

# The Financial Stability Implications of Multifunction Crypto-asset Intermediaries

28 November 2023



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## Executive summary

Multifunction crypto-asset intermediaries (MCIs) are individual firms, or groups of affiliated firms, that combine a broad range of crypto-asset services, products, and functions typically centred around the operation of a trading platform. Many MCIs have proprietary trading and investment functions, while some are also involved in issuing, promoting, and distributing crypto-assets or related products, including so-called stablecoins. Most of these activities and their combinations have analogues in traditional finance but are often not provided by the same entity or are only provided under significant restrictions or controls to prevent conflicts of interest and promote market integrity, investor protection and financial stability.

Key economic incentives underpin the emergence of MCIs. On the demand side, these include lower costs of access to crypto-asset markets (in terms of user time, expertise, and technology resources) and network effects. On the supply side, MCIs appear to benefit from economies of scale and scope and from cost savings in part from non-compliance with existing regulations in some jurisdictions. Revenue sources include transaction fees from trading activity on their platforms (which appear to be the primary source of revenue); interest income from stablecoin reserves; transaction validation fees when MCIs operate a blockchain infrastructure; and proprietary trading and investments (potentially including in an MCI's self-issued crypto-asset).

Many MCIs operate their platforms primarily through a single global entry point, but MCIs often have affiliated entities and subsidiaries in several countries; are incorporated in offshore financial centres; are privately held; and generally, are not transparent regarding their corporate structure and control, financial accounts, product and service descriptions, and dependencies and linkages. In some cases, opacity appears intentional and limits understanding and assessment of MCI activities, economic models, and vulnerabilities. Internal governance at MCIs is also largely undisclosed, and there are strong indications that independent and robust risk management functions are lacking. In many cases, a single individual or very few individuals retain ownership, control, and decision-making privileges.

MCI vulnerabilities are not very different from those of traditional finance, including leverage, liquidity mismatch, technology and operational vulnerabilities, and interconnections. However, certain combinations of functions could exacerbate these vulnerabilities. For example, the engagement of MCIs in proprietary trading, market making on their own trading venues, and the lending and borrowing of crypto-assets could lead to higher leverage. MCIs offering investment programmes to their users, issuing proprietary crypto-assets, or operating investment and venture capital arms may also be exposed to liquidity mismatch. These vulnerabilities are further amplified by a lack of effective controls (for example, governance and risk management frameworks) and operational transparency, by poor or no disclosures, and by conflicts of interest. There are also additional vulnerabilities stemming from the centrality of MCIs in the crypto-asset ecosystem and their concentration and market power.

MCI vulnerabilities could spill over to the traditional financial system and the economy through various transmission channels. Widespread use of MCI services by crypto-asset investors could result in adverse confidence effects, which could be propagated through so-called stablecoins. There could be linkages between MCIs and financial institutions through reliance on each other's services, direct exposures between them, or through MCI-issued stablecoins backed by traditional financial assets. Adverse wealth effects from MCI stress or bankruptcy may apply to investors funding MCIs or investing in related crypto-assets, or to users of their services, as

MCI often provide the entry-exit point for investors to and from the crypto-asset ecosystem. MCIs could also promote the adoption of stablecoins or other crypto-assets for payment or as a medium of exchange or store of value. The failure of a major MCI or a stablecoin issued or promoted by an MCI could have significant effects for crypto-asset markets and lead to further spillovers.

Available evidence suggests that the threat to financial stability and to the real economy from the failure of an MCI is limited at present. Significant information gaps impair this qualitative assessment, but it is corroborated by the experience of recent failures of MCIs. Nonetheless, relatively concentrated deposit exposures to firms that are reliant in some form on crypto-assets contributed to the closure or failure of a few “crypto-asset-friendly” banks, highlighting the risks from increasing interconnectedness. Although spillovers from crypto-asset markets to the traditional financial system have been limited so far, stress events caused significant losses to crypto-asset investors and shook confidence in these markets. Financial stability implications – both at individual jurisdiction and global levels – depend on how the crypto-asset sector develops, how the role of MCIs changes within the sector, the extent to which MCIs expand their linkages with traditional finance, and the effective implementation and enforcement of comprehensive and consistent regulations to the crypto-asset markets globally.

In light of the findings, the report identifies policy implications for consideration by the FSB in collaboration with the relevant standard-setting bodies (SSBs):

- Assess whether the amplification risks identified for combinations of MCI functions, as well as lack of proper governance and extensive conflicts of interest, are adequately covered by FSB and SSB recommendations or would warrant additional mitigating policy measures in some jurisdictions. Combining functions in MCIs that are typically restricted or separated for traditional finance appears *prima facie* inconsistent with the principle of ‘same activity, same risk, same regulation’.
- Consider ways to enhance cross-border cooperation and information sharing to help local authorities effectively regulate and supervise MCIs operating globally.
- Consider ways to address information gaps identified in this report, including whether disclosures and reporting are adequately covered by FSB and SSB recommendations or would warrant additional mitigating policy measures.

# 1. Introduction

Multifunction crypto-asset intermediaries (MCIs) refer to individual firms, or groups of affiliated firms, that offer combinations of crypto-asset services, products, and functions that are typically conducted by separate legal entities in traditional finance. MCIs typically combine many services, which may include exchange, brokerage, dealing, market-making, custody, clearing and asset management activities; issuing, promoting and distributing crypto-assets, including so-called stablecoins;<sup>1</sup> providing various institution-to-institution and peer-to-peer markets (e.g. lending, investing, payments); and offering blockchain-specific services such as launching and/or operating a blockchain, other distributed ledger technology (DLT)-based applications, and staking-as-a-service. Additionally, some MCIs have substantial proprietary trading and investment functions, some of which are conducted in the course of offering some of the aforementioned services and others which are solely for the MCI's own account. This latter category includes hedge fund-like directional trading in crypto-asset markets and venture capital investments.

The May/June 2022 crypto-asset market turmoil and the collapse of FTX in November 2022 highlight that MCIs represent a critical part of crypto-asset markets and can exacerbate structural vulnerabilities in those markets, e.g. relating to leverage and liquidity mismatch. Some MCIs are deeply interconnected with a broad range of counterparties across the crypto-asset ecosystem. As a result, a major MCI's failure could be significant for the crypto-asset ecosystem due to its centrality and interconnectedness in the market. MCIs also are a common entry point for retail and institutional investors into the crypto-asset ecosystem, and as such are potential channels for spillovers into the traditional financial system.

The objective of this report is to analyse the structure and functioning of MCIs, with the aim of assessing relevant financial stability risks, including key information gaps that complicate those assessments, and deriving implications for policy consideration. Those risks relate largely to: 1) the combination of different functions and activities within MCIs that are typically separated in traditional finance; 2) issues associated with market concentration; and 3) the linkages of MCIs within the crypto-asset ecosystem as well as with the traditional financial system and real economy.

The report is structured as follows:

- Section 2 describes the general landscape of MCIs, focusing on key characteristics such as functions and activities conducted, ownership and corporate structure, and interconnectedness within the crypto-asset ecosystem and with the financial system.<sup>2</sup>
- Section 3, drawing on the analysis in the first part, assesses financial stability risks of MCIs. The assessment uses as a starting point the vulnerability categories in the 2021

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<sup>1</sup> A stablecoin refers to a crypto-asset that purportedly aims to maintain a stable value relative to a specified asset, or a pool or basket of assets. There is no universally agreed legal or regulatory definition of stablecoin. The use of this term should not be construed as any endorsement of the value, stability, risk management, or legal claims related to this type of crypto-asset.

<sup>2</sup> The discussion in this report should not be taken to constitute any claim about compliance of specific crypto-assets, issuers of such assets, or other firms with existing laws and regulations in relevant jurisdictions. Individual jurisdictions might have different legal interpretations of terms used in this report and different interpretations of the compliance of entities, products, or services with regulations relevant to these jurisdictions. All factual claims about crypto-assets, firms, products, or services are based on publicly available sources and commercial data providers.

FSB surveillance framework,<sup>3</sup> such as leverage, maturity/liquidity mismatch, operational/technology risks, and interconnectedness; and the 2018 FSB report on potential crypto-asset risk transmission channels,<sup>4</sup> such as financial sector exposures, wealth effects, confidence effects and use in payments and settlement. This part assesses how the typical MCI structures and functioning interact with and amplify these vulnerabilities and summarises the channels through which stress may be transmitted to the traditional financial system and the real economy.

- Section 4 discusses data gaps and potential indicators to monitor MCI developments.
- Section 5 discusses implications for policy consideration by the FSB and relevant standard-setting bodies (SSBs).

In addition, Annex 1 summarises risks and vulnerabilities associated with combinations of functions in MCIs; and Annex 2 gives a detailed overview of the potential crypto-asset transmission channels that are relevant for MCIs.<sup>5</sup>

## 2. Multifunction crypto-asset intermediaries

This section describes common characteristics of the functioning and structures of MCIs. While there are differences across MCIs in their specific services, products, and structures, there are also many commonalities among them. This section focuses on these commonalities to provide an overview of the general landscape of entities and activities. It is not intended to cover the details of services and products provided by specific MCIs, nor does it seek to identify distinctions in those services and products across MCIs or the terminology used for them by individual MCIs.<sup>6</sup> Similarly, this section is not intended to convey a view on the legal categorisation of any specific product or service in any specific jurisdiction. Finally, although, as described in this section, non-compliance with regulatory requirements is a common feature of the MCI landscape in some jurisdictions, this section does not assert any position regarding individual firms.

### 2.1. Information availability and limitations

The analysis in this report draws entirely on publicly available information. Sources include commercial data providers, industry analyses, and media coverage. In addition, MCIs typically provide some information about their services and product offerings, activities and organisation on their commercial websites, and certain MCIs may release various types of formal public

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<sup>3</sup> See FSB (2021), *FSB Financial Stability Surveillance Framework*, September.

<sup>4</sup> See FSB (2018), *Crypto-asset markets: Potential channels for future financial stability implications*, October.

<sup>5</sup> For a glossary of terms used in this report, see previous FSB reports – such as the 2023 *FSB High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets* and *The Financial Stability Risks of Decentralised Finance* – as well as reports by other international organisations and standard-setting bodies. The use of these terms does not involve a judgment as to their appropriateness in all cases given the rapidly evolving crypto-asset markets.

<sup>6</sup> Examples of MCIs include Binance, Bitfinex and Coinbase (and FTX prior to its failure). These types of firms account for a significant share of total crypto-asset trading volume; some of them have ownership links with stablecoin issuers; and have a wide geographic reach, operating in a large number of jurisdictions around the world often with local subsidiaries.



disclosures such as regulatory filings. This report has drawn on these sources of public disclosure as well.

Substantial information gaps remain. MCIs typically do not provide accurate and complete public disclosures, unlike traditional firms, due to the lack of or non-compliance with regulatory reporting requirements. They often disclose minimal corporate structure and governance information; reliable and complete balance sheet and other financial information is typically not available; product and service descriptions are lacking in material details; and various dependencies, linkages, and common exposures within MCIs, between MCIs, and with the financial system are only partially revealed in publicly available information (see also Section 4). This lack of information makes it difficult to fully assess vulnerabilities associated with MCIs.

## 2.2. Key activities

MCIs engage in a wide range of activities (Table 1), many of which are similar across MCIs.<sup>7</sup> Often, these activities centre around the operation of a trading platform and extend to a wide range of financial and payment services and products connected to that platform. Many have proprietary trading and investment functions, although the nature and magnitude of such activities often is not easily measurable. In addition to these customer-facing and proprietary activities, some MCIs are also actively involved in the direct issuance, promotion, and distribution of crypto-assets, including stablecoins.

**Table 1. Typical activities of MCIs<sup>8</sup>**

ACTIVITIES	EXAMPLES
Issuance, <sup>9</sup> promotion and distribution	Stablecoins
	Other crypto-assets
Trading	Spot trading (incl. non-fungible tokens and securities in some cases)
	Derivatives trading
	Margin trading
	OTC market
	Brokerage
	Investment programmes
Lending and borrowing	Staking-as-a-service
	Yield/earn programmes
Lending and borrowing	Lending/ liquidity provision
	Borrowing

<sup>7</sup> Additional detail on individual activities in which MCIs often engage can be found in Annex 2 of the October 2022 [FSB consultative report on the regulation, supervision and oversight of crypto-asset activities and markets](#).

<sup>8</sup> The categories in this table are conceptual and do not attempt to draw legal distinctions, correspond to specific definitions, or create new definitions. The activities and examples presented include both crypto-assets and other financial instruments that are securities in certain jurisdictions.

<sup>9</sup> Issuance in this context refers to the MCI acting as issuer, not providing services to issuers.

ACTIVITIES	EXAMPLES
Wallet/ custody, transmission and payment	Custodial wallet / custodian service
	Non-custodial wallet
	Crypto-asset payment services
	Prepaid cards
Proprietary activities	Proprietary trading
	Direct (venture capital) investment
Others	Development and/or operation of blockchain
	Pooled mining <sup>10</sup>

Most of these activities and their combinations have analogues in traditional finance as described in Annex 1, but are typically not provided by the same entity or are only provided under significant restrictions or controls. The existence and nature of any restrictions or controls on certain combinations can vary across jurisdictions. These limitations are generally intended to prevent conflicts of interest and foster transparency with the goal of promoting market integrity, investor protection, fairness, efficiency and other objectives (see Box 1), thereby helping to mitigate some of the vulnerabilities and contagion channels described in this report.

#### Box 1: Comparison between MCIs and traditional financial institutions

The possible combination of functions in traditional finance has led to bodies of law, regulations, and rules regarding the management of conflicts of interest, which, in some jurisdictions, may also apply to the activities of MCIs. While combinations of certain functions are explicitly prohibited in some jurisdictions, in other jurisdictions various disclosures and safeguards that have been developed over time often limit, in practice, the practicality and profitability of combining functions in the way currently observed among MCIs. MCIs without required conflict of interest controls, including potentially the legal disaggregation and separate registration of certain functions, may currently be acting in non-compliance with applicable laws and regulations in certain jurisdictions.

##### Example 1: Issuance and listing of a crypto-asset by MCIs

While it appears common for MCIs to have interests in, or to be the issuer of, some of the crypto-assets admitted to their platforms, this activity would generally face a number of barriers in traditional markets, if not direct prohibition. First, conflict of interest rules<sup>11</sup> would typically require the investment firm to take all appropriate steps to identify and to prevent or manage conflicts of interest between themselves and their clients (i.e. the members of the trading venue), and disclose those conflicts to clients. This is a powerful protection in traditional financial markets with respect to a trading venue or investment firm taking stakes in other elements of the ecosystem.

Strong bodies of law in many countries further protect against conflicts of interest in traditional financial markets. The direct parallel of a crypto-asset issued by an MCI being admitted to a market that the MCI operates would be the case of a stock exchange admitting shares in its own company to its own market. In that case, the architecture of securities markets would typically mean:

<sup>10</sup> Includes services allowing users to contribute computing resources to a mining pool or to pay crypto-assets to support a mining pool.

<sup>11</sup> See, for example, the section of the [FCA Handbook](#) on "Senior Management Arrangements, Systems and Controls" in the UK or article 23 of the [Markets in Financial Instruments Directive \(MiFID\)](#) in the EU.

- A prospectus would be required for the trading venue's shares that would need to contain all necessary information for a reasonable investor to make an informed investment decision – information concerning governance and rights attached to the shares would be included; and
- Rules would govern disclosures of large holdings in the shares.<sup>12</sup>

Additionally, provisions for pre- and post-trade transparency would also ensure that other market participants were aware of all transactions by the trading venue in its own shares, thereby seeking to reduce the likelihood of the venue taking unfair advantage of its position as market operator.

### **Example 2: Combining trading platform, brokerage, clearing and other services by MCIs**

In some jurisdictions, there is no explicit prohibition to an investment firm establishing its own trading venue and secondarily a brokerage firm that would then trade on that market. However, regulation (e.g. the Markets in Financial Instruments Directive (MiFID) in the EU) would require separate legal entities and governance structures. Generally, in the US securities markets, the functions of exchange, broker, dealer, and clearing agency are separately registered and have separate specific requirements. In this way, both conflict of interest rules and additional disclosure rules act to reduce the likelihood and profitability of these types of relationships emerging in a significantly harmful way.

#### *2.2.1. Market infrastructure and customer-facing services*

A core aim of MCIs is to provide execution of orders in crypto-assets. Some MCIs operate a single-dealer platform, while others offer all-to-all matching in a manner resembling traditional exchanges, sometimes also acting as a market maker on the all-to-all system. Many also offer routing services so that their customers can obtain liquidity on other markets (such as other MCIs).

To support their customers, MCIs offer a wide range of services that would normally be provided by other customer-facing intermediaries in traditional financial markets, such as execution, custody, funds safekeeping, and other functions. For retail customers, common services include brokerage, custody of client assets (including various wallet services), products that allow users to deposit their crypto-assets with the MCI to earn a yield, and lending and borrowing services that allow users to provide or receive loans of crypto-assets or fiat currency, typically collateralised against users' crypto-asset portfolios and often for the purpose of supporting levered trading.<sup>13</sup> MCIs also commonly serve as on- and off-ramps between crypto-assets and fiat currency by accepting fiat currency transfers from customers' banks or making fiat currency transfers to customers' banks once customers have traded their crypto-asset balances for fiat currency-denominated balances. For institutional clients, MCIs often offer a suite of prime brokerage services including over-the-counter (OTC) or "off-exchange" trading desks and market making, as well as access to liquidity for hedging, speculation, and working capital. In the course of offering these combined services to retail and institutional customers, MCIs may conduct much of the record-keeping and asset transfer on their own books and records.

Most MCIs offer additional forms of transfer services to their customers to increase potential convenient uses of crypto-asset balances with MCIs. These include services that facilitate merchant acceptance of crypto-assets (or receipt of fiat currency after a spot trade) and services

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<sup>12</sup> See, for example, the section of the [FCA Handbook](#) on "Disclosure Guidance and Transparency Rules sourcebook" in the UK or the [Transparency Directive](#) in the EU.

<sup>13</sup> In some jurisdictions these products may also constitute the offer and sale of securities.

that enable customers to send crypto-assets to or receive crypto-assets from other individuals. They also include pre-paid debit cards that are linked to a customer's fiat currency or crypto-asset balances that are held with the MCI.<sup>14</sup> In addition to allowing customers to use the value of their crypto-assets for retail purchases, these cards can serve as an additional off-ramp (i.e. trading or converting out) from crypto-assets for an MCI's customers.

For some MCIs, core technology operations also include development of and a material role in the operation of base-layer blockchain infrastructure or other DLT-related applications.<sup>15</sup> While most MCIs have not developed their own blockchains, doing so may widen the potential economies of scope and network effects of their services and may be intended to increase demand for MCI-issued assets. Some MCIs also act as miners/validators or provide services that facilitate users' contributions to mining or staking pools for purposes of increasing the likelihood of successfully validating transaction blocks for crypto-assets based on proof-of-work or proof-of-stake protocols.

### *2.2.2. Proprietary trading and investment activities*

MCIs also conduct multiple proprietary trading and investment activities. MCIs often operate venture capital arms through which they finance crypto-asset-related projects and other start-ups. Some MCIs trade for themselves on their platforms in multiple capacities. Some of this trading activity can involve affiliates that engage in hedge fund-like trading strategies.<sup>16</sup> Often, the existence and extent of this proprietary trading may not be disclosed to those who trade on MCIs.

### *2.2.3. Issuance, promotion, and distribution of crypto-assets*

MCIs often issue their own proprietary crypto-assets and integrate them into their services.<sup>17</sup> Some of these crypto-assets are marketed as so-called "utility tokens" because they can be used to pay for or obtain discounts on MCIs' services or otherwise have special uses in specific MCIs. Notwithstanding this moniker, these crypto-assets can also be traded and held as investment instruments on MCI balance sheets. These proprietary or otherwise closely tied assets are therefore deeply enmeshed in the financial risks and interests of MCIs.

MCIs also often directly issue or are closely affiliated with particular stablecoins. The stablecoins linked to MCIs to-date are primarily USD-denominated and are among the largest in market value, reflecting their prevalence in the crypto-asset marketplace (see the right panel of Graph 1).<sup>18</sup> These stablecoin arrangements are purportedly designed to generate a relatively stable and liquid source of dollar-denominated value for use within the MCI as collateral, payment, and in trading pairs with other crypto-assets. Some MCIs offer financial incentives to customers for

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<sup>14</sup> In general, pursuant to payment card network rules, such cards are issued by a bank. To issue the cards, that bank has contracted with the MCI through an agreement related to the funds backing the cards. The ultimate cardholder also enters into a cardholder agreement with the issuing bank.

<sup>15</sup> For example, BNB Chain is a supposedly permissionless, smart-contract enabled blockchain developed by Binance that serves as an infrastructure for transferring crypto-assets, included those traded on the Binance trading platform, and also as a platform for so-called DeFi and other smart contract-based applications.

<sup>16</sup> For example, Alameda Research, which shared ownership with FTX, was a quantitative trading fund specialising in crypto-assets that borrowed strategies from traditional hedge funds.

<sup>17</sup> Examples include Binance BNB, FTX FTT, and Bitfinex UNUS SED LEO.

<sup>18</sup> MCIs or their close affiliates also issue EUR-denominated stablecoins, but their relative use generally is smaller.

using particular stablecoins with which the MCI is affiliated,<sup>19</sup> or restrict the use of other stablecoins. For those MCIs that issue their own stablecoins, the interest income earned from reserve assets may be an important source of revenues, particularly since interest rates started to rise in 2022. Concurrently, stablecoin issuers rely on MCIs for stablecoin distribution to end-users, and platform-based trading activity represents a major source of demand for their stablecoins.

### 2.3. Business model considerations

Key economic forces underpin the emergence of MCIs in general, as well as the ability of a small number of MCIs to achieve significant size and prominence in the crypto-asset marketplace. Notwithstanding the stated “decentralisation” ethos of Bitcoin and some other crypto-assets, there has been strong demand for intermediated crypto-asset services. Motivations for this demand appear to be: 1) lower costs in terms of user time, expertise, and technology resources; and 2) benefits from network effects as buyers and sellers, as well as lenders and borrowers, more easily find one another through intermediaries and as smaller participants potentially combine resources for greater influence or profit (e.g. through “staking as a service” programs). On the supply side, MCIs appear to benefit from cost savings from evading and not complying with existing regulations and from economies of scope and scale, with costs such as technology investment, customer acquisition and liquidity management being lower as activities are combined. Certain combined activities, such as those associated with offering a diversity of intermediation services, may reflect an MCI’s aspirations to become a “one-stop shop” for crypto-asset investing, which can not only attract new users to an MCI’s platform but can also increase the “stickiness” of existing users to its basket of services. These demand and supply side effects have underpinned the growth of certain MCIs, allowing them to take advantage of economies of scope and scale.

Some combinations of services, such as operating a trading platform while also engaging in proprietary trading, venture capital investments and issuance of crypto-assets, may result in advantages and profits for MCIs that would not be possible in traditional finance (see Box 1). These advantages and profits persist in crypto-asset markets because of the absence of similar regulatory requirements in some jurisdictions and because of MCIs’ lack of compliance with applicable laws and regulations in other jurisdictions, including through some MCIs’ willingness to engage in regulatory arbitrage.

The various activities in which MCIs engage provide multiple potential revenue sources. At present, transaction fees generated from trading activity on their platforms appear to be a primary source of revenue for many MCIs.<sup>20</sup> This includes fees derived from trades on self-issued crypto-assets when they are traded on their “home” MCI. Trades on other platforms of an MCI’s self-issued crypto-assets may indirectly drive additional demand to the issuing MCI’s broader set of services.<sup>21</sup> Interest earned from stablecoin reserves may be another material

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<sup>19</sup> Such as the exemption of trading fees and higher yield for investment programmes that involve a particular stablecoin.

<sup>20</sup> For example, Coinbase reported that transaction fees accounted for approximately 84% of total revenues between 2020 and 2022. See Coinbase, SEC Filings Details (21 February 2023). Coinbase filings also show that roughly 80% of trading volume is institutional and 20% is retail. See Coinbase, [FORM 10-K](#) (31 December 2022).

<sup>21</sup> For example, users who trade an MCI-issued crypto-asset may eventually wish to obtain benefits (e.g. discounts or rewards) or utilise other services built around that asset that are only available on the MCI’s own platform. Similarly, strong performance of an MCI’s crypto-asset may increase interest in the overall MCI “brand” of products and services.

revenue source. When MCIs directly operate a blockchain infrastructure, they potentially collect transaction validation fees. Finally, proprietary trading and investments (potentially including trading and investment in the MCI's proprietary or self-issued crypto-assets) may provide another source of income for an MCI. The magnitude of these revenue sources is unclear given the limited information publicly disclosed, but it generally depends on the extent of trading activity on the MCI's platform and the demand for crypto-assets more broadly.

## 2.4. Structure and governance

### 2.4.1. Structure

MCIs typically operate their platforms using a global website that serves as a primary entry point for services. Some MCIs have chosen, in some jurisdictions, to create country-specific local versions of their platforms with legal structures purportedly separate from their main operations. Additionally, some MCIs also establish local subsidiaries (sometimes by buying a local licensed firm) that may receive some level of regulatory permission to provide crypto-asset services to domestic residents, while still connecting to the global platform. The extent to which local regulators have insights into global MCIs and their relationships with subsidiaries appears to vary across regulators and MCIs. Often, the extent and nature of an MCI's operations in multiple jurisdictions are opaque, and this opacity may be intentional.

MCIs generally have a broad range of affiliated entities and subsidiaries, though information on their corporate structure is often limited. Many MCIs are incorporated in offshore financial centres, such as the British Virgin Islands or the Bahamas. Most MCIs are privately held and generally are not transparent regarding their corporate structure and control information – and even when they disclose information, they typically do it for only a small part of their business, such as the local company set up for a specific jurisdiction. Much of the available information for many MCIs has surfaced through media coverage, court filings, and regulatory actions, rather than public disclosures made by the MCIs themselves.

### 2.4.2. Governance

MCIs do not generally disclose their internal governance, but there are strong indications that independent and robust risk management functions are lacking. Notwithstanding the extensive numbers of subsidiaries and affiliates within their corporate structures, ownership, control, and decision-making at some MCIs often appear concentrated among one or a few individuals.<sup>22</sup> Based on available information, many or perhaps most MCIs are governed in a manner that fails to create meaningful separation between potentially conflicted business lines, provide clear accounting of activities and transaction records, or otherwise facilitate strong internal risk, compliance, and audit practices. In cases where MCI governance bodies have been defined, the members of those bodies may not undergo fit-and-proper tests or checks on conflicts of interest compared to traditional financial institutions.

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<sup>22</sup> For example, the November 11, 2022 bankruptcy filing for FTX Group included 134 legal entities, all of which were asserted to be directly or indirectly owned by 7 "top companies" and that Samuel Bankman-Fried was the controlling owner, director, officer, manager or other authorised person for the each of them.

## 2.5. Interconnections within crypto-asset markets and with traditional finance

MCI appear to have many types of connections within the crypto-asset ecosystem and a seemingly narrower set of connections with traditional financial institutions. MCIs appear to have at least the following material connections with other crypto-asset firms: ownership stakes; investments in crypto-assets, including those issued by other MCIs; ownership stakes in the same third-party projects; and other common dependencies, such as common large users and key listed products, service providers and infrastructure. Information on MCIs' dependency on banks and other financial institutions for deposit, payment, and collateral services is opaque, and these dependencies are often not publicly known. Some MCIs have also invested in financial institutions that are focused on crypto-assets and have pursued partnerships with a variety of traditional financial firms to connect those firms' customers to crypto-asset markets more easily.

### 2.5.1. *Interconnections within crypto-asset markets*

MCIs play a central role in crypto-asset markets and are involved in a wide range of activities, resulting in a high level of interconnection with each other and with other crypto-asset players. Interconnections throughout the crypto-asset market are extensive and opaque. There are a variety of financial dependencies, operational dependencies, and exposures among entities that are difficult to disentangle. MCIs appear to have exposures to one another through their proprietary trading and venture capital businesses, which include direct investments as well as holdings of crypto-assets issued by another MCI. MCIs similarly are very active in investments in and acquisitions of other crypto-asset market infrastructures and service providers. Additionally, MCI entities at times may rely on loans or other funding from other crypto-asset entities.

### 2.5.2. *Interconnections with traditional finance*

There is no evidence, based on currently available information, that MCI connections with banks and other financial institutions is concentrated in more than a limited number of financial institutions, although existing relationships are opaque, fluid and could grow over time. The need to “on-ramp” and “off-ramp” funds into and out of the crypto-asset ecosystem has made MCIs dependent on banks and payment service providers for services. For example, banks may provide fiat currency-denominated deposit accounts, payment services, prepaid debit card issuance, asset custody, lending, and other related services to MCIs.<sup>23</sup> MCIs deposit corporate funds, customer monies, and stablecoin cash reserves in commercial banks. Some MCIs also have invested in one or more traditional financial institutions. Recent events in March 2023 demonstrated the presence of interlinkages between MCIs and traditional finance (see Annex 2). While spillovers to traditional finance so far have been limited, future stress events may reveal currently opaque interlinkages, in addition to the potential for these interlinkages to grow in connection with future developments.

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<sup>23</sup> For example, some banks previously provided internal networks that allowed 24x7 real-time payments between MCIs or between an MCI and its large institutional clients. Two of these, Silvergate Bank and Signature Bank, no longer operate.

### 3. Financial stability implications of MCIs

The activities of MCIs outlined above, and especially the combination of those activities, could create vulnerabilities including those relating to leverage, liquidity mismatch, technology and operational vulnerabilities, and interconnectedness. These vulnerabilities may be amplified by MCIs' opaque, cross-border structure and weaknesses in governance and risk management. This section analyses these vulnerabilities and amplification mechanisms, as well as potential transmission channels through which stress originating from MCIs could spill over to the traditional financial system and the real economy.

#### 3.1. Vulnerabilities of MCIs

##### 3.1.1. Leverage

MCIs engaging in proprietary trading or market making on their own trading platforms could exacerbate the build-up of leverage. Trading platforms may offer their affiliated proprietary trading entities favourable terms, such as extended or unlimited credit lines with lenient or no collateral requirements. Such terms incentivise high leverage, especially if appropriate governance, disclosures, and safeguards are not in place.

Another source of excessive leverage could stem from MCIs issuing and distributing, while also trading and borrowing against, proprietary crypto-assets. Illiquidity and concentrated holdings coupled with opaque supply and circulation jointly allow the prices of MCI-issued crypto-assets to be inflated. Such crypto-assets or investment products with inflated prices have been pledged as collateral to secure further borrowings for other purposes by the MCI, leading to additional build-up of leverage. This type of vulnerability associated with proprietary crypto-assets appears particularly relevant in the recent failure of FTX.

The provision of lending and borrowing services by MCIs also facilitates risk-taking behaviour of borrowers and lenders. To the extent that the risks associated with these services are not disclosed or managed appropriately (see section 3.2), this could facilitate the build-up of leverage. Together with some MCIs offering of financing for customers on their trading platforms, this can increase overall leverage within the crypto-asset ecosystem.<sup>24</sup>

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<sup>24</sup> For an overview of leverage offered by major crypto-asset trading platforms including MCIs, see ECB (2022), *Decrypting financial stability risks in crypto-asset markets*, May.



### 3.1.2. *Liquidity mismatch*

MCI investment programmes, including staking-as-a-service and yield/earn programmes, create liquidity mismatch. Many MCIs offer programmes where users can place their crypto-assets to earn a yield. The crypto-assets are then lent further or invested in, for example, other crypto-assets or so-called DeFi protocols.<sup>25</sup> Various staking and staking-as-a-service programs offered by MCIs operate similarly. Through these programmes, MCIs may incur significant liquidity and maturity risk if they promise investors immediate redemption, while investing the proceeds in riskier and less liquid assets, and often using collateral to borrow further.<sup>26</sup> Exacerbating these risks, some levered trading strategies involve the issuance of derivatives on staked assets, which are then used in so-called DeFi protocols.<sup>27</sup>

MCIs issuing stablecoins are also vulnerable to the general risks associated with stablecoins, in particular, run risk. The risks of stablecoins have been well-documented in previous FSB reports,<sup>28</sup> and there could be additional risks from integrating stablecoin issuance with other MCI core activities (see Box 2).

#### **Box 2: Risks of integrating stablecoin issuance with other MCI core activities**

The integration of stablecoin issuance with other core activities of the MCI under the same structure could lead to significant risks affecting the MCI, the resilience of the stablecoin arrangement, and the ability of stablecoin holders to redeem in normal and stress times. Potential additional risks include risk of contagion between the MCI and the stablecoin arrangement, as well as unmanageable conflicts of interest. In particular, the self-issuance of global stablecoins<sup>29</sup> by MCIs is likely to raise financial stability concerns meriting further consideration.

Further, the lack of clear separation of functions, reinforced by poor governance and risk management practices, could lead MCIs to comingle the reserve assets of the stablecoin with their own assets and/or misappropriate the reserve assets. The incentives to misuse stablecoin reserves could be heightened if the MCI faces financial difficulties in other parts of the group, and is looking for funds to restore the solvency of the group. For instance, the US Commodity Futures Trading Commission (CFTC) previously found that in addition to other violations of the Commodity Exchange Act arising from Tether's misrepresentations about its stablecoin reserves, Tether comingled USDT reserve funds with Bitfinex's operational and customer funds, and that Tether transferred Tether reserve funds to Bitfinex, including when Bitfinex needed help responding to a "liquidity crisis".<sup>30</sup>

In addition, MCIs typically take on activities that present a higher risk profile distinct from the stablecoin arrangement (e.g. proprietary trading, lending, etc.), which could affect the safety and resilience of the stablecoin arrangement itself, in normal times and in stress. In particular, excessive risk-taking in an MCI core activity could lead to losses resulting in the failure of the MCI and spill over to the stablecoin issuer, disrupting the payments and settlement function. This could have important implications for financial stability if such self-issued stablecoins are used widely.

These risks might be heightened by the complexity and opaqueness of the capital structure of the group, which could affect the effective capital level of the stablecoin issuer. Furthermore, the integration of issuance with other core activities of MCIs may create conflicts of interest and incentivise issuers to invest the reserves in riskier assets to increase revenues for the parent company, thereby affecting the safety of the stablecoin.

MCIs could also invest funds in other crypto-asset related projects through their investment or venture capital functions, triggering the liquidity vulnerability. In particular, these funds could be used to purchase crypto-assets of other start-ups or projects at a low price. These assets would

typically be fully or partially locked up for a period of time, during which the investors are prevented from selling in the market (i.e. a vesting period). Should the liquidity risk of the investments be poorly managed, the MCIs could fail to meet their obligations, such as sales, redemption, or withdrawal demands from their users. Particularly if MCIs have inappropriate funds handling practices (see segregation and misappropriation discussion in amplifier section) the MCIs may effectively be using the same funds multiple times for various investments.

### 3.1.3. *Technological and operational vulnerabilities*

MCIs are susceptible to several technological and operational vulnerabilities. MCIs have been a target of cyber-attacks and a number of them have had funds stolen by hackers in the past. The specific security controls implemented by MCIs to protect crypto-assets, such as how they use hot and cold storage, multi-signature control, and manage private keys could also make them vulnerable to cybersecurity threats. There have also been cases where certain functions of MCI platforms were temporarily suspended, such as client trading, deposit and withdrawals, due to various technical issues. If underlying infrastructures such as Ethereum and other blockchains face operational/technological problems, MCI services that rely on such infrastructures would be heavily affected. In addition, those MCIs active in the development of native blockchains may centralise and run the operations themselves, which could also exacerbate their vulnerability to security breaches or limit their operational resilience.

### 3.1.4. *Interconnections*

By combining trading venue and investment functions, MCIs may increase interconnectedness in the crypto-asset ecosystem. In the absence of clear and robust admission rules in certain jurisdictions, MCIs could be incentivised to admit crypto-assets on their trading venue in which their investment or venture capital arm is invested without appropriate due diligence, and promote those assets even when not in the best interest of their customers, which may boost the value of these assets and create monetisation opportunities. In times of stress, MCIs might need to sell their investment holdings and the contagion could spread to other projects they have invested in, which could lead to spillovers to the crypto-asset market.

MCIs accepting their proprietary crypto-assets from external parties as collateral to secure loans could increase MCI vulnerabilities and interconnectedness with the broader crypto-asset ecosystem. In particular, were an MCI to become distressed, a fall in the price of that MCI's proprietary crypto-asset would cause a decline in the value of collateral posted by external parties. Should the borrowers then default on their (crypto-asset) loans, the MCI may not have

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<sup>25</sup> See FSB (2023), *The Financial Stability Risks of Decentralised Finance*, February.

<sup>26</sup> See Box 1 in FSB (2022), *Promoting Global Financial Stability: 2022 FSB Annual Report*, November.

<sup>27</sup> See OECD (2022), *Lessons from the crypto-winter*, December.

<sup>28</sup> See, for instance, FSB (2022), *Review of the FSB high-level recommendations of the regulation, supervision and oversight of "Global Stablecoin" arrangement*, October.

<sup>29</sup> This refers to a stablecoin with an existing or potential reach and use across multiple jurisdictions and which could become systemically important in and across one or many jurisdictions, including as a means of making payments and/or store of value. See FSB (2023), *High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final report*, July.

<sup>30</sup> For an overview of the CFTC's enforcement action against Tether and Bitfinex, see CFTC (2021), *CFTC Orders Tether and Bitfinex to Pay Fines Totaling \$42.5 Million*, October.

sufficient collateral to mitigate loan losses. This may lead to further negative pressure on the value of the proprietary crypto-asset and negative effects also for other parties transacting with the MCI.

MCI may also increase their interconnectedness through investments in and collaborations with each other. Some MCIs have invested in each other at early stages or hold significant amounts of each other's crypto-assets, which increases the interlinkages and spillovers between these MCIs.<sup>31</sup> In addition, MCIs that are more specialised in certain functions may choose to collaborate. For instance, the lending of crypto-assets by an MCI could be backed by crypto-assets that are raised by another MCI. Another example is the participation of MCIs in DeFi activity, where MCIs have in the past sought yields on the basis of highly levered and risky strategies.

## 3.2. Amplifiers of MCI vulnerabilities

### 3.2.1. Structure and governance

Some MCIs may lack effective governance and risk management frameworks to manage the aforementioned vulnerabilities. MCI staff may lack experience and expertise in risk management and governance processes, exposing them and their clients to uncontrolled leverage and liquidity risks. Moreover, some MCIs may intentionally try to avoid regulatory oversight and/or operate in non-compliance with existing regulations, leading to no or little independent oversight of their risk management and governance frameworks by regulators. Poor risk management and the lack of governance and oversight may make it easier for insiders to engage in misconduct that magnifies MCI vulnerabilities. For example, a vulnerability can be exacerbated if governance controls are weak and part of the MCI is able to misappropriate assets or utilise commingled customer funds.

Conflicts of interest from the combination of certain functions amplify MCI vulnerabilities. In most jurisdictions, exchanges and broker-dealers are usually separated. Broker-dealers that operate trading venues are typically subject to rules that prohibit proprietary trading or impose other conditions (see Box 1). Segregation of funds between broker-dealers and their clients is required. MCIs are exposed to the amplified vulnerabilities when performing a combination of proprietary trading and market making on their own trading venues. They may have financial incentive and operational means to engage in market manipulation for assets they have issued, invested in, or accept as collateral. Another example of such manipulation is for MCIs to exaggerate the activity of trades on their own platforms.<sup>32</sup>

In the absence of proper segregation safeguards, users' funds and crypto-assets held by MCIs could potentially be misappropriated or re-hypothecated to invest into other crypto-asset related projects. This misuse would allow MCIs to take on further leverage and increase potential

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<sup>31</sup> Evidence of such interconnectedness was clearly observed on the outset of the H1 2022 crypto-asset market downturn; see more in OECD (2022), *Lessons from the crypto-winter*, December.

<sup>32</sup> MCIs and their affiliated market makers may exaggerate the activity of trades on their platforms through "wash trading" where a market participant sells assets to itself or affiliated entities. In particular, MCIs may have incentives to exaggerate the market liquidity of their proprietary tokens. See Cong et al (2022), *Crypto Wash Trading*, NBER Working Paper 30783, December.

liquidity mismatch. Customers may not have their funds and crypto-assets returned to them on demand or may lose them permanently.

A lack of transparency and disclosure may prevent regulators or market participants from adequately assessing the safety and soundness of MCI business models. The lack of transparency and disclosure means that risks from, for example, the lack of effective governance and risk management, the lack of profitability of the business model, or weakness of the collateral supplied by borrowers, may be hidden until negative shocks materialise. This may also frustrate proper due diligence by market participants, for example investors in MCIs.

MCIs that operate on a global scale, while being headquartered or incorporated in lightly regulated jurisdictions or in jurisdictions with no applicable regulation, may complicate proper monitoring and enforcement of regulations by national authorities. As discussed in section 2.4, MCIs often provide services to users in jurisdictions in which the MCIs have no legal presence and/or appropriate licenses, or where the government may have restrictions or bans applicable to crypto-assets. While there were cases in the past in which some MCIs have voluntarily withdrawn their operations from individual jurisdictions, it is unclear if those MCIs have put in place robust on-boarding/know-your-customer procedures to identify and prevent users in those jurisdictions from accessing their platforms, even though some jurisdictions have warned MCIs against unregistered operations. The global reach of MCIs may also make it difficult to enforce existing regulation by some national authorities. The global and opaque structure of some MCIs may obscure vulnerabilities where neither regulators nor investors have a complete view into their activities and operations.

### *3.2.2. Concentration and market dominance*

One or more MCIs could become the major source of liquidity in crypto-asset markets and hence fundamental to market functioning. This could happen through several MCI activities, including stablecoin issuance, proprietary trading, market making, maintaining order books and executing clients' orders (see Graph 1). The concentration of market services within one or a small number of MCIs could reinforce their role as key connection points with traditional finance and interactions with various blockchains and so-called DeFi applications. With this concentration, a single MCI's failure could be disruptive to crypto-asset price discovery and market functioning. Additionally, minimal interoperability between some platforms combined with concentration may generate fragmentation, negatively affecting the functioning of crypto-asset markets.

High concentration, paired with a wide combination of functions, could facilitate anti-competitive behaviours by MCIs and further amplify vulnerabilities. MCIs may, for example, raise barriers to entry and increase the costs for users to switch to potential competitors in order to strengthen customer use of their own suites of products and services. This risk is also present in traditional finance, though it is mitigated by the fact that financial institutions are more likely to comply with rules against anti-competitive behaviour.

## **3.3. Financial stability interlinkages and transmission channels**

A number of transmission channels may be relevant to assess how stress originating from MCIs could spill over to the traditional financial system and the real economy. These are: (i) confidence effects; (ii) financial institutions' exposures to crypto-assets, related financial products and entities

that are financially impacted by crypto-assets; (iii) wealth effects stemming from the fluctuations in the market value of crypto-assets; and (iv) the extent of crypto-assets' use in payments and settlement. As MCIs play a central role within crypto-asset markets and a failure of a major MCI could have significant effects on crypto-asset markets, the spillovers to the traditional financial system and the real economy from stress originating in a specific MCI and stress originating in crypto-asset markets more broadly cannot always be clearly distinguished.

Investigating these transmission channels specifically for MCIs show several distinct risks and vulnerabilities (see Annex 2). Adverse confidence effects may result from a widespread use of MCI services by unsophisticated crypto-asset investors and could be propagated through stablecoins. Such investors could perceive MCIs to be similar to traditional financial institutions and in case of stress at an MCI that existing regulations or the regulatory authorities are not effective, which might spillover to the financial system. Linkages between MCIs and the traditional financial system could result through: (i) financial institutions relying on MCI services, such as custody, trading and lending of crypto-assets; (ii) MCIs relying on banks or financial market infrastructures (FMIs) such as payment systems for (non-crypto-asset) deposit taking, custody, money transfer and settlement, and lending; (iii) MCI-issued stablecoins that are backed by traditional financial assets; and (iv) direct investments by MCIs in financial institutions (or vice versa). Adverse wealth effects from MCI stress or bankruptcy may apply to investors funding MCIs or investing in related crypto-assets, or to users of MCI services as MCIs often provide the sole entry-exit point for the crypto-asset ecosystem for many investors. MCIs could promote the adoption of stablecoins or other crypto-assets for remittances or as a medium of exchange or store of value, or as use for payments by partnering with payment schemes to issue credit or debit cards. Significant information gaps – both about the MCIs' activities, organisation and governance and financial positions, and also on MCIs' linkages with financial institutions – impede a comprehensive assessment of the relative strength of each transmission channel in the event of stress.

The collapse of a major MCI could have significant contagion effects for the crypto-asset ecosystem, but limited effects on the financial sector and the real economy. While the vulnerabilities of MCIs are high and contagion within the crypto-asset ecosystem would likely be significant given some MCIs' size and centrality to the crypto-asset ecosystem, a material impact on financial stability would not be expected. This is due to the still relatively small size of the crypto-asset markets and the low levels of connectedness between those markets and the core of the financial system.<sup>33</sup> This assessment is, however, limited by the data gaps discussed in Section 2.

The financial stability implications ultimately depend on how the crypto-asset sector develops and how the role of MCIs evolves within the sector. To analyse financial stability concerns associated with MCIs, it is useful to consider and monitor four interrelated dimensions. Certain developments along these dimensions could signal risks to financial stability. These dimensions relate to the degree of: (i) globally coordinated crypto-asset regulation and its effective implementation and compliance, including by MCIs; (ii) linkages of MCIs with the financial system and the real economy; (iii) concentration of MCIs and the impact this could have on the crypto-asset market more generally; and (iv) evolving combinations of activities within MCIs given the aforementioned vulnerabilities. The dimensions also interact with each other, e.g. crypto-asset regulation may increase interest from traditional financial institutions in crypto-assets and in providing services to

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<sup>33</sup> See FSB (2022), *Assessment of Risks to Financial Stability from Crypto-assets*, February.

MCI, which could also lead to further growth of these markets. While more stringent regulation and enforcement of existing regulations may reduce the vulnerabilities in MCIs, higher linkages with the financial system could imply higher risks to financial stability. Broader developments related to the tokenisation of assets and the use of DLTs in the financial system may also affect how MCIs and their linkages with the financial system develop.

## 4. Data gaps and potential elements of monitoring

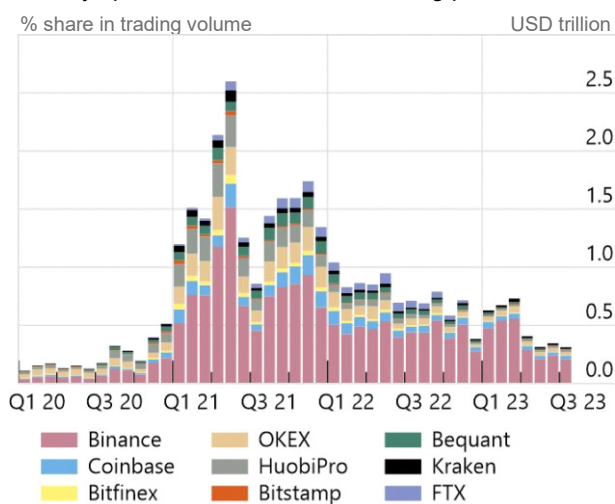
Monitoring MCI developments within the crypto-asset sector may give an indication of evolving financial stability concerns. However, because of the substantial data gaps previously discussed (see section 2.1), including those stemming from instances of non-compliance with existing regulations, currently available information on the activities of MCIs is limited. Moreover, the governance, conflicts of interest, and related amplifiers of vulnerabilities discussed above create market manipulation and market integrity risks, making available data unlikely to be fully reliable. Information deficiencies relate to the size and legal structure of MCIs; their financial activities; interconnections between MCIs and other parts of the crypto-asset ecosystem; and MCI linkages with traditional finance. Addressing these deficiencies is necessary for enhancing the robustness of risk monitoring.

Potential indicators to monitor MCI developments, some of which are already used by authorities to assess related risks, can be broadly categorised into three groups (see Box 3). The first group is related to the overall footprint of MCIs, both in terms of the types of services they provide and their importance in specific markets (see Graph 1). The second group of indicators is related to the vulnerabilities stemming from the provision of these services and their combinations. The third group of indicators is related to monitoring interconnections between MCIs and the traditional financial system. The frequency of collecting these indicators depends on data availability and cost, although indicators relating to vulnerabilities and interconnections should be collected at a fairly high frequency given the rapidly evolving crypto-asset markets. It is important to note that given the current lack of comprehensive and reliable quantitative data on MCIs, monitoring should also incorporate qualitative analyses and insights from market intelligence.

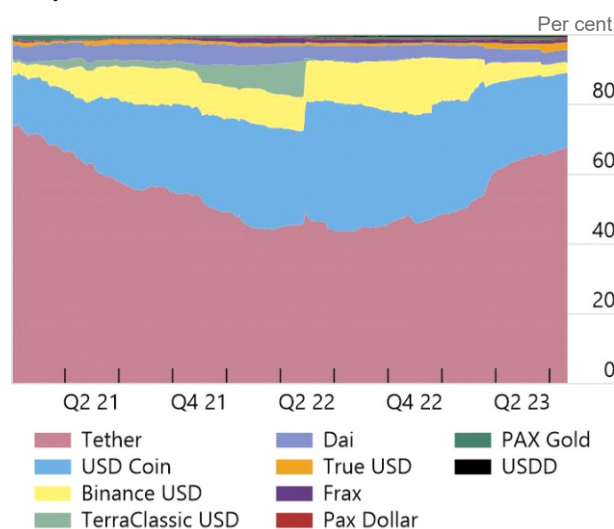
## Trading volume and market share of selected crypto-asset trading platforms and stablecoins

Graph 1

Monthly spot volumes of selected trading platforms



Daily market share of stablecoin market value



<sup>1</sup> 'Other' consists of Bequant, Bitstamp, HuobiPro, Kraken, and OKEX. <sup>2</sup> 'Other' consists of Dai, Frax, Gemini dollar, Pax Dollar, PAX Gold, TerraClassicUSD, TrueUSD, and USDD.

Sources: CoinGecko; CryptoCompare, CCData; The Block; FSB calculations.

### Box 3: Examples of potential indicators to monitor MCI developments

#### Group 1: Indicators of MCI activities

Key indicators to monitor the size of MCIs in customer-facing services could include spot and futures trading volumes; number of clients; number of crypto-assets listed; and daily net flows for MCIs providing execution of orders in crypto-assets, including on-ramp and off-ramp transactions (i.e. conversion to/from fiat currencies, excluding crypto-asset-related payment services mentioned below).

To monitor the overall size and evolution of proprietary activities performed by MCIs, authorities could monitor assets under management and trading volumes by investment firms affiliated with MCIs.

To monitor issuance, promotion, and distribution of crypto-assets by MCIs, authorities could collect information on the market values and trading volumes of crypto-assets issued by MCIs or affiliated entities, in particular stablecoins, and the amount of these tokens that is held directly by the MCI or its affiliated entities.

For MCIs running their own blockchain, it could be important to collect information on blockchain activity, such as on-chain trading volumes, volatility of transactions fees, average network latency and nodes governance.<sup>34</sup> For MCIs offering crypto-asset-related payment services, indicators could include number of payment cards issued and volumes of payments initiated with these cards linked to a customer's fiat currency or crypto-asset balances that are held with the MCI. These indicators can be usefully broken down by residency of the customers.

<sup>34</sup> The latency of the blockchain network is the time between sending a transaction to the network and the network's first acceptance confirmation.

## Group 2: Indicators of MCI vulnerabilities

Indicators of MCI vulnerabilities can be distinguished between those related to the MCIs themselves and those related to the built up of vulnerabilities within the wider crypto-asset ecosystem (i.e. related to MCI customers) that are relevant for the transmission of MCI vulnerabilities to the wider ecosystem.

Indicators to monitor vulnerabilities related to the MCIs themselves could involve the provision of liquidity transformation services, such as the volumes of yield or staking-as-a-service programs, as well as indicators associated with financial vulnerabilities due to entities affiliated to MCIs that engage in proprietary investment activities. The latter could include information on their leverage (financial and synthetic, both on- and off-balance sheet leverage) and liquidity risk (e.g. cash buffers and amount of high-quality liquid assets).

In order to monitor vulnerabilities associated with MCI customers (both on an individual MCI basis and aggregated for all MCI), authorities could collect information on the amount of MCI's lending to their clients on their trading platforms as well as credit provided via other services. The volume of services that involve liquidity transformation, such as staking-as-a-service, would be key indicators to monitor liquidity risks of MCI customers.

Operational vulnerabilities could be monitored by subjecting MCIs to standard operational risk indicators, such as fraud losses and cyber incidence reporting. Some of these reporting requirements may be tailored to blockchain technologies when MCIs are running their own blockchains.

Finally, for MCIs issuing stablecoins, detailed and timely information on the composition of reserve assets is key to monitor liquidity risk.<sup>35</sup>

## Group 3. Indicators of MCI interconnections

Indicators of MCI linkages within the crypto-asset ecosystem can be largely inferred from their activities, footprint and vulnerabilities described above. Indicators of direct MCI interconnections with the traditional financial system could come from consolidated information in the MCI's balance sheet, where available.<sup>36</sup> These include used and unused credit lines from banks as well as MCI-issued debt instruments. Important indicators of interconnections for the purposes of financial stability monitoring could also come from reporting requirements for traditional financial institutions, such as bank and non-bank investments in debt and equity issued by MCIs and their affiliates.

Several of the indicators used to monitor MCI vulnerabilities could be also useful to monitor indirect interconnections between MCIs and traditional finance (e.g. the amount of leverage of entities affiliated to the MCIs that engage in proprietary investment activities and the composition of reserve assets for MCIs issuing stablecoins).

## 5. Conclusions and policy implications

MCIs have become a critical component of the crypto-asset ecosystem, as their business models have expanded and continue to evolve. MCIs have rapidly expanded their scope of services to include market making, trading services, asset management and venture capital businesses, blockchain infrastructure development, self-custodial wallet provision, and issuance of crypto-assets and stablecoins. Much of this expansion and evolution of business models has occurred in non-compliance with existing regulations or due to an absence of sufficient applicable

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<sup>35</sup> An example of a template for common disclosure of reserve assets of global stablecoins is provided in Annex 2 of FSB (2023), *High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements*, July.

<sup>36</sup> Availability is generally dependent on reporting requirements or lack thereof and is further complicated by non-compliance with existing reporting requirements.



regulations. The MCI business models, and the nature of the risks they present, are likely to continue to change as the technology and the regulation of the crypto-asset sector evolve further in the coming years.

Whether MCIs could have adverse effects for financial stability depends on their vulnerabilities and the strength of the transmission channels, but a full assessment is currently impaired by lack of data. The extent to which MCIs amplify inherent crypto-asset market vulnerabilities due to their combination of various functions, and whether such adverse effects pose material levels of risk to financial stability, depend on the size of the linkages between the crypto-asset sector and the traditional financial system and whether such linkages are concentrated within systemically important financial institutions or multiple regionally significant financial institutions. The current assessment of MCI vulnerabilities and strength of transmission channels is impaired by significant information gaps both on the MCIs, which are lacking reliable disclosures about their activities, organisation and governance and financial positions, and also on MCIs' linkages with financial institutions. These limitations are often a result of non-compliance with existing regulations or the absence of sufficient applicable regulation requiring public and regulatory transparency.

Available evidence suggests that the threat to global financial stability and to the real economy from the failure of an MCI is limited at present. Such a qualitative assessment may be corroborated by the experience of the recent failures of MCIs. Nonetheless, a key takeaway from the recent closure or failure of a small number of "crypto-asset-friendly" banks is that they had relatively concentrated deposit exposures to firms with business models reliant in some form on crypto-assets. Additionally, although spillovers from crypto-asset markets to the traditional financial system have been limited, stress events in crypto-asset markets caused significant losses to investors and shook confidence in these markets. The assessment of financial stability implications of an MCI failure is impaired by the information gaps referred to above. Financial stability implications – both at individual jurisdiction and global levels – ultimately depend on how the crypto-asset sector develops, how the role of MCIs changes within the sector, the extent to which MCIs expand their linkages with the traditional financial system, and on the effective implementation and enforcement of globally consistent crypto-asset regulation (see Box 4).

#### Box 4: FSB and IOSCO Crypto-Asset Recommendations

In July 2023, FSB published high-level recommendations for a global regulatory framework for crypto-asset activities to promote the comprehensiveness and international consistency of regulatory and supervisory approaches. The framework is based on the principle of ‘same activity, same risk, same regulation’ and consists of distinct sets of recommendations for the regulation, supervision and oversight of crypto-asset activities and markets and of so-called “global stablecoin” arrangements.<sup>37</sup>

In light of the turmoil in the crypto-asset markets in 2022, including the lessons from MCI failures, the FSB has strengthened its draft high-level recommendations on crypto-asset activities and markets in three areas: (i) ensuring adequate safeguarding of client assets; (ii) addressing risks associated with conflicts of interest; and (iii) encouraging further cross-border cooperation. In particular, the FSB recommends that authorities should ensure that crypto-asset service providers and their affiliates that combine multiple functions and activities are subject to appropriate regulation, supervision and oversight, including requirements regarding conflicts of interest and separation of certain functions, activities or incorporation as appropriate to address the risks associated with individual functions and those arising from the combination of functions (recommendation 9). In addition, the recommendations also cover issues around governance (recommendation 4), risk management (recommendation 5), data collection, recording and reporting (recommendation 6) and disclosure (recommendation 7), as well as financial stability risks arising from interconnections and interdependencies (recommendation 8).

In May 2023, IOSCO published a consultation report with policy recommendations for crypto and digital asset markets.<sup>38</sup> The recommendations are intended to respond to concerns regarding investor protection and market integrity in crypto-asset markets and cover the range of activities in crypto-asset markets that involve crypto-asset service providers (CASPs) from offering, admission to trading, ongoing trading, settlement, market surveillance and custody as well as marketing and distribution to retail investors. In particular, the recommendations and supporting guidance address risks arising from vertically integrated crypto-asset trading platform business models. For example, recommendation 2 states that CASPs should have effective governance and organisational requirements in place to effectively address and mitigate issues on conflicts of interests arising from vertical integration, including the possible need for measures such as legal disaggregation and separate registration, while recommendation 3 states that a CASP should accurately disclose each role and capacity in which it is acting at all times.

The FSB and the sectoral standard-setting bodies have developed a shared workplan for 2023 and beyond, through which they will continue to coordinate work, under their respective mandates, to promote the development of a comprehensive and coherent global regulatory framework commensurate to the risks crypto-asset market activities may pose to jurisdictions worldwide.

In light of the findings in this report, the following are initial policy implications for consideration by the FSB in collaboration with relevant SSBs:

- Assess whether the amplification risks identified for combinations of MCI functions, as well as lack of proper governance and extensive conflicts of interest, are adequately covered by FSB and SSB recommendations or would warrant additional mitigating policy measures. In many cases, MCIs combine functions that in traditional finance are often separated or restricted, either due to MCI non-compliance with existing

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<sup>37</sup> See FSB (2023), *FSB Global Regulatory Framework for Crypto-asset Activities* July; FSB (2023) *High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final report*, July; and FSB (2023) *High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final report*, July.

<sup>38</sup> IOSCO (2023), *Policy Recommendations for Crypto and Digital Asset Markets Consultation Report*, May.

regulations or because such regulations did not explicitly contemplate the crypto-asset market. Examples include MCIs holding crypto-assets and issuing proprietary crypto-assets (stablecoins and other crypto-assets) that trade on the MCIs' trading platform; proprietary trading, investment and market making of crypto-assets on their own platform; and the lending and borrowing of crypto-assets. The inherent vulnerabilities of MCIs are amplified by the combination of these functions, even more so in the absence of appropriate risk governance and controls as well as regulatory safeguards. Combining these functions in MCIs in jurisdictions where they are typically restricted or separated for traditional finance, appears *prima facie* inconsistent with the principle of 'same activity, same risk, same regulation' and may also merit further investigation.

- Consider ways to enhance cross-border cooperation and information sharing to help local authorities effectively regulate and supervise MCIs operating globally. MCIs are typically incorporated in crypto-asset-friendly jurisdictions, but they conduct activities in many other jurisdictions. Their complex organisational structures and lack of proper governance and risk management amplifies MCI vulnerabilities, while their incorporation in jurisdictions where they are lightly (or even not) regulated brings the risk of regulatory arbitrage and a race to the bottom. The global reach of MCIs can also make it difficult for individual national authorities to adopt and enforce robust requirements. Approaches are needed to address these concerns at the global and consolidated level in addition to at the individual MCI entity (jurisdiction-specific) level. The aim would be to promote practical ways to facilitate cross-border cooperation and thereby address the risk that a toughening of regulation and oversight in some jurisdictions – including in response to the FSB's framework for the international regulation of crypto-asset activities – may incentivise MCIs to move elsewhere so that they continue to operate globally from jurisdictions with the least stringent regulations.
- Consider ways to address information gaps identified in this report, including whether disclosures and reporting are adequately covered by FSB and SSB recommendations or would warrant additional mitigating policy measures. In some jurisdictions, lack of disclosure and regulatory reporting by MCIs hamper authorities' market oversight, assessment of financial stability risks and advancement of necessary policy measures. In other jurisdictions, the information gaps result from MCIs wilfully avoiding regulatory requirements to register and adhere to record-keeping and reporting requirements, including by providing information to relevant authorities.

## Annex 1: Risks and vulnerabilities associated with the combination of functions in MCIs

Combinations of functions	General current practices		Risks and vulnerabilities (Financial stability risk in <b>bold</b> )
	TradFi	MCIs	
Trading venue + Broker-dealer + Custodial services + <i>amplified by</i> (Proprietary trading / market making)	<ul style="list-style-type: none"> <li>Exchanges and broker-dealers are usually separated</li> <li>For broker-dealers that operate trading venues, they are typically subject to rules that prohibit proprietary trading or impose conditions on it</li> <li>Segregation of funds between broker-dealers and their clients is typically required</li> </ul>	<ul style="list-style-type: none"> <li>Many MCIs provide a combination of trading venue, brokerage, settlement, and custody services without separation of legal entities or adequate record keeping and governance processes</li> <li>MCIs could potentially engage in directional proprietary trading in the crypto-asset derivative and / or spot markets. Preferential treatment could be given to the proprietary trading function of the MCIs</li> </ul>	<ul style="list-style-type: none"> <li>Misappropriation of clients' funds</li> <li>Market manipulation</li> <li>Wash trading</li> <li>MCIs trading against or ahead of their customers</li> <li>Conflict of interests</li> <li><b>Excessive leverage</b></li> <li><b>Liquidity</b></li> <li><b>Interconnection - contagion / interdependence</b></li> </ul>
Trading venue + Token admission + Direct investments through venture capital (VC) + <i>amplified by</i> (Proprietary trading / market making)	<ul style="list-style-type: none"> <li>Clear listing/admission or public offering rules which typically involve the support of sponsors, underwriters or placing agents</li> <li>Requirements for a prospectus that, in some jurisdictions, meets a necessary information test</li> <li>Ongoing disclosures of largest shareholders</li> <li>Distribution – a third party typically would be subject to suitability and appropriateness tests</li> </ul>	<ul style="list-style-type: none"> <li>Trading venues' admission rules are not well-established or not clear, and could be heavily influenced by other factors (e.g. project paying fees to MCIs to be admitted, admission of crypto-assets by MCIs which they have vested interests via their VC arms)</li> </ul>	<ul style="list-style-type: none"> <li>Conflict of interests</li> <li>Price manipulation/volatility</li> <li>Fraud</li> <li>Front-running</li> <li><b>Interconnection - contagion</b></li> </ul>

<p>Stablecoin issuance, promotion, and distribution + Trading venue + Proprietary trading / market making</p>	<ul style="list-style-type: none"> <li>• Exchanges typically do not issue assets that can circulate outside of the exchange's own records, be used elsewhere as settlement assets or payment instruments, or otherwise provide a potential source of liquidity for non-exchange transactions</li> </ul>	<ul style="list-style-type: none"> <li>• Some MCIs issue (or create and distribute a wrapped version of) stablecoins while at the same time running a trading platform, sometimes via separated affiliates</li> <li>• Stablecoins provide liquidity for MCIs to facilitate trades on their platforms</li> </ul>	<ul style="list-style-type: none"> <li>• Supply-reserve mismatch (e.g. misappropriation of reserves and/or fractional reserves without appropriate safeguards)</li> <li>• <b>Excessive leverage</b></li> <li>• Market manipulation through the supply of stablecoins</li> <li>• <b>Interconnection - concentration risks</b> exacerbated by anti-competitive practices</li> <li>• <b>Interconnection - interdependence</b> (e.g. on oracles)</li> </ul>
<p>Investment token issuance and distribution + Development of native blockchain + Trading venue + Direct investments including through VC + Proprietary trading / market making</p>	<ul style="list-style-type: none"> <li>• Exchanges typically do not issue securities except under strict conditions</li> <li>• Exchanges typically do not engage in VC funding/other directional proprietary trading, and vice versa</li> </ul>	<ul style="list-style-type: none"> <li>• Some MCIs issue tokens that can be used as investment (including so-called utility tokens) while at the same time running a trading platform</li> <li>• Some MCIs could engage in further vertical integration with the development of a native blockchain, strengthening the connection between DeFi and MCIs</li> </ul>	<ul style="list-style-type: none"> <li>• Market manipulation through speculative activities on their own investment tokens or through non-transparent supply management activities</li> <li>• <b>Excessive leverage</b> (e.g. re-use their own investment tokens as collateral)</li> <li>• <b>Interconnection - concentration risks and contagion</b></li> </ul>

<p>Investment products issuance and distribution + Lending and borrowing + Margin trading</p>	<ul style="list-style-type: none"> <li>• Asset managers are typically subject to requirements on adherence to investment mandates, avoidance of conflicts of interest (e.g. prohibition of transactions with connected parties), governance and risk management, liquidity and leverage management</li> <li>• For banks, capital requirements and credit risk assessments apply for lending services</li> <li>• Requirements on the maximum margin that firms can provide to customers and the minimum maintenance margin on customer accounts</li> </ul>	<ul style="list-style-type: none"> <li>• Where regulatory requirements are not complied with or absent, fund management practices prohibited in traditional finance may be present in the crypto-asset space</li> <li>• Tokens issued by related parties are accepted by MCIs as collateral for lending or margin trading</li> <li>• The lending of crypto-assets by an MCI could be backed by funding raised by another MCI</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Credit risk</b></li> <li>• <b>Re-hypothecation and excessive leverage</b></li> <li>• <b>Liquidity mismatch</b></li> <li>• <b>Interconnection – contagion</b></li> </ul>
<p>Staking as a service + Lending and borrowing + <i>amplified by</i> (Proprietary trading / market making)</p>	<ul style="list-style-type: none"> <li>• No direct corollary in traditional finance</li> </ul>	<ul style="list-style-type: none"> <li>• There could potentially be mismatches between (i) tokens that are being staked by users on the MCI platform and (ii) tokens that are being staked by the MCI on a proof-of-stake blockchain</li> <li>• A lack of transparency in the operation of the platform and about the terms of staking-as-a-service could lead to the misuse of users' tokens to generate yields from other functions or activities</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Liquidity mismatch</b></li> <li>• Misappropriation of clients' funds</li> </ul>

## Annex 2: MCI transmission channels

### Confidence effects

Market participants could perceive MCIs to be similar to traditional financial institutions. Some retail investors may perceive MCIs to be similar to banks or exchanges and therefore assume they comply with existing financial regulations, including e.g. capital and liquidity requirements, conflict of interest controls, segregation of funds, reporting and disclosure requirements and governance.<sup>39</sup> However, MCIs may not provide investors with basic protections and other safeguards required by financial regulations (e.g. deposit insurance or requirements on the segregation of assets) as they largely operate in non-compliance with or, in some cases, outside of regulatory frameworks.

Widespread use of MCI services by unsophisticated crypto-asset investors could therefore result in adverse confidence effects. This would apply particularly to investors with limited knowledge of the crypto-asset market and its functioning, amplified by the lack of investor protections and resolution and recovery frameworks for crypto-assets and related services in some jurisdictions. A large failure, or evidence of fraud, in an MCI, might create the perception that the regulations or the regulatory authorities are not effective, which might spill over to the financial system. This could be amplified by the global nature of crypto-asset service providers operating from jurisdictions without adequate regulation and supervision, and by the fact that orderly wind-down and resolution mechanisms for complex types of entities such as MCIs might not exist in some jurisdictions or are untested regarding their application to MCIs.

Negative confidence effects could propagate through stablecoins, potentially affecting other MCI activities. Some MCIs issue their own stablecoins, which are commonly used as liquidity for their trading platforms. In the event of market stress, or the failure of an MCI, there could be a run on its stablecoin, and the resulting loss of confidence could create contagion across other stablecoins in circulation. In turn, high volumes of stablecoin redemptions could have a negative impact on traditional financial market asset prices through sales of reserve assets invested in short-term funding markets. The risks for financial stability are currently limited, given the small size of stablecoins compared to the global economy. However, this could change if stablecoins grow significantly or reserve assets of stablecoins begin to account for a large share of segments of traditional financial asset markets.

MCI stress could trigger a loss of confidence in the wider crypto-asset ecosystem, potentially spilling over to financial markets. MCIs act as the principal on-off ramp for retail and institutional investors between fiat currency and crypto-asset markets. Cases of fraud, bankruptcy or mismanagement at significant MCIs could result in a loss of confidence in the crypto-asset market, especially if institutional investors pull out their capital. This might reduce investors' risk-taking appetite and result in withdrawals from other financial markets.

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<sup>39</sup> For example, the FDIC issued cease-and-desist letters to five companies for making crypto-related false or misleading representations about deposit insurance. See the FDIC [press release](#) (19 August 2022).

## Financial institutions' exposures to MCIs

Financial institutions, including banks and non-bank financial intermediaries, could be exposed to MCIs through a reliance on their services, such as custody, trading and lending of crypto-assets. These institutions may use MCIs as a convenient channel to gain exposure to crypto-assets given that they offer integrated services across jurisdictions. This could create risks for financial institutions. In some cases, MCIs could be a source of counterparty risk when MCIs purportedly provide crypto-asset custodian services. There could be market and liquidity risks if the MCI stops the operation of a crypto-asset trading venue. Financial institutions could also face credit risks if they use the lending or staking services by MCIs. These linkages are currently limited, posing limited risks to financial stability.

Financial sector entities such as banks and traditional FMs could also be exposed to MCIs if the latter rely on or use them for (non-crypto-asset) deposit taking, custody, money transfer and settlement, and lending. Risks could flow from MCIs to financial institutions and could also spill over from stress in financial institutions to MCIs or other crypto-asset service providers that rely on their services.

So far, there is no evidence that exposure through banking and custody services is concentrated in more than a limited number of financial institutions. A key takeaway from the recent failure of “crypto-asset-friendly” banks, is that they had relatively concentrated deposit exposures to firms with business models reliant in some form on crypto-assets. In general, banks face heightened liquidity risks when depositors make synchronised, large withdrawals. Stress at an MCI could lead to synchronised, large deposit withdrawals and such heightened liquidity risks at banks providing deposit services to MCIs. It remains to be seen whether there will be new models of “crypto-asset-friendly” banks emerging, either by more active participation by established financial institutions, or by crypto-asset-native firms seeking to provide banking-as-a-service.

The recent failure of banks serving as intermediaries for money transmission between MCIs and their clients may impact the links between banks and MCIs. In particular, the failure of the banks' real-time systems to facilitate money transfers between crypto-asset firms. The failure of these banks has arguably reduced the availability of traditional banking services to MCIs and other crypto-asset firms. This could incentivise other banks from various jurisdictions to step in and fill the gap in services, or it could incentivise MCIs to move away from banking and towards non-bank payment service providers, or indeed push MCIs to reduce their links with traditional finance. Some MCI-related stablecoin issuers also announced that they were shifting to larger financial institutions for managing their stablecoin reserves. However, most larger banks have taken a cautious approach towards crypto-asset business opportunities by imposing restrictions on the services to which crypto-asset firms have access to or by limiting crypto-asset exposure.

Financial institutions could also provide loans and credit lines to MCIs, and thereby be exposed to credit risk. Theoretically, financial institutions may also accept MCI-issued crypto-assets as collateral and, to the extent they do that, face potential losses when the value of such collateral falls, for instance, due to the MCI's failure or a more general crypto-asset downturn.<sup>40</sup> While

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<sup>40</sup> The BCBS standard on the *Prudential treatment of crypto asset exposures* (December 2022) should also mitigate these risks. While the rules will only be implemented as of 1 January 2025, they specify what crypto-asset can be accepted as collateral for credit risk mitigation.



there is little information available on such lending practices, it is expected that such exposure should be limited, in part due to banks' cautious attitude towards crypto-asset firms generally and the willingness to accept crypto-assets as collateral specifically. In addition, financial institutions could provide loans or credit lines to their clients, which then use these funds to buy exposure to crypto-assets issued by MCIs.

Other linkages with the financial system could result from MCIs, or their affiliates, issuing stablecoins that are backed by traditional financial assets. MCIs or their affiliates issuing stablecoins purportedly hold some of their reserves in assets such as bank deposits, short-term government bonds, money market funds, commercial paper and certificates of deposit. Large-scale redemptions or a run on a stablecoin's reserve assets could lead to fire sales of those reserve assets, creating disruptions in short-term funding markets. The assessment of the magnitude of this transmission channel is complicated by the lack of verifiable disclosures by some MCIs of their stablecoin reserve holdings.

Linkages between financial institutions and MCIs could also result from direct investments in each other, but these currently seem to be mainly concentrated in crypto-asset focused financial institutions. While only a limited number of financial institutions, such as venture capital firms and crypto-asset focused hedge funds, incurred losses from their direct investment in some MCIs, there could be increased interest in investment in MCIs if the crypto-asset market begins to grow again.

## Wealth effects

Investors funding MCIs or investing in related crypto-assets could be subject to wealth effects in case of MCI stress or bankruptcy. The valuation of these investments is dependent on the continued operational viability of MCIs, their ability to attract new investors, or the overall state of the crypto-assets markets, among other factors. In addition, the issuance of reserve-backed stablecoins by MCIs could lead to wealth effects for investors in the reserve asset markets in the event of fire sales during a run on the MCI-issued stablecoin.

Users of MCI services could be exposed to adverse wealth effects in case of MCI stress or bankruptcy. MCIs often provide the sole entry-exit point from the crypto-asset ecosystem for many retail and institutional investors. The withdrawal of MCI services, for example, due to an MCI bankruptcy, could leave investors unable to liquidate their crypto-assets in a timely manner, leading to losses during periods of high market volatility and potentially amplifying the initial wealth effect. Further, MCIs frequently offer retail customers access to levered and complex crypto-asset products, which can expose them to significant financial losses. Specifically, for some of the stablecoins currently issued, wealth effects could be more pertinent for retail users as stablecoin issuers constrain users in their redemption possibilities and offer insufficient public disclosure about their redemption terms.<sup>41</sup>

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<sup>41</sup> If a run ensues, retail investors lose out because they can only get the current market price on trading platforms whereas preferred users (those with redemption rights) can presumably redeem and will buy up from retail at decreased prices only to redeem at \$1. See for example discussion in Adachi et al (2022), [Stablecoins' role in crypto and beyond: functions, risks and policy](#), *ECB Macroeprudential Bulletin* Article No. 18, July.

The wealth effects in case of an MCI bankruptcy could be amplified by the absence of orderly wind down mechanisms and legal clarity of customer funds. In the event of MCI bankruptcy, investors may face uncertain and extended timelines for asset recovery. There may be a lack of legal clarity over customer deposits at MCIs in bankruptcy proceedings and in some cases, actions taken by the MCI might result in customers being treated as unsecured depositors. This issue will be exacerbated for users accessing services from outside of a jurisdiction where a bankruptcy court is located.

The valuation of institutional and retail investment in parts of the crypto-asset ecosystem could also be exposed to MCI vulnerabilities if MCIs operate critical ecosystem infrastructure. For example, blockchains with operations supported by MCI funding may no longer remain viable in the event of an MCI bankruptcy, impacting the value of crypto-assets created or recorded on these blockchains.

## Payments and settlements

Use of MCI issued crypto-assets including stablecoins for payments outside of the crypto-asset ecosystem is limited at present but may differ depending on country circumstances. Crypto-assets, including stablecoins, issued by MCIs are not generally used for payments and settlements outside of the crypto-asset ecosystem, limiting financial stability effects. However, there could be differences across jurisdictions and the risk of “cryptoisation” could not be totally eliminated. For example, MCIs could encourage the adoption of stablecoins (or other crypto-assets) to use for remittances or as a medium of exchange or store of value in certain Emerging Markets and Developing Economies (EMDEs). This may be particularly relevant for those EMDEs with weaker macroeconomic performance, where inflation is very high and the value of the domestic currency is less stable, particularly in the presence of capital controls. As a result, the domestic currency and banking sector in EMDEs may be at risk of disintermediation with the accompanying financial stability risks.<sup>42</sup>

MCIs could promote crypto-asset use for payments by partnering with payment schemes to issue credit or debit cards for payment purposes. MCIs could use their market power and recognition factor to promote these type of payment schemes. This could facilitate access to crypto-assets and support the development of crypto-asset payments. At present the MCIs are not issuing any cards directly, though some offer services which enable users to make purchases of goods and services (flights, hotels, etc.) using crypto-assets from participating businesses. But the utilisation of these services appears low at present.

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<sup>42</sup> For the risks of global stablecoins specifically for EMDEs, see IMF and FSB (2023), *IMF-FSB Synthesis Paper: Policies for Crypto-Assets*, September; IMF (2023), *G20 Note on the macro-financial implications of crypto assets*, February; and FSB (2022), *Assessment of risks to financial stability from crypto-assets*, February.

## Abbreviations

CASP	Crypto-asset service provider
CFTC	Commodity Futures Trading Commission
DeFi	Decentralised finance
DLT	Distributed ledger technology
ECB	European Central Bank
EMDEs	Emerging markets and developing economies
FCA	Financial Conduct Authority
FMI	Financial market infrastructure
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
MCI	Multifunction crypto-asset intermediary
MiFID	Markets in Financial Instruments Directive
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
SSB	Standard-setting body
TradFi	Traditional financial system
VC	Venture capital