Cross-Border Supervisory Cooperation, the CPMI-IOSCO Principles for Financial Market Infrastructures, including the Responsibilities of Authorities and particularly Responsibility E, the FATF standards, in particular Recommendation 15, and the relevant principles applicable to cross-border banking supervision and crisis management of the BCBS and the FSB. Efforts by the standard setting bodies to review, and where appropriate adjust their standards to take into account the novel features of stablecoins can further promote international consistency and reduce the risk of arbitrage or regulatory underlaps. See Annex 2 for examples of vulnerabilities and regulatory tools, and international standards by activity of a GSC arrangement to address these vulnerabilities.

1. **Authorities should have and utilise the necessary powers and tools, and adequate**

resources, to comprehensively regulate, supervise, and oversee a GSC arrangement and its multi-functional activities, and enforce relevant laws and regulations effectively.

Authorities within a jurisdiction, either independently or collectively, should have and utilise the appropriate powers and capabilities to regulate, supervise, oversee and if necessary prohibit effectively the activities being conducted and services being offered to users in or from their jurisdiction and the attendant risks that these services and activities may pose.

This may include, for example, services and activities related to the governance/control of the stablecoin arrangement, operating the infrastructure of the stablecoin arrangement, issuing/redeeming stablecoins, managing stablecoin reserve assets, providing custody/trust for stablecoin reserve assets, trading/exchanging stablecoins, or storing the keys providing access to stablecoins.

Authorities' powers should extend to entities that are engaged in GSC activities in their jurisdictions and within the scope of their authority and relevant to their mandate.

Authorities should evaluate, identify and clarify which authorities have responsibility for each activity of a GSC arrangement, as appropriate.

Authorities should identify and address gaps through changes in regulations, or policy, as applicable. In some jurisdictions, legislative changes may be necessary to address those gaps.

Authorities should ensure the appropriate monitoring of GSC activities (and any significant change to the way those activities are performed) and the financial system and ensure timely access to relevant information sufficient to conduct effective regulation, supervision and oversight.

Authorities should have the powers and capabilities to enforce applicable regulatory, supervisory and oversight requirements, including the ability to undertake inspections or examinations, and, when necessary, require corrective actions and take enforcement measures. To do so, authorities should be provided with or obtain sufficient information regarding the technology and legal obligations underpinning the GSC arrangements.

Authorities should be able to identify the legal entities responsible for the relevant activities and to assess the ability of the GSC arrangement to implement corrective actions.

Authorities should have the ability to mitigate risks associated with or prohibit the use of certain or specific stablecoins in their jurisdictions where these do not meet the applicable regulatory, supervisory, and oversight requirements.

2. Authorities should apply regulatory requirements to GSC arrangements on a functional basis and proportionate to their risks.

To promote a technology neutral approach that enables comprehensive oversight of GSC's multi-functional activities and mitigates regulatory arbitrage, authorities should focus on the functions performed by the GSC arrangement and risks posed and apply the appropriate regulatory framework in the same manner as they would apply it to entities performing the same functions or activities, and posing the same risks ("same business, same risk, same rules"). Authorities should apply rules and policies, including applicable international standards, as appropriate and to the extent that the GSC arrangement provides the same functions and poses the same risks as other financial service providers. This includes the relevant regulation, standards and rules for e-money issuers, remittance companies, payments and financial market infrastructures, collective investment schemes, and deposit-taking and

securities trading activities. This also includes market integrity, consumer and investor protection arrangements, appropriate safeguards, such as pre- and post-trade transparency obligations, rules on conflicts of interest, disclosure requirements, robust systems and controls for platforms where the GSC is traded, and rules that allocate responsibility in the event of unauthorised transactions and fraud, and rules governing the irrevocability of a transfer orders ("settlement finality").

Authorities should consider the extent to which existing financial regulation captures the risks of GSC functions and activities, and the potential effects of financial regulation not applying to aspects of a GSC arrangement.

Authorities should be prepared to clarify or supplement financial regulations that do not adequately capture the risks of GSC functions and activities and to develop and implement regulations to address uncaptured risks as needed.

Where regulations of more than one jurisdiction may apply, there should be cooperation and coordination regarding how jurisdictions' rules apply to the different aspects of the GSC arrangement's functions and activities operating across borders, as with other types of financial arrangements.

3. **Authorities should ensure that there is comprehensive regulation, supervision and oversight of the GSC arrangement across borders and sectors. Authorities should cooperate and coordinate with each other, both domestically and internationally, to foster efficient and effective communication and consultation in order to support each other in fulfilling their respective mandates and to facilitate comprehensive regulation, supervision, and oversight of a GSC arrangement across borders and sectors.**

   Cooperation arrangements should be flexible, efficient, inclusive, and multi-sectoral, and take into account the complexity and the potential evolution of the GSC arrangement and the risks it poses over time. They may take different forms (e.g. supervisory colleges, fora or networks). They should also consider the distinctive nature of GSC arrangements as usually consisting of multiple and oftentimes unrelated entities that interact and have varying roles and responsibilities.

   Cooperation arrangements may be underpinned by bilateral and/or multilateral memoranda of understanding for cooperation and information sharing, and for crisis management and resolution, and complemented with mechanisms with a single focus, e.g. regarding AML/CFT or cyber security. These arrangements should also consider the potential need to seek cooperation from authorities in other jurisdictions to achieve regulatory objectives, e.g. in implementing recovery and resolution plans, or halting activities based in one jurisdiction having an adverse impact in another.

   In establishing a cooperation arrangement, authorities should consider how to ensure that the arrangement takes into account the interests of each of the jurisdictions and sectors in which GSC arrangements may be operating or seeking to operate, jurisdictions where the governance body, the providers of GSC functions and activities and the GSC arrangement's users are located, where (spillover) risks reside, and the potentially differing impacts of GSC arrangements across jurisdictions and between AEs and EMDEs.

4. **Authorities should ensure that GSC arrangements have in place a comprehensive governance framework with a clear allocation of accountability for the functions and**

activities within the GSC arrangement.

Authorities should ensure adequate governance frameworks over the entire network of GSC activities, functions and participants, given each part of the network can affect the other parts. The governance structures and accountabilities should have a sound legal basis and be clear, transparent, and disclosed to users and other stakeholders. Such disclosures should include how governance and accountability is allocated among different entities in different jurisdictions, as well as clarify the limits of accountability and legal liability in any one jurisdiction. This should be the case for all functions and activities of the GSC arrangement, including but not limited to, setting rules and standards for participants of the GSC arrangement, operating the stabilisation mechanism in particular the investing of the reserve assets as appropriate, providing the custody/trust services for reserve assets, and providing user-facing services such as exchanges and wallets.

GSC arrangements may vary in the degree of decentralisation of their governance design. This notwithstanding, authorities should ensure that there are one or more governance bodies or an equivalent mechanism and that the functions and activities of

the GSC arrangement are subject to appropriate oversight, governance and safeguards. Fully permissionless ledgers or similar mechanisms could pose particular challenges to accountability and governance and may not be suitable if regulators cannot be assured that appropriate regulatory, supervisory, and oversight requirements are satisfied.

Where a GSC arrangement relies on a third-party, the GSC governance body should provide a comprehensive assessment of how its reliance on the third-party does not impede its ability to meet regulatory requirements and expectations for performance, resilience, security, development and maintenance, and regulatory compliance.

5. Authorities should ensure that GSC arrangements have effective risk management frameworks in place especially with regard to reserve management, operational resiliency, cyber security safeguards and AML/CFT measures, as well as "fit and proper" requirements

Authorities should ensure that GSC arrangements have in place policies that set out how all functions and activities within the GSC arrangement are subject to risk management measures that are appropriate to and commensurate with the specific risks that GSC arrangements pose. If the risk from the fluctuation in the value of the underlying assets is borne, partially or totally by the GSC operator, the relevant prudential framework (e.g. market risk framework) should be applied to the GSC operator.

Authorities should ensure that GSC arrangements conduct due diligence (for example, by way of 'fit and proper' standards) into individuals involved in the management and control of the GSC arrangement, as well as those who exercise significant power or discharge significant responsibilities in relation to GSC activities.

Authorities should ensure that GSC arrangements have in place policies that address heightened risks for GSC arrangements, such as operational risks, AML/CFT risks, and cyber risks. Risk management measures and technical standards should cover relevant activities performed by providers of activities in the GSC arrangements, paying particular attention to compliance by permissionless or anonymous networks

Authorities should ensure that GSC arrangements conduct continuous risk assessments,

contingency preparedness, and continuity planning. Authorities should ensure that GSC arrangements have a robust assessment of how its technology model and the rules for transferring coins provide assurance of settlement finality.

In addition to consumer protection considerations, authorities should address potential financial stability concerns and limit spillover effects to the wider financial system, and consider requiring GSC arrangements to adopt strict rules on reserve assets management and have adequate capital and liquidity buffers to absorb credit, liquidity and market risks, as well as risks related to legal, operational and cyber risks relevant to the stabilisation mechanism.

There should be particular attention to the degree of risk-taking in terms of duration, credit quality, liquidity and concentration of a GSC's reserve assets. In addition, asset- linked stabilisation mechanisms should have sufficient controls to ensure that GSC issuance and destruction are sufficiently matched by a corresponding increase or decrease in reserve assets and that such increases or decreases are managed to avoid adverse impacts on the broader market.

6. **Authorities should ensure that GSC arrangements have in place robust systems for safeguarding, collecting, storing and managing data.**

GSC arrangements should implement and operate data management systems that record and safeguard in a discoverable format relevant data and information collected and produced in the course of their operations, while conforming to all applicable data privacy requirements. Adequate controls should be in place to safeguard the integrity and security of both on-chain and off-chain data and conform to applicable data protection regulation.

Authorities should be able to obtain timely and complete access to relevant data and information to enable them to implement adequate regulatory, supervisory, and oversight approaches that capture the functions and activities of the GSC arrangement, in accordance with the level and nature of the risks posed..

7. **Authorities should ensure that GSC arrangements have appropriate recovery and resolution plans.**

Authorities should ensure that GSC arrangements have in place appropriate planning to support an orderly wind-down or resolution under the applicable legal (or insolvency) frameworks, including continuity or recovery of any critical functions and activities within the GSC arrangement.

Authorities should consider how such plans are implemented through effective contractual obligations among the entities in the GSC network, and address the potential involvement of authorities in all of the jurisdictions that the entities operate in.

8. **Authorities should ensure that GSC arrangements provide to users and relevant stakeholders comprehensive and transparent information necessary to understand the functioning of the GSC arrangement, including with respect to its stabilisation mechanism.**

Information about the governance structure of the GSC arrangement, the allocation of roles and responsibilities assigned to operators or service providers within the GSC arrangement, the operation of the stabilisation mechanism, the investment mandate for the reserve assets, the custody arrangement and applicable segregation of reserve assets, and available dispute

resolution mechanisms or procedures for seeking redress or lodging complaints are features of GSC arrangements that should be transparent.

Authorities should ensure that the GSC arrangements makes appropriate disclosures to users and the market regarding the design of the stabilisation mechanism (e.g. asset- linked or algorithm-based), and the mechanism by which the stablecoin's value is maintained.

Information to be disclosed to users and counterparties should also periodically cover the amount of GSC in circulation and the value and the composition of the assets in the reserve backing the GSC. Information pertaining to the amount of GSC in circulation and the value and the composition of the assets in the reserve backing the GSC should be subject to independent audit, and disclosed on a regular basis in a comprehensive and transparent manner.

GSC arrangements should put in place mechanisms to ensure the protection of users and counterparties, when a potential modification of the arrangement could have a material effect on the value, stability, or risk of the GSC.

9. Authorities should ensure that GSC arrangements provide legal clarity to users on the nature and enforceability of any redemption rights and the process for redemption, where applicable.

Authorities should require GSC arrangements to provide appropriate information to users on the nature and enforceability of redemption rights, where available, and of any claims that users and intermediaries may or may not have on the underlying reserve assets or against the issuer or guarantors, including how claims may be treated in insolvency or resolution. The GSC arrangement should also provide adequate information on the process for redemption and the enforcement of any claims, where applicable, and how the GSC arrangement ensures smooth execution of such processes, including under stressed circumstances. Authorities should consider implications of GSC arrangements' decisions to grant users and/or intermediaries a direct legal claim against the GSC issuer or its reserve portfolio, including for "run" risks.

Adequate disclosure should be made of the recovery avenues, available to a user that loses access to his/her wallet and private key because of a cyber-attack or other operational incident.

Where a stablecoin is used widely for payment purposes, authorities should assess whether safeguards or protections consistent with similar instruments are appropriate. Where a GSC arrangement for such a stablecoin offers rights to redemption, such redemption should be at predictable and transparent rates of exchange, including, where authorities consider it appropriate, at par into fiat money consistent with similar instruments used widely for payment purposes. Authorities should ensure that such GSC arrangements follow prudential standards comparable to those required for financial institutions performing the same economic functions and posing similar risks.

10. Authorities should ensure that GSC arrangements meet all applicable regulatory, supervisory and oversight requirements of a particular jurisdiction before commencing any operations in that jurisdiction, and construct systems and products that can adapt to new regulatory requirements as necessary.

.....

Authorities should not permit the operation of a GSC arrangement in their jurisdiction unless the GSC arrangement meets all of their jurisdiction's regulatory, supervisory, and oversight requirements, including affirmative approval (e.g. licenses or registrations) where such a mechanism is in place.

GSC arrangements should have the ability to adjust their operational features, processes and mechanisms as necessary to maintain compliance with regulatory requirements and international standards if these evolve.

Before launching the arrangement and the provision of services to users in a particular jurisdiction, entities intending to engage in GSC functions and activities should ensure that they have a clear understanding of the regulatory requirements that apply and,

where regulations of more than one jurisdiction may apply, which jurisdictions' rules are applicable to different aspects of the functions and activities of the entities performing them and should engage proactively with authorities.

Annex 1: Different operating models for stablecoin arrangements

Stablecoin arrangements could take on a variety of structures and operating models, including from a technical perspective. The following four hypothetical examples can be used to illustrate the diversity in current and proposed stablecoin arrangements.

	Stablecoin A	**Stablecoin B**	**Stablecoin C**	**Stablecoin D**
Issuer	Single issuer	Multiple issuers	Single issuer	Smart Contracts
Liability - Who or what is the claim on, and are there conditions?	Claim on issuer	Claim on issuer, subject to holder meeting compliance requirements	Claim on approved intermediary; users have no rights or claims on underlying reserve assets	Interest in an equivalent amount held in the reserve assets
- Is it directly redeemable by the user, and if not, by whom?	Directly redeemable	Directly redeemable	Not directly redeemable; only approved participants can redeem coins with issuer	Directly redeemable
-What is it redeemed for, and are there conditions?	Redeemable for USD only at high ticket size, > $100K	Redeemable for USD (> $100)	Redeemable for local fiat currency	Redeemable for another crypto-asset
Stabilisation mechanism	Fiat currency - backed	Fiat currency - backed	Fiat currency - backed	Crypto-asset backed
Reserve assets	USD bank deposits	USD bank deposits	Bank deposits and short-term government securities in the referenced currencies	Another crypto-asset
Transaction permission	Permissionless	Permissionless	Permissionless below threshold	Permissionless
Medium of record	Multiple public blockchains	Single public blockchain	Single private blockchain	Single public blockchain
Ledger model	UTXO[24] or account depending on the blockchain	Account	Account	Account
Network permissions	Permissionless	Permissionless	Permissioned; validator nodes operated by approved parties	Permissionless

[24] The Unspent Transaction Output (UTXO)-based model records the ownership of the coins, and transfers occur through updating the ownership records of coins. The account-based model records the amount of coins associated with each account, and transfers occur through adjusting the amount of coins in accounts.

Annex 2: Examples of vulnerabilities, regulatory tools, and international standards by activity of a GSC arrangement

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
Establishing rules governing the stablecoin arrangement	Fraud or conflict of interest of those governing the GSC arrangement Lack of contractual arrangements among the entities of the GSC arrangement Difficulties to tackle the uncertainty for users due to an unclear definition of roles and responsibilities within the GSC arrangement. Inadequate governance framework	Ability to regulate and supervise the GSC arrangement in a holistic manner, e.g. through cooperation among authorities (akin to comprehensive consolidated supervision) Ability to require a GSC arrangement to be governed in a manner that facilitates effective regulation and supervision, including by prohibiting fully decentralised systems Governance, internal control and risk management requirements applicable at the level of the entire GSC arrangement Power to wind down or resolve a GSC arrangement Governance requirements requiring a solid legal basis Cybersecurity and other operational resiliency safeguards AML/CFT and sanctions controls	FATF Standards apply, while further updates and clarification may be necessary, especially regarding peer-to-peer transactions. For GSC arrangements set up entirely by banks, the Basel Framework and associated principles for supervision and colleges would provide a basis for overseeing the setup. For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the basis of a preliminary analysis, some of the most relevant principles regarding these vulnerabilities would be those on legal basis, governance and comprehensive management of risks. Responsibility E would provide a strong basis for cooperation among relevant authorities. See Annex 4 on CPMI-IOSCO preliminary analysis. For GSC arrangements where the token or the reserve qualifies as a security, IOSCO cooperation agreements are relevant (IOSCO Principles[25] covering Cooperation in regulation (Principles 13 to 15), IOSCO's Multilateral

[25] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
			MoU Concerning Consultation and Cooperation and the Exchange of Information,[26] the Enhanced Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information,[27] IOSCO's Principles on CrossBorder Supervisory Cooperation[28] of May 2010, the cross-border regulatory cooperation aspect of the IOSCO 2015 Cross-Border Regulation Task Force Report[29] and the work of the FollowUp Group to address potential regulatory arbitrage).
Issuing, creating and destroying stablecoins	Inability to meet redemptions in stressed conditions For algorithmic arrangements, errors in the issuance or redemption algorithm that impact value	Adequate liquidity (risk) management Liquidity risk management tools (e.g. redemption gates) Certain own funds/liquidity requirements Cybersecurity and other operational resiliency safeguards AML/CFT and sanctions controls	FATF standards apply to firms "issuing and managing means of payment" or to those who provide "participation in and provision of financial services related to an issuer's offer and/or sale of a virtual asset". For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the

[26] https://www. iosco.org/about/? subsection=mmou

[27] https://www.iosco.org/about/?subsection=emmou

[28] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD322.pdf

[29] https://www.iosco.org/librarv/pubdocs/pdf/IOSCOPD507.pdf

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
			basis of a preliminary analysis, some of the most relevant principles regarding these vulnerabilities would be those related to frameworks for comprehensive risk management and settlement. See Annex 4 on CPMI-IQSCQ preliminary analysis. Depending on the creation/redemption processes, the IQSCQ Principles for the Regulation of Exchange Traded Funds (2013)[30] could be relevant.
Managing reserve assets	A sharp fall in price and/or liquidity of reserve asset(s) Change in reserve allocation across reserve assets Lack of transparency in the composition of reserve Fraud or mismanagement of the reserve Investment in illiquid assets Significant increase in the price volatility of the reserve assets that cannot be or is not readily managed	Portfolio diversification rules and issuer limits rules Liquidity and other financial risk safeguards Liquidity risk management tools (e.g. redemption gates) Requirements on disclosure of the composition of the assets Disclosure of investment policies Cybersecurity and other operational resiliency safeguards AML/CFT and sanctions controls	FATF standards apply to those who provide "safekeeping and administration of cash and liquid securities on behalf of other persons", or "safekeeping and/or administration of virtual assets or instruments enabling control over virtual assets". For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. Depending on its structure, the reserve may engage IQSCQ Liquidity Risk Management (2018)[31] or IQSCQ Policy Recommendations for MMFs (2012).[32]

30 https://www.iosco.org/library/pubdocs/Ddf/IQSCQPD414.Ddf.

31 https://www.iosco.org/news/pdf/IQSCQNEWS486.Ddf.

32 http://www.iosco.org/library/pubdocs/pdf/IQSCQPD392.pdf.

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
			For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the basis of a preliminary analysis, some of the most relevant principles regarding these vulnerabilities would be those on custody and investment risks and transparency. See Annex 4 on CPMI-IOSCO preliminary analysis.
Providing custody/trust for reserve assets	Custodian failure, cross-border resolution, fraud Liquidity Lack of legal clarity regarding rights to reserve assets, particularly where legal regimes of different jurisdictions are implicated	Segregation requirements/rights for reserve assets Liquidity and other financial risk safeguards Cyber security and other operational resiliency safeguards AML/CFT and sanctions controls	FATF standards apply to those who provide "safekeeping and administration of cash and liquid securities on behalf of other persons" or "safekeeping and/or administration of virtual assets or instruments enabling control over virtual assets". For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. IOSCO Recommendations Regarding the Protection of Client Assets (2013).[33] For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the basis of a preliminary analysis, some of the most

[33] Recommendations Regarding the Protection of Client Assets Consultation Report http://www.iosco.org/library/pubdocs/pdf/IOSCOPD436.pdf. https://www.iosco.org/library/pubdocs/pdf/IQSCQPD401.pdf; Final Report

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
			relevant principles regarding these vulnerabilities would be those on custody and investment risks and transparency. See Annex 4 on CPMI-IOSCO preliminary analysis.
Operating the infrastructure	Disruption to the mechanism that links the value of the stablecoin and the value of its reserves, for example a cyber incident. Uncertainty on the revocability of the payments. GSC ledger compromised due to design flaw, operational (e.g. cyber) incident.	Liquidity and other financial risk safeguards Requirements on payments finality Cyber security and other operational resiliency safeguards AML/CFT and sanctions controls	FATF Standards apply to GSC infrastructure if it satisfies the definition of a financial institution or a virtual asset service provider provided in the FATF glossary. For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the basis of a preliminary analysis, some of the most relevant principles regarding these vulnerabilities would be those on framework for the comprehensive management of risks and settlement. See Annex 4 on CPMI-IOSCO preliminary analysis.
Validating transactions	GSC ledger compromised due to failure of multiple validator nodes	Cyber security and other operational resiliency safeguards AML/CFT and sanctions controls	For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
			systemically important, the PFMI apply. On the basis of a preliminary analysis, some of the most relevant principles regarding this vulnerability would be that on operational risk and settlement. See Annex 4 on CPMI-IOSCO preliminary analysis.
Storing the private keys providing access to stablecoins (wallets)	Disruption of a wallet, for example theft of coins from digital wallet or operational (e.g. cyber) incident. Direct loss, including by consumers	Liquidity and other financial risk safeguards Cyber security and other operational resiliency safeguards AML/CFT and sanctions controls	FATF Standards apply to all entities providing wallet services with the exception of un-hosted wallet For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk. For GSC arrangements deemed to be perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. On the basis of a preliminary analysis, a relevant principle regarding these vulnerabilities would be that on operational risk. See Annex 4 on CPMI-IOSCO preliminary analysis.
Exchanging, trading, reselling and market making of stablecoins	Withdrawal of liquidity provision by authorised resellers/market makers Disruption of a trading platform. Fraud, market manipulation, unauthorised transactions	Liquidity and other financial risk safeguards Settlement finality requirements Allocation of legal responsibility for unauthorised transactions Cybersecurity and other operational resiliency safeguards AML/CFT and sanctions controls	FATF Standards apply to all entities carrying out trading / exchanging activity with the exception of peer-to-peer transactions For GSC arrangements involving banks, the prudential risks and operational resilience vulnerabilities would be subject to the Basel Framework and Principles for the sound management of operational risk.

Activities	Vulnerabilities	Regulatory authorities and potential tools to address the vulnerabilities	
		Authority/tool	**Relevant international standard**
	Cyber incident		For GSC arrangements deemed to perform systemically important payment system functions or other FMI functions that are systemically important, the PFMI apply. See Annex 4 on CPMI-IQSCQ preliminary analysis. Issues Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms (2020)[34], discussing IQSCQ Principles[35] 13, 14, 15, 33, 34, 35, 36, 37, 29, 30, 31, 32, 38 and associated IQSCQ reports.

[34] https://www.iosco.org/library/pubdocs/pdf/IQSCQPD649.pdf.
[35] https://www.iosco.org/library/pubdocs/pdf/IQSCQPD561.pdf.

Annex 3: Summary of stocktake responses

This annex presents findings from the FSB survey on regulatory and supervisory approaches to so-called "stablecoins" (hereinafter "SCs"). All FSB members as well as the members of its Regional Consultative Groups (RCGs) were invited to participate in the survey.

A total of 51 jurisdictions completed the survey, including 25 FSB jurisdictions and 26 RCG jurisdictions. All questions have not necessarily been answered by jurisdictions, i.e. the sum of responses in tables and graphs may be fluctuant and less than the total number of responses received.

Current regulatory approaches

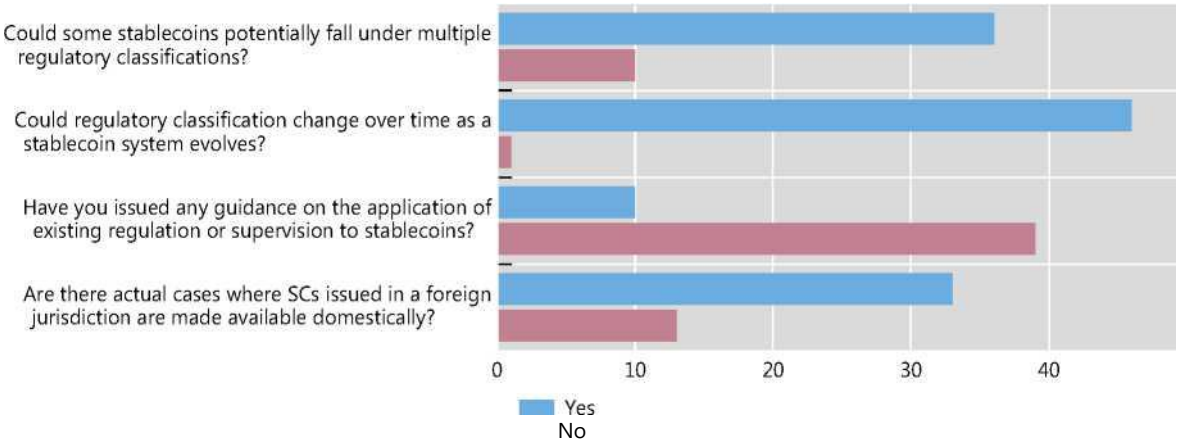
The majority of jurisdictions do not currently have SCs issued domestically. SCs are available in 31 jurisdictions, mostly cross-border. The majority of those jurisdictions, including several AE, do not currently have regulatory or supervisory regimes that are specific to SCs per se. However, regulatory and supervisory approaches in many of those jurisdictions do apply in whole or part to SCs.

Graph 1 summarises responses concerning the current regulation of SCs. Most respondents note that SCs could be classified under more than one regulatory category, and that the classification could change as the nature and use of the SC evolves. Many respondents are of the view that the existing regulatory and supervisory framework may not be adequate to address the risks emanating from SCs, and that there may be a need to adjust existing regulatory frameworks.

Regarding cross-sectoral issues, most jurisdictions are of the view that existing cooperation mechanisms between sectoral authorities enable them to address the need for cooperation and coordination, possibly with some adaptations (e.g. through Memorandums of Understanding (MoU)).

Graph 1

Stablecoins-Aspects of current regulation



Source: FSB

Regulatory classifications

Thirty-seven jurisdictions provided some information about how they *might* classify SCs. Jurisdictions in AEs were more likely to have a classification scheme in place.

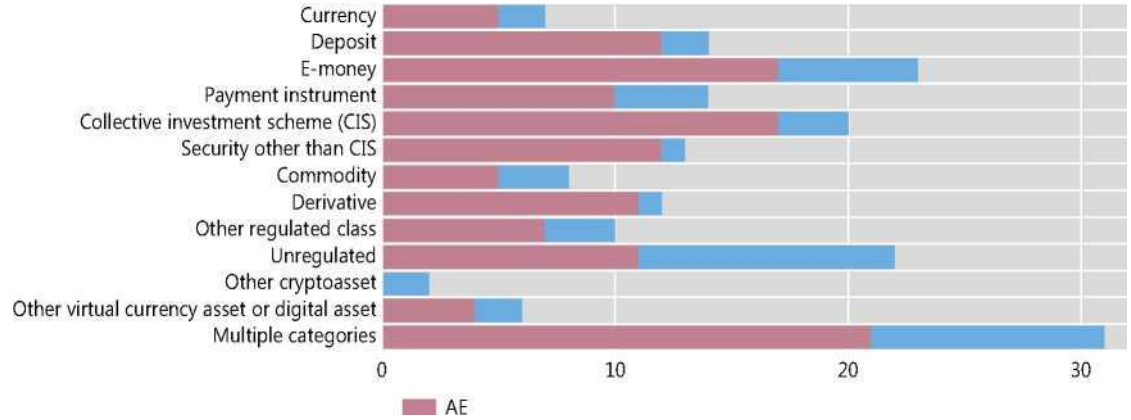
Graph 2 shows current and prospective classifications. SCs are most frequently classified as e-money, a collective investment scheme (CIS) in the AEs, followed by deposits, security other than CIS and as derivative. For EMDEs, the most common classifications used were e-money and payment instrument.

Thirty one jurisdictions indicated that SCs could fall under multiple classifications. Jurisdictions that classified SCs as e-money were likely to also classify them as either deposit or as a payment system. Four out of five jurisdictions that classified a SC as a CIS (16 out of 20) also classified it as another security, including security other than CIS, derivative, or commodity. One jurisdiction mentioned that depending on the details, a SC could exhibit bond-like features.

A few respondents indicated that under their current legal framework, it is not possible to classify SC as falling under multiple regulatory classifications. As such, certain activities may not be regulated/captured depending on which regulatory classification the SC ecosystem would fall under. Table 1 also shows that the most prominent regulation types considered by respondents are AML/CFT, cyber/technology risk, safety/soundness, and data privacy.

Graph 1

Current and prospective classification of SCs



Total number of responses: 40 including 22 from advanced economies (AEs), and 18 from emerging market and developing economies (EMDEs)

Source: FSB

Regulation by activity

Table 1 shows applicable regulation by activity within a SC ecosystem. Issuing/redeeming SCs; managing SC reserve assets; providing custody for SC reference assets; trading/exchanging SCs (including reselling to retail users) and storing SCs (wallets) are the functions that are most frequently covered by regulation, in particular provisions with respect to AML/CFT. Regulatory coverage is lowest with respect to governance and the operation of infrastructure arrangements for SCs.

One respondent noted that certain activities could be easily operated remotely and shift location quickly (e.g. mastermind, issuance of SC, reserve management) and thus would be more likely to be prone to regulatory arbitrage than those activities that tend to have domestically-focused functions (e.g. trading, storing, custody of SCs).

Table 1: Classification of SCs into activities and applicable regulations[36]

	AML/CFT	FMI/payments	Competition	Investor protection	Consumer protection	Market conduct /integrity	Cyber /technology risk	Safety and soundness	Data privacy	Other
Governing/controlling the SC arrangement ("mastermind")	17	16	17	11	11	11	15	18	19	5
Operating the infrastructure of the SC arrangement (e.g. payment or settlement system)	18	20	16	7	11	11	17	20	21	3
Issuing/redeeming SCs	33	16	16	12	17	12	18	18	21	3
Managing SC reserve assets	23	9	15	15	12	10	18	22	17	3
Providing custody for SC reference assets	21	11	13	17	13	10	21	21	17	6
Trading/exchanging SCs (including reselling to retail users)	35	8	13	19	16	20	25	22	21	6
Storing keys to access SCs (wallets)	32	12	12	14	16	9	22	17	20	5
Undertaking other type of activity (please specify)	4	2	2	1	3	2	4	2	4	1

[36] Number in each cell indicate the number of responses received for a given activity and regulation type, e.g. 33 jurisdictions indicated that AML-CFT regulations exist and would apply to issuing/redeeming of stablecoins.

Cross-border regulation and supervision of SCs

Most jurisdictions have some power with respect to SCs arrangements operating in a crossborder context,[37] whether it be SC activities provided out of a foreign jurisdiction available to a jurisdiction's domestic customers **(Graph 3)**, or a SC arrangements operating domestically offering services cross-border outside of the country **(Graph 4)**.

An authority's regulatory/supervisory reach also depends on whether the SC could be classified under an existing regulatory framework. Most jurisdictions' authorities would have the same power with respect to SCs issued overseas but being available to users domestically, so long as the SC can be classified under the domestic regulatory framework. Jurisdictions in AE generally indicate having more powers both domestically and abroad.

A majority of respondents feel that international cooperation would be very or somewhat important in regulating and supervising SC activity **(Graph 5)**, supporting cooperative oversight and cross-border information sharing (e.g. through the application of international standards such as the PFMI[38], existing regulatory regimes in geographies[39] or cooperation mechanisms between authorities[40]), or even considering the establishment of a cross-border coordination mechanism or cooperation network.[41] Considerations concerning cross-border cooperation seem to be at an earlier stage in EMDEs.

With regards to data on SCs that authorities are able to collect and exchange, including across borders, this would highly depend on the actual classification and regulation of the SC or SC arrangement. If a given entity performing an activity of a SC arrangement is regulated, generally broad powers are available to authorities to collect data, e.g. on payment transactions, exposures of financial institutions to SCs, investor and trading data (depending on the licensing regime considered). In those cases, data sharing is generally covered by existing cooperation mechanisms in place with foreign authorities. Challenges arise where entities fall outside of the regulatory perimeter.

[37] Several so-called "stablecoins" have been mentioned as being available cross-border, with Tether being the leading one. A non-exhaustive list also includes DAO, DAI, TrueUSD, USDPax, PAXGold, Everex, SGDR, 1SG, SDS, USDC, USDS, EURX, JPYX, GBPX, AUDX, NZDX, CNYX, RUBX, CHFX, CADX, GLDX, SLVX.

[38] More precisely, Responsibility E.

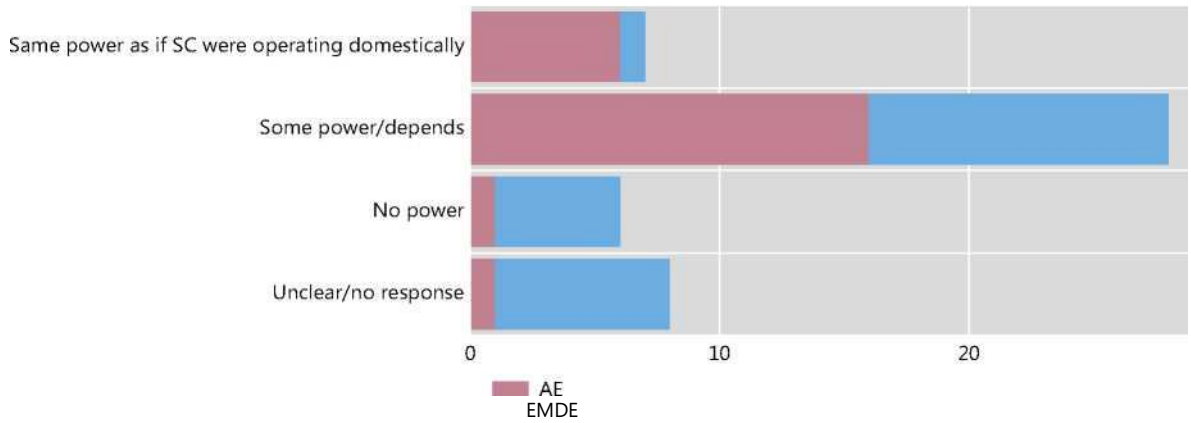
[39] E.g. in Europe, under the passporting rules for licensed entities, and through the supervisory and regulatory cooperation mechanisms in place within the European Supervisory Authorities (EBA, ESMA and EIOPA).

[40] Through existing or extended MoUs and similar bilateral/multilateral agreements between authorities (e.g. as offered by SSBs such as IOSCO).

[41] The existing arrangement for SWIFT has been mentioned.

Power that authorities have with respect to SC activities operating out of a foreign jurisdiction available domestically (incoming)

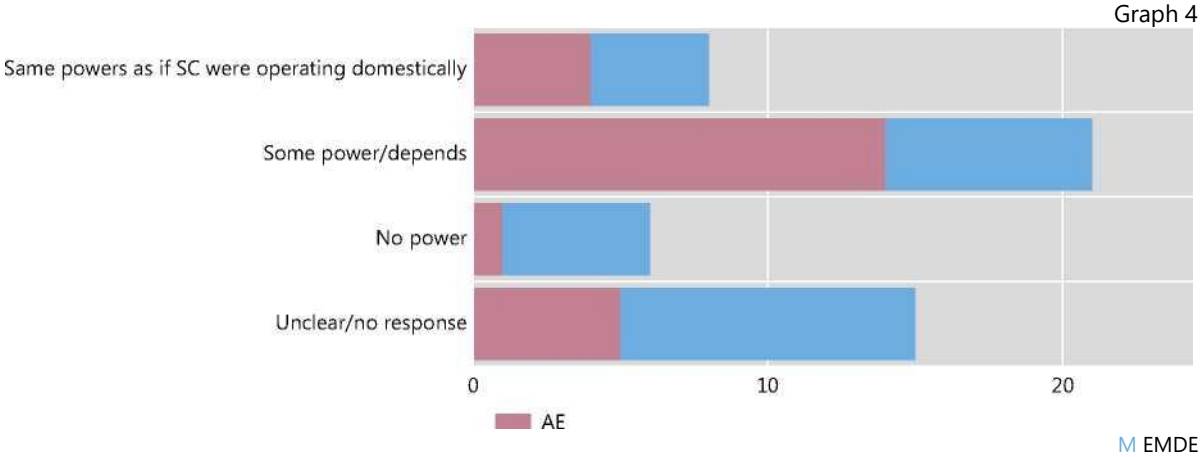
Graph 3



Source: FSB

Power that authorities have with respect to domestic SC activities operating overseas (outgoing)

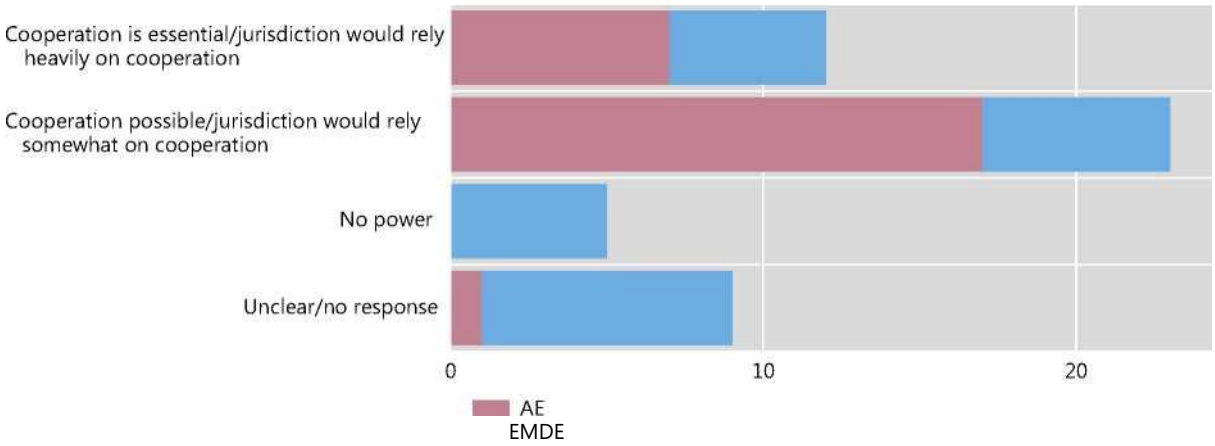
Graph 4



Source: FSB

Extent to which a jurisdiction would rely on cross-border cooperation to regulate or supervise SC activity

Graph 5



Source: FSB

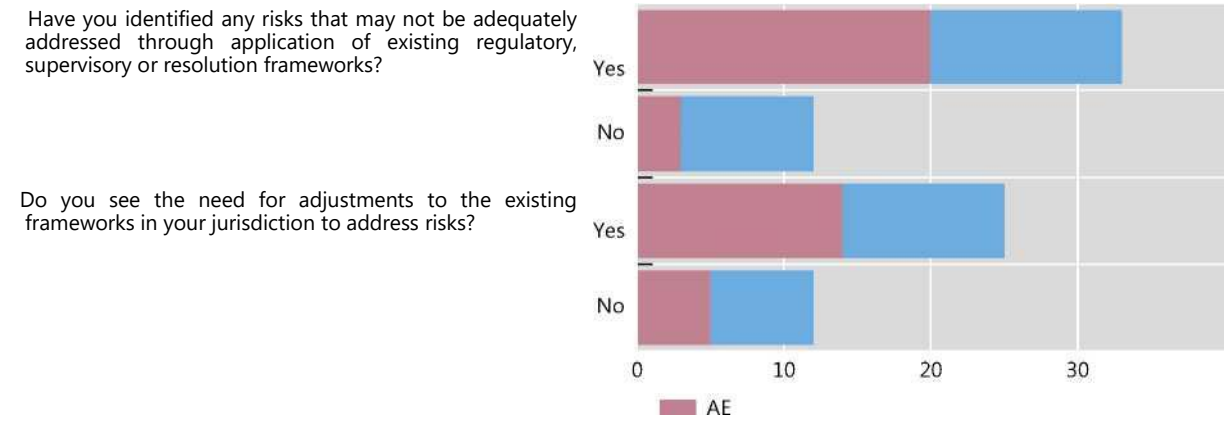
Potential evolution of regulation

Graph 6 summarises responses concerning the potential evolution of regulation of SCs. Changes in the structure of the SC (change in the composition of the reserve, i.e. assets, stabilisation mechanism), the rights associated to it (existence of changes in the claim on the reserve assets), and the actual use of the SC (e.g. becoming a payment means, used for credit, a change in scale of the adoption) could trigger a re-evaluation of its regulatory classification. Some jurisdictions noted that a change in the regulatory environment could influence existing classifications.

Regarding risks that may not be adequately addressed, respondents noted that cross-border and cross-sectoral issues would need to be considered carefully. Most jurisdictions stressed that risks related to financial stability, monetary policy, monetary sovereignty, currency substitution, consumer and investor protection, AML/CFT, data privacy and specific operational risks linked to the underlying technology (DLT/Blockchain) used by SCs would need to be assessed further. The decentralised nature of SCs systems has been underlined by some as a complexity factor. Finally, risks of regulatory arbitrage and the risk of not capturing key activities within the regulatory ambit have also been raised. Respondents also pointed to more general risks with GSCs, which could become a substitute to currencies (especially for EMDEs, where also large and volatile capital flows could become manifest through exchange rates), retail deposits or safe assets, exacerbate bank runs, and disintermediate more traditional financial institutions. Some respondents are confident that, if a GSC system were considered a payment system, existing frameworks (e.g. PFMI) would apply and cover risks adequately.

Most respondents indicated that adjustments to existing regulatory frameworks may be needed in the future. A few respondents indicated their intention to take legislative action, either to address missing parts in their regulatory regimes (e.g. trading/exchanging, storing SCs), or to adopt a comprehensive framework (e.g. in the EU, with a potential new legislation for a common EU approach to crypto-assets, including SCs).

Graph 6



Source: FSB

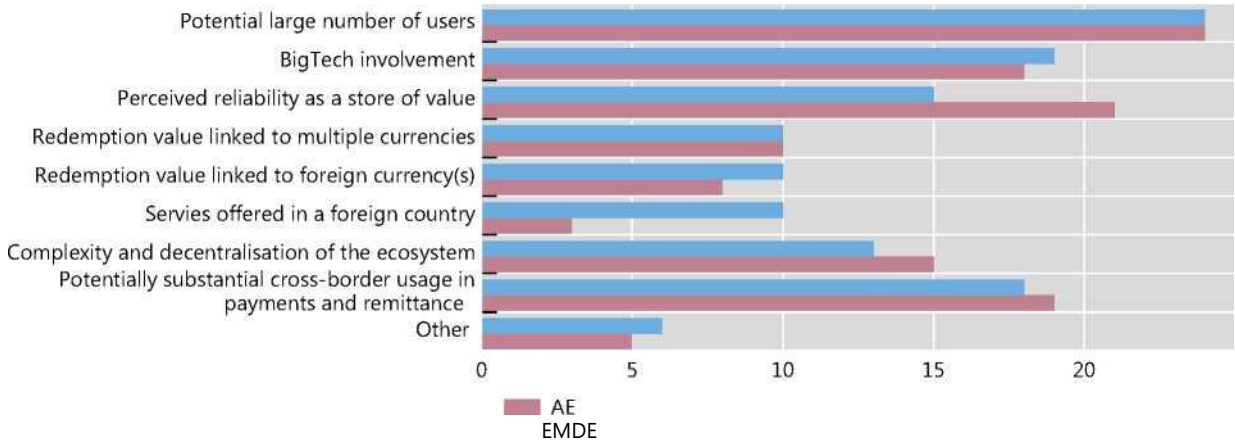
Policy development and considerations for the FSB

Graph 7 shows that jurisdictions from both AEs and EMDEs considered the potential large number of users, the involvement of BigTechs, the potential cross-border usage of a GSC for payments or remittances, and the ability for a GSC to become a store of value to be the main features of a GSC that would distinguish it from other SCs and could pose a greater risk to financial stability and regulatory objectives pursued by authorities.

Jurisdictions in the AEs tended to be more concerned by a GSC's perceived reliability as a store of value and the complex and decentralised nature of a GSC's ecosystem. On the other hand, EMDE jurisdictions expressed greater concern about a GSC being linked to foreign currency, whether it be the service provided or redemption value of a GSC being linked to foreign currency.

Features of a GSC that would distinguish it from other SCs

Graph 6



Source: FSB

Annex 4: Details from standard-setting bodies on work underway

BCBS

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

(i) vigilant monitoring of market and regulatory developments related to crypto-assets, and an assessment of the impact of such developments on the banking system;

(ii) the quantification of banks' direct and indirect exposures to crypto-assets and related services through periodic data-collection exercises; and

(iii) an assessment of the appropriate prudential treatment for banks' crypto-asset exposures, and the extent to which this treatment should vary based on different types of crypto-assets.

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

The Committee published a discussion paper in December 2019 to seek the views of stakeholders on a range of issues related to the prudential regulatory treatment of crypto-assets, including:

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

The Committee is also assessing the supervisory and bank implications of GSCs, including the role of banks acting as intermediaries, custodians, or providers of other services, and with respect to liquidity risk, operational risk, and AML/CFT risk.

CPMI-IOSCO Preliminary analysis of the application of the PFMI to stablecoin arrangements

Key points

- CPMI-IOSCO have undertaken a preliminary analysis of the applicability of the Principles for Financial Market Infrastructure (PFMI)[42] 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.[43] 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.[44] 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.
- The PFMI are technology neutral. It may be challenging for some systemically important

[42] 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.

[43] 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"* (Paragraph 1.10 of the PFMI).

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

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)[45] 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[46] 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 in

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[45] 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).

[46] 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.

progress in regulatory fora other than CPMI-IOSCO.[47] 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[48] 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.[49] In particular, most stablecoin arrangements appear to be inherently designed, at a minimum, to settle payments via a transfer mechanism, where "money settlement"[50] occurs, e.g. when a "token" transfer is recorded on the arrangement's "ledger".[51] 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.[52] 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.

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

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47 A stablecoin arrangement, or particular parts thereof, may be classified as a different type of regulated entity (i.e. 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.

48 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.

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

50 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".

51 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.

52 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.

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[53] 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.[54] 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.

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.

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

[54] 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 ofpayments; 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.

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 (e.g. 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[55]	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
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.

IOSCO

On 23 March 2020, IOSCO published a report on "Global Stablecoin Initiatives".[56] The report includes a discussion, at a high level, of how some of the relevant IOSCO Principles, Standards,

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

[56] httDs://www.iosco.org/library/pubdocs/pdf/IQSCQPD650.Ddf

Recommendations and Guidance (IOSCO Standards) could apply to GSC proposals. For purposes of the discussion on IOSCO Standards, the report used a hypothetical case study of a stablecoin that could act as a global currency and potential financial infrastructure used for domestic and cross-border payments, which uses a reserve fund and intermediaries to seek a stable price vis a vis a basket of low volatility currencies. The report's discussion of how this hypothetical case study could interact with the remits of securities regulators could apply to other GSC proposals, depending on their specific design and their legal and regulatory characteristics and features. The report does not provide an account of how any particular jurisdiction's domestic regulation might apply to GSC proposals.

The majority of IOSCO's report explores the potential application of IOSCO Standards to the "back-end" of a hypothetical GSC, including the management and structuring of the reserve fund; the creation and redemption of coins; coin arbitrage; and potential secondary market trading of the coin. The report also contains a preliminary analysis of the CPMI-IOSCO Principles for Financial Market Infrastructures.

Policy Recommendations for Money Market Funds (2012)[57]

Stablecoin arrangements that use a reserve fund to keep the secondary market price in line with the value of the referenced basket or assets in the reserve may have features that resemble a collective investment scheme, a securitised product, or other type of security. Certain characteristics of these reserve funds may be similar to money market funds, particularly with respect to portfolio construction, and market intermediaries may be considered to be acquiring a debt instrument. On this basis, Recommendations 1, 3, 9, 13 and 14 of the *IOSCO Policy Recommendations for MMFs (2012)* may be the most relevant.

Recommendations Regarding the Protection of Client Assets (2013)[58]

In a stablecoin arrangement, a reserve fund or the rights of the authorised participants (APs) with respect to the reserve fund, might be considered a security (e.g. an MMF, other collective investment scheme, or other security). Any third-party participants in GSC proposals involving such securities need to assess whether they are also providing regulated activities, including safeguarding activities. 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 designed to protect client assets.

Principles for the Regulation of Exchange Traded Funds (2013)[59]

Certain features of a reserve fund may exhibit similar characteristics to exchange traded funds (ETFs) and other exchange traded products (ETPs). For example, a stablecoin arrangement may use intermediaries acting similarly to APs to effect transactions of fiat currency and the coin, facilitating redemptions and providing liquidity to coin holders. The role of the APs includes establishing the demand for a coin and distributing the coin received through third party platforms to customers. This could be akin to the role of APs that purchase and redeem ETF shares, and distribute ETF shares to the public. IOSCO's Principles for the Regulation of Exchange Traded

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57 http://www.iosco.org/library/pubdocs/pdf/IQSCQPD392.pdf.

58 Recommendations Regarding the Protection of Client Assets Consultation Report https://www.iosco.org/library/pubdocs/pdf/IQSCQPD401.pdf; Final Report http://www.iosco.org/library/pubdocs/pdf/IQSCQPD436.pdf.

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

Funds (2013) make a number of observations on the role of APs and set out nine principles that regulators could consider for ETFs.

Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms (2020)[60]

Coin distribution could occur through APs that directly interact with the reserve fund (to mint or burn the coin) and such APs may use crypto-asset trading platforms (CTPs) to buy and sell the coin. As such, CTPs could be the main secondary market where users buy and sell coins. Where a securities 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 2020 report describes some of the issues and risks associated with the trading of crypto-assets on CTPs. It describes key considerations and provides toolkits that are intended to assist regulatory authorities who may be evaluating CTPs within the context of their regulatory frameworks. CTPs may need to be regulated as trading venues and meet relevant domestic requirements and international standards.

Principles for Financial Benchmarks (2013)[61]

If any stablecoin pricing, or the value of any assets that are linked to the stablecoin, is 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 turn, depending on the jurisdiction, the administrator of the benchmark might be carrying out regulated activity and need to be authorised. 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 calculating and publishing prices.

Principles for the Regulation and Supervision of Commodity Derivatives Markets[62]

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

The following three IOSCO principles on commodity derivatives are potentially relevant: 1) economic utility (contracts should meet the risk management needs of potential users and promote price discovery of the underlying commodity); 2) transparency (information concerning a physical commodity derivatives contract's terms and conditions, as well as other relevant information concerning delivery and pricing, should be readily available to authorities and market participants; and 3) review of evolving practices (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).

Cooperation and information exchange

Given the cross-border nature of global stablecoins, it will be important that markets regulators and other financial supervisors cooperate amongst themselves to reduce the risk of regulatory arbitrage through fragmentation. These regulatory cooperation tools, both with other securities

[60] https://www.iosco.org/library/2ubd.ocs/pdf/IOSCOPD649.pdf
[61] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf
[62] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD358.pdf.

regulators and with banking and payments regulators, can strengthen the ability of authorities to protect their domestic investors and ensure stablecoin market transparency.

In this context, the IOSCO Principles covering Cooperation in Regulation could be important when assessing global stablecoin arrangements, by encouraging a broad range of cross-border 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.

Enforcement Cooperation

IOSCO's Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information (MMoU) and the Enhanced Multilateral MoU Concerning Consultation and Cooperation and the Exchange of Information (EMMoU) will be relevant and may facilitate exchange of relevant information amongst members with respect to enforcement.

The MMoU, developed based on the Principles 13, 14 and 15 above, assists the signatories to the MMoU to exchange confidential information (including banking records, data, documents, metadata, recordings, and images, among others) to help them enforce their laws and regulations. Currently, there are 124 authorities that are signatories to the MMoU, both from developed and developing jurisdictions. IOSCO's MMoU Screening Group assesses and determines whether the prospective signatory fully complies with the standards of cooperation. Only applicants that fully comply with the standards of cooperation are admitted as signatories. IOSCO's MMoU Monitoring Group, monitors jurisdictions' adherence to the MMoU.

The IOSCO Enhanced MMoU (EMMoU) covers new areas, including subscriber records held or maintained by internet service providers, and other electronic communication providers, who are located within the jurisdiction of the requested authority, that identify subscribers (name and address), payment details, length of service, type of service utilized, network addresses, and session times/dates and durations.

Supervisory Cooperation

Due to their inherently cross-border nature, global stablecoins are also likely to create the need for cooperation in the area of supervision. Supervisory cooperation will therefore be essential to enable cooperation and coordination between regulatory authorities. In that context, IOSCO's Principles on Cross-Border Supervisory Cooperation published in 2010 can assist securities regulators in determining the form of cooperation best suited to the regulatory task at hand and by outlining the critical issues that regulators should agree upon outside of enforcement matters. These Principles remain valid in the context of stablecoins as they can assist financial regulators in identifying common concerns.

One tool - for example - that is discussed within the Report is the use of supervisory colleges. In the securities area, IOSCO published a Report on Supervisory Colleges for Credit Rating Agencies

in 2013,[63] noting the challenges that the dispersion of internationally active CRAs present for domestic supervisors and promoting the use of colleges for these internationally active CRAs. Global stablecoins may similarly have global reach and raise novel risk issues; and can benefit from the supervisory cooperation applied to CRAs as indicated in IOSCO's Report.

However, to achieve effective cross-border oversight, information sharing is also an important condition of any cooperation agreement. Many jurisdictions have therefore used the sample annotated MoU developed by IOSCO in designing their bilateral supervisory arrangements. These types of agreements may also need to be explored for stablecoins as part of a wider supervisory cooperation strategy.

Deepening supervisory cooperation was identified as a key area to explore further by IOSCO and its Members in its Report on Market Fragmentation and Cross-Border Regulation.[64] IOSCO will therefore investigate ways to encourage supervisory cooperation, beginning with a review, as appropriate, of the 2010 Principles for Supervisory Cooperation and a review of the use of supervisory colleges to identify good practices in the establishment and conduct of existing and future colleges. Where appropriate, IOSCO will also identify practical issues which could be raised or usefully addressed through colleges and potential ways to increase their use. This work may provide further insights for the supervision of stablecoins.

Finally, IOSCO's 2015 Report on Cross-Border Regulation provides authorities with a toolkit of cross-border regulatory options and considerations. This toolkit has been used by authorities in other financial sectors and may assist regulators in developing, implementing and evaluating cross-border approaches with regards to stablecoins too in the future.[65]

Annex 5: Potential elements that could be used to determine whether a stablecoin qualifies as a GSC

A stablecoin's global systemic importance could be measured in terms of the impact that a stablecoin arrangement's failure can have on the global financial system and wider economy.

Given that a stablecoin may be used as a means of payment or store of value, and could be used in multiple jurisdictions, the criteria to be considered in determining a GSC would need to take into account the potential uses in multiple jurisdictions. Taking reference from existing approaches such as the criteria that are often considered in determining the need for or degree of regulation, supervision, and oversight of FMIs (PFMI, 2012), and global systemically important banks (BCBS, 2013), potential elements that could be used to determine whether a stablecoin qualifies as a GSCs could include factors such as:

(i) Number and type of stablecoin users
(ii) Number and value of transactions
(iii) Size of reserve assets
(iv) Value of stablecoins in circulation
(v) Potential substantial cross-border use in payments and remittances;
(vi) Number of jurisdictions with stablecoin users
(vii) Market share in each jurisdiction
(viii) Redemption linked to a foreign currency or multiple currencies
(ix) Interconnectedness with financial institutions
(x) Available alternatives to using the GSC as a means of payment at short notice

[63] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD416.pdf.
[64] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD629.pdf.
[65] IOSCO Task Force on Cross-Border Regulation Final Report.

(xi) Business, structural and operational complexity