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Shadow Banking Rewritten in Code: The Future Beyond MiCAR in Regulating Centralised Crypto-Asset Lending and Borrowing

Kornranut Junwerasatien*

ABSTRACT

The most recent crypto winter, sometimes regarded as the crypto industry's Lehman moment, highlights the problems associated with unregulated lending and borrowing platforms such as Celsius, Voyager, and BlockFi. These centralised entities, while built on differing technological infrastructures, perform functions comparable to those of non-bank financial intermediaries (NBFIs) in traditional financial markets and are exposed to similar intermediation risks. This paper examines these parallels, identifies the risks arising from centralised crypto lending and borrowing activities, and proposes regulatory recommendations from both prudential and conduct perspectives to prevent a recurrence of such catastrophic downturns. The paper aims to contribute to the broader discussion on regulatory approaches to decentralised finance (DeFi) by focusing specifically on the regulation of lending and borrowing activities facilitated by centralised platforms. The main finding is that the very existence of these platforms within the DeFi ecosystem paradoxically reintroduces a regulatory entry point which can draw upon traditional financial regulation addressing intermediation risks. The analysis finds that, while more targeted mitigants may be implemented, MiCAR nonetheless provides strong coverage in relation to conduct rules. However, MiCAR's prudential framework is highly insufficient for addressing the risks associated with lending and borrowing activities.

Keywords: EU financial regulation, MiCAR, crypto lending, crypto borrowing

I. INTRODUCTION

Founded on the ideology of cyber-libertarianism,[1] decentralised finance (DeFi), which encompasses underlying technologies such as distributed ledgers and cryptocurrencies, seeks to replicate certain functions of the traditional financial system in an open and permissionless manner.[2] When considered through Lessig's four modalities of regulation, namely law,

* LLM in IT and Data Law (LSE); LLM in IP and Information Law (KCL). The author would like to express his gratitude to Elisabeth Noble for her insightful guidance on earlier drafts, Frank Muci for his inspiring course on digital assets, and the reviewers of CLR for their constructive feedback. All views expressed remain the author's own.

[1] Paolo Tasca and Riccardo Piselli, 'The Blockchain Paradox' in Philipp Hacker and others (eds), *Regulating Blockchain* (OUP 2019) 27.

[2] European Banking Authority (EBA) and European Securities and Markets Authority (ESMA), 'Joint Report on Recent Developments in Crypto-Assets under Article 142 of MiCAR' ESMA75-453128700-1391 EBA/Rep/2025/01

norms, markets, and architecture,[3] DeFi places significant reliance on architecture or software code. According to Lessig, these four modalities regulate individuals by constraining their choices within a set of permissible actions. This reliance on code in DeFi reflects a cyber-libertarian effort to bypass traditional legal frameworks and human intermediaries by encoding rules into the architecture.

Unlike the traditional financial system, which requires a degree of trust in the administration and safeguarding of the system, distributed ledger technology (DLT) operates on the principle of cryptographic proof rather than trust.[4] To establish this trust-less system, the architecture of DLT is designed to maintain multiple copies of the ledger across various locations using intercommunicating systems or nodes on a computer network. This ensures the ledger's content is resistant to loss, destruction, invalidation, corruption, or tampering through forged transactions.[5]

A blockchain, an essential component of cryptocurrencies such as Bitcoin and Ethereum,[6] is a well-known example of DLT which chains together blocks of data to form the distributed ledger.[7] Consensus mechanisms such as Proof of Work and Proof of Stake are employed to validate transactions and add new blocks to the chain,[8] replacing the role of a centralised validator.[9] With the use of one-way cryptographic hash functions, the blockchain serves as an immutable log, as each block contains transaction data and a hash pointer to the previous block.[10] This pointer, a hash digest of the preceding block, verifies that the block's content has not been altered.[11]

(2025), para 10; European Commission (EC) 'European Financial Stability and Integration Review' SWD(2022)93, 43.

3 Lawrence Lessig, 'What Things Regulate', *Code: Version 2.0* (Basic Books 2006) 124–25.

4 Matthew Levine, 'The Only Crypto Story You Need' *Bloomberg* (31 October 2022) <https://www.bloomberg.com/features/2022-the-crypto-story/> accessed 20 July 2025; Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008) 1.

5 Claudio Di Ciccio, 'Blockchain and Distributed Ledger Technologies' in Sabrina Leo and Ida Claudia Panetta (eds), *The Role of Distributed Ledger Technology in Banking* (Cambridge University Press 2023) 15.

6 ibid 11.

7 Sabrina Leo and Andrea Delle Foglie, 'The Integration of Distributed Ledger Technology in Banking' in Ida Claudia Panetta and Sabrina Leo (eds), *The Role of Distributed Ledger Technology in Banking* (Cambridge University Press 2023) 36.

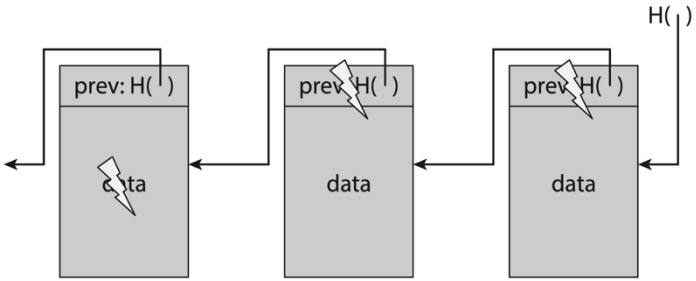
8 Ciccio (n 5) 18–19.

9 Marco Dell'Erba, 'The Underlying Complexities within the Line of Disruption', *Technology in Financial Markets* (OUP 2024) 59.

10 ibid; Arvind Narayanan and others, 'Introduction to Cryptography and Cryptocurrencies', *Bitcoin and Cryptocurrency Technologies* (Princeton University Press 2016) 11–12.

11 Narayanan and others (n 10) 11–12.

Figure 1: Block Chain as a Tamper-Evident Log[12]



In theory, the underlying technological architecture of DeFi should both directly influence individual behaviour and indirectly affect the other modalities of regulation.[13] As financial products, services, arrangements, and activities in DeFi are developed on the basis of DLT,[14] the libertarian ideology of eliminating central authorities[15] is, in principle, expected to encourage market participants to engage with the cryptoeconomy[16] in a decentralised manner.

Nevertheless, nearly two decades after the introduction of the first[17] public blockchain, the Bitcoin blockchain, a contradictory reality has emerged in the cryptoeconomy. Centralised crypto service providers have filled the void left by the absence of intermediaries. One notable limitation of DLT is its complexity, which requires users to adopt and learn unfamiliar technologies.[18] Recent FCA findings, for example, show that only 8% of UK consumers who reported holding crypto-assets used decentralised exchanges to acquire them, compared to 73% who used centralised exchanges.[19]

As the cryptoeconomy matures, there has been an increasing number of lending and yield-enhancement products.[20] The aforementioned centralisation trend is also evident in the context of lending and borrowing. While similar services are available in decentralised forms,[21] the average retail user typically opts for centralised platforms, which are generally more user-friendly, offer customer support, and do not demand technical expertise.[22] Furthermore, providers such as Celsius, Voyager, and BlockFi attracted users by offering access to, inter alia,

[12] ibid 12. This diagram illustrates the tamper-evident nature of a blockchain. Each block contains a hash digest of the preceding block; consequently, any alteration (represented by the lightning bolt) to the data within a block will result in a different hash value. This change propagates through all subsequent blocks, creating a detectable discrepancy within the chain.

[13] cf Tasca and Piselli (n 1) 29 ("Blockchain code, like the law, not only modifies individual behaviour directly, but it also does so indirectly; it conditions other modalities, which, in turn, condition it").

[14] Dell'Erba (n 9) 60.

[15] Levine (n 4) ("A new financial system with transparent and irreversible transactions, with no special power for governments or big banks, had an appeal").

[16] Dell'Erba (n 9) 59.

[17] EC (n 2) 43.

[18] Leo and Foglie (n 7) 40.

[19] YouGov on behalf of the Financial Conduct Authority (FCA) 'Cryptoassets consumer research 2025 (Wave 6)' (December 2025), 33–34; cf FCA 'Regulating Cryptoasset Activities' DP25/1 (May 2025), para 7.2.

[20] Henri Arslanian, 'Crypto Ecosystem Enablers', *The Book of Crypto* (Springer International Publishing 2022) 366.

[21] FCA (n 19) para 7.2.

[22] Arslanian (n 20) 367.

high-yield financial products.[23] For instance, Celsius once promised annual returns of up to 18%.[24]

These entities perform economic functions that are equivalent to those of traditional financial intermediaries.[25] Since crypto lending and borrowing occur outside regular banking regulation systems and safety nets, such activities fall within the scope of shadow banking[26] or non-bank financial intermediation.[27] As a result, the terms "imitation banks"[28] and "non-bank financial intermediaries" (NBFIs)[29] are often used to describe these providers. It is well understood that there is no risk-free way to conduct bank-like activities[30] as such entities are by construction vulnerable to runs.[31] This vulnerability, combined with specific risks in the crypto lending and borrowing business model, contributed to the "Lehman moment" for the crypto industry[32] or the so-called "crypto winter" of 2022-23,[33] during which several major crypto lending platforms, including Celsius, Voyager, and BlockFi, filed for bankruptcy.[34] Collectively, these three companies owed nearly USD 22 billion to over 2 million customers at the time of filing.[35]

Recognising the parallels between the functions of these centralised service providers and those of NBFIs in traditional markets, this paper argues that regulatory tools designed to address traditional intermediation risks can be effectively transposed to mitigate risks arising from crypto lending and borrowing service providers. The central aim of this paper is to contribute to the broader discussion concerning the appropriate scope of regulation in DeFi, specifically, whether centralised crypto lending and borrowing activities fall within the existing regulatory perimeter and, if not, how they should be regulated.

Chapter II examines the business model of centralised crypto lending and borrowing and identifies characteristics of shadow banking. It then assesses the regulatory gaps in the current EU framework for the cryptoeconomy, the Markets in Crypto-Assets Regulation (MiCAR).[36] Building on these identified similarities and regulatory shortcomings, Chapter III outlines primary risks arising from the absence of regulation from both prudential and

[23] Radhika Patel and Jonathan D Rose, 'A Retrospective on the Crypto Runs of 2022' [2023] Chicago Fed Letter 1; FCA (n 19) para 4.3.

[24] Kadhim Shubber and Joshua Oliver, 'Inside Celsius: How One of Crypto's Biggest Lenders Ground to a Halt' *Financial Times* (13 July 2022) <https://www.ft.com/content/4fa06516-119b-4722-946b-944e38b02f45> accessed 20 July 2025.

[25] FCA (n 19) para 3.2; cf Financial Stability Board (FSB), Global Regulatory Framework for Crypto-Asset Activities (2023) 3.

[26] EC 'Communication on Shadow Banking' COM(2013)614, 3.

[27] FSB 'Global Monitoring Report on Non-Bank Financial Intermediation' (2024), 3.

[28] Todd Phillips and Matthew A Bruckner, 'Consumer Shadow Banks' (2024) 35 Stanford Law & Policy Review 226, 254.

[29] Financial Stability Institute (FSI) 'Safeguarding the Financial System's Spare Tyre: Regulating Non-Bank Retail Lenders in the Digital Era' FSI Insights on Policy Implementation No 56 (2024), 1.

[30] Phillips and Bruckner (n 28) 233–34.

[31] Francesca Arnaboldi, 'Deposit Guarantee Schemes', *Deposit Guarantee Schemes* (Palgrave Macmillan 2014) 52.

[32] Dirk Zetzsche, Julia Sinnig and Areti Nikolakopoulou, 'Crypto Custody' (2024) 19 Capital Markets Law Journal 207, 208.

[33] Ilya Kokorin, 'The Anatomy of Crypto Failures and Investor Protection under MiCAR' (2023) 18 Capital Markets Law Journal 500, 525.

[34] Patel and Rose (n 23) 2.

[35] Calculated based on the number of customers with positive claims: Celsius (542,333; USD 13.44 billion), Voyager (975,521; USD 6.98 billion), and BlockFi (599,766; USD 1.41 billion). Each may have had additional customers without positive claims at the time of filing. See ibid 2–3.

[36] Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 [2023] OJ L150/40 (MiCAR).

conduct perspectives. Finally, Chapter IV proposes corresponding regulatory solutions in areas where transposition is both feasible and necessary, grounded in MiCAR's fundamental frameworks and baseline principles. These recommendations reflect the understanding that, in this particular domain, the cryptoeconomy is not unique and inherits vulnerabilities and structural issues long associated with traditional finance.

II. Context and Regulatory Landscape

A. Centralised crypto-asset lending and borrowing service providers

As briefly mentioned in the introduction, there are both decentralised and centralised approaches through which clients can engage in crypto lending and borrowing within DeFi. In the context of centralised shadow banking, two types of non-bank financial intermediation exist: platforms may act either as auxiliaries or as intermediaries. As auxiliaries, platforms function as off-balance-sheet online marketplaces that enable lenders to transact directly with borrowers in a peer-to-peer manner, while, as intermediaries, platforms use their own balance sheets to originate loans.[37] The latter forms the primary focus of this paper as it was the principal form of intermediation that contributed to the downturn during the most recent crypto winter.

For the purposes of the following discussion, it is useful to outline the basic business model of crypto lending and borrowing. In crypto-asset lending, a service provider (lender) transfers ownership of crypto-assets to a user (borrower) against collateral, with an obligation to return equivalent value plus any agreed interest.[38] Conversely, in crypto-asset borrowing, a user (lender) lends assets to the service provider (borrower), who commits to return the equivalent amount, often with an additional yield, on a future date or upon a trigger event.[39]

Platforms such as Celsius, Voyager, and BlockFi operated by borrowing crypto-assets from both retail and institutional sources and deploying them through unsecured loans, high-risk investments, or on exchanges.[40] The platforms then used the fees generated from these loans, along with other sources of profit, to fund their operations and pay interest.[41] For instance, Celsius offered both the "Borrow Service" and the "Earn Service," which it clarified in its terms of use as follows:

> your Celsius account is not a bank account,... terms such as "account", "account balance," "withdraw"... with the Earn Service and the Borrow Service... used... as terms of convenience only in referring to users' borrowing or lending of digital assets...[42]

[37] FSB (n 27) 17 Box 2-1.
[38] FCA (n 19) para 4.1; EBA and ESMA (n 2) para 142.
[39] FCA (n 19) para 4.1; EBA and ESMA (n 2) para 157.
[40] Emilios Avgouleas and Alexandros Seretakis, 'How Should Crypto Lending Be Regulated Under EU Law?' (2023) 24 European Business Organization Law Review 421, 427; Kokorin (n 33) 516.
[41] Gary Gorton and Jeffery Zhang, 'Bank Runs During Crypto Winter' (2024) 14 Harvard Business Law Review 297, 305; Phillips and Bruckner (n 28) 228.
[42] 'Terms of Use' (*Celsius*, 29 September 2022) Section 2 <https://web.archive.org/web/20250224212718/https://celsius.network/terms-of-use> accessed 20 July 2025.

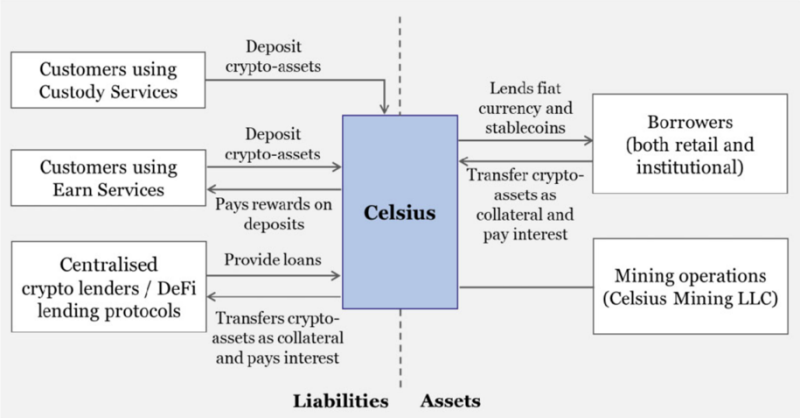
For its crypto-asset lending activity or the "Borrow Service" and its crypto-asset borrowing activity or the "Earn Service," Celsius required ownership rights over both the collateralised crypto-assets and the borrowed crypto-assets, respectively, with clients required to:

> grant Celsius... all right and title..., including ownership rights,... to pledge, re-pledge, hypothecate, rehypothecate, sell, lend, or... invest... in Celsius' full discretion.[43]

And with respect to the "Earn Service," clients:

> earn a financing fee... referred to as "Rewards,"... in exchange for entering into open-ended loans...[44]

Figure 2: Business Model of Celsius[45]



B. CENTRALISED SERVICE PROVIDERS AS NON-BANK FINANCIAL INTERMEDIARIES

Considering the economic function of traditional banks, their core business model of on-balance sheet intermediation[46] is based on three functions: maturity transformation, liquidity transformation, and credit transformation.[47] Maturity transformation occurs when banks convert short-term liabilities, such as the short-term deposits of retail customers and money market instruments, into medium- and long-term loans.[48] In doing so, they are able to offer depositors a share of the higher returns generated by long-term investments.[49] Liquidity

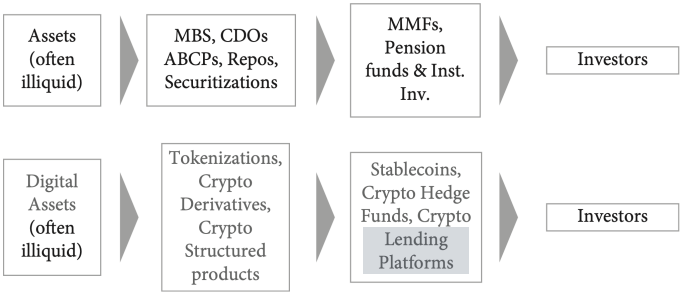
[43] ibid Section 13.
[44] ibid Section 4(D).
[45] Kokorin (n 33) 516.
[46] Dirk Zetzsche and Jannik Woxholth (eds), 'Cryptoasset Regulation in the System of EU Financial Law', *The EU Law on Crypto-Assets: A Guide to European FinTech Regulation* (Cambridge University Press 2025) 32.
[47] John Armour and others, 'Theory of Banking', *Principles of Financial Regulation* (OUP 2016) 277.
[48] Dell'Erba (n 9) 39.
[49] Armour and others (n 47) 278.

transformation refers to the process by which banks use the liquid assets of depositors to invest in illiquid assets. This is made possible through the law of large numbers, which allows banks to predict aggregate withdrawal behaviour across a large pool of depositors, and the principles of fractional reserve banking, under which only a fraction of deposits is held as reserves while the remainder is lent out.[50] Credit transformation involves the conversion of low-risk deposits into individually high-risk investments in a manner designed to minimise overall risk. Banks achieve this by screening and monitoring the quality of their investments, diversifying them both sectorally and geographically, and holding sufficient capital to absorb potential losses.[51]

Shadow banking or non-bank financial intermediation[52] broadly refers to credit intermediation involving entities and activities outside the regular banking system[53]—that is, financial intermediaries that engage in maturity, liquidity, and credit transformation without access to central bank liquidity or public sector credit guarantees.[54] Finance companies in traditional markets, for example, originate loans but are not classified as banks because they are largely funded by wholesale money markets rather than deposits.[55]

As seen from the discussed business model, centralised crypto lending and borrowing involves attracting crypto-assets from various sources—including borrowing—and lending credit to third parties on their own account.[56] Consequently, these platforms engage in maturity, liquidity, and credit transformation outside the conventional banking system, thereby qualifying as NBFIs.[57] For instance, from the lending perspective, they function in a manner similar to traditional finance companies. Moreover, due to functional similarities, scholars have recognised that this emerging form of crypto shadow banking parallels traditional shadow banking, as both indirectly connect borrowers with investors in capital markets.[58]

Figure 3: Traditional Shadow Banking Vs Crypto Shadow Banking[59]



50 ibid 277.
51 ibid 278.
52 FSB 'Global Monitoring Report on Non-Bank Financial Intermediation' (2018) 3 Box 1-1 ("change in terminology is intended to emphasise the forward-looking aspect… not affect the substance or coverage…").
53 John Armour and others, 'Market-Based Credit Intermediation: Shadow Banks and Systemic Risk', *Principles of Financial Regulation* (OUP 2016) 445.
54 Steven Schwarcz, 'Regulating Shadow Banking' (2012) 31 Review of Banking & Financial Law 619, 621.
55 Patricia Jackson, 'Shadow Banking and New Lending Channels: Past and Future' in Morten Balling and Ernest Gnan (eds), *The European Money and Finance Forum* (SUERF 2013) 380; Armour and others, (n 53) 446.
56 Kokorin (n 33) 522.
57 Avgouleas and Seretakis (n 40) 426. See also Phillips and Bruckner (n 28) 236; Kokorin (n 33) 522.
58 Marco Dell'Erba, 'Disrupting Shadow Banking or Crypto Shadow Banking', *Technology in Financial Markets* (OUP 2024) 313.
59 ibid.

C. MARKETS IN CRYPTO-ASSETS REGULATION'S SCOPE AND REGULATORY GAPS

For platforms to be regulated under MiCAR, they must qualify as a crypto-asset service provider (CASP), defined as 'a legal person or other undertaking whose occupation or business is the provision of one or more crypto-asset services'.[60] The exhaustive list of crypto-asset services includes, for example, custody, exchange, advice, and transfer services,[61] which broadly encompasses two categories: crypto trading services; and brokerage, investment advice, and asset management services.[62]

Once qualified as CASPs, platforms become subject specifically to the provisions of Title V of MiCAR, which includes, inter alia, licensing and authorisation requirements, as well as specific conditions for certain services. Under this activity-focused approach, even if a crypto-asset lacks an issuer such as Bitcoin or Ethereum, platforms engaged in the listed activities still fall within the scope of MiCAR as CASPs.[63]

However, if an activity is not included in the list of crypto-asset services, particularly lending and borrowing, it does not fall within the scope of MiCAR. While such activities may be regulated under other frameworks, relying on alternative rules introduces legal uncertainty and creates a significant regulatory gap. Corroborating this, a joint EBA-ESMA survey found that only 5 out of 37 national competent authorities[64] reported that crypto lending and/or borrowing activities are subject to some level of regulation within their jurisdiction. Even among this small minority, the rules are often narrow in scope; for example, one indicates that a consumer credit provider registration requirement applies if the loan is denominated in official currency.[65]

Compared to existing frameworks in the US and the UK, the EU's MiCAR can be seen as a trailblazer in introducing a comprehensive regulatory regime for crypto-assets.[66] While the US and UK rely on applying existing laws or standards to crypto-assets, MiCAR represents a dedicated legislative framework for the sector. However, its current scope still expressly does 'not address the lending and borrowing of crypto-assets... [as] the feasibility and necessity of regulating such activities should be further assessed'.[67]

It is true that several platforms may qualify as CASPs by virtue of their involvement in other listed activities beyond lending and borrowing. As noted in the aforementioned EBA-ESMA survey, 11 entities offering lending and/or borrowing services were also engaged in other regulated crypto-asset services, such as asset management or exchange services.[68] Consequently, certain general requirements applicable to all CASPs under Chapter 2 of Title V, such as fiduciary duties[69] and governance obligations,[70] may also be applicable to some aspects

60 MiCAR, Article 3(15).
61 MiCAR, Article 3(16).
62 Dirk Zetzsche and Jannik Woxholth (eds), 'Regulation of Cryptoasset Service Providers (Title V MiCA)', *The EU Law on Crypto-Assets: A Guide to European FinTech Regulation* (Cambridge University Press 2025) 96.
63 MiCAR, Recital 22; ibid 102.
64 16 out of 37 identified crypto lending and/or borrowing providers. See, EBA and ESMA (n 2) para 183.
65 EBA and ESMA (n 2) para 186.
66 Giovanna Massarotto, 'Call for a Global Crypto-Assets Regulatory Framework: Lessons from the US, Europe, and the UK' in Paolo Tasca and Reena Aggarwal (eds), *Digital Assets: Pricing, Allocation and Regulation* (Cambridge University Press 2025) 152.
67 MiCAR, Recital 94. See eg Kokorin (n 33) 517.
68 EBA and ESMA (n 2) para 184.
69 MiCAR, Articles 66 and 72.
70 MiCAR, Articles 68, 69, and 71.

of lending and borrowing. Nevertheless, due to the particular nature of lending and borrowing, these general requirements may require adaptation when applied to such activities.[71]

Furthermore, Chapter 3 of Title V also provides specific regulatory conditions tailored to the risk profile of each listed activity. In the absence of general consideration and specific rules designed for lending and borrowing, this activity-based[72] framework risks undercapturing the full range of risks involved, particularly in areas not overlapping with other regulated services.

III. Risks Posed by Crypto-asset Lending and Borrowing

This chapter examines the risks inherent in the centralised business model of crypto lending and borrowing. While the cryptoeconomy possesses distinct characteristics, the risks identified broadly mirror the intermediation risks of NBFIs in traditional financial markets,[73] particularly from a prudential and conduct perspective. For each category, the causes and nature of the risk are explored, with reference to documented cases that contributed to the 2022-23 crypto winter. While economic downturns are inevitable, analysing documented failures provides a necessary blueprint for addressing the regulatory challenges of future crises.[74]

A. Prudential Perspective

(i) Drivers of Prudential Risks

Prudential risks generally arise when a financial firm assumes risks that threaten its financial health and its ability to meet obligations to investors and counterparties.[75] At their core, these are risks of a firm becoming financially unsound and unable to fulfil its market commitments.[76] For on-balance-sheet intermediation, the primary concern is eventually the potential insolvency of the financial entity itself.[77]

The principal driver that leads these firms to assume excessive risk, pushing them towards insolvency, is moral hazard. Moral hazard occurs when the agent (platform) has an incentive to exert less effort than the principal (client) would deem optimal due to the principal's inability to fully monitor the agent's behaviour.[78] As a consequence, the agent may not bear the full burden of the negative outcomes arising from their decisions.[79] When a service provider's accountability diminishes, it tends to adopt riskier practices, particularly in the absence of adequate regulation.

71 MiCAR, Article 71 and Annex IV.
72 Zetzsche and Woxholth (n 63) 95.
73 See eg FSI (n 29) paras 24–25; FCA (n 19) para 3.2.
74 See eg Hyman P Minsky, *Stabilizing an Unstable Economy* (McGraw-Hill 1986) 110–12 ("Unless we understand what it is that leads to economic and financial instability, we cannot prescribe—make policy—to modify or eliminate it".).
75 Eric Pan, 'Organizing Regional Systems' in Niamh Moloney, Eilís Ferran and Jennifer Payne (eds), *The Oxford Handbook of Financial Regulation* (OUP 2015) 191.
76 ibid 190.
77 Zetzsche and Woxholth (n 46) 32.
78 Nicholas Gregory Mankiw and Mark P Taylor, 'Information and Behavioural Economics', *Economics* (6th edn, Cengage 2023) 405.
79 ibid.

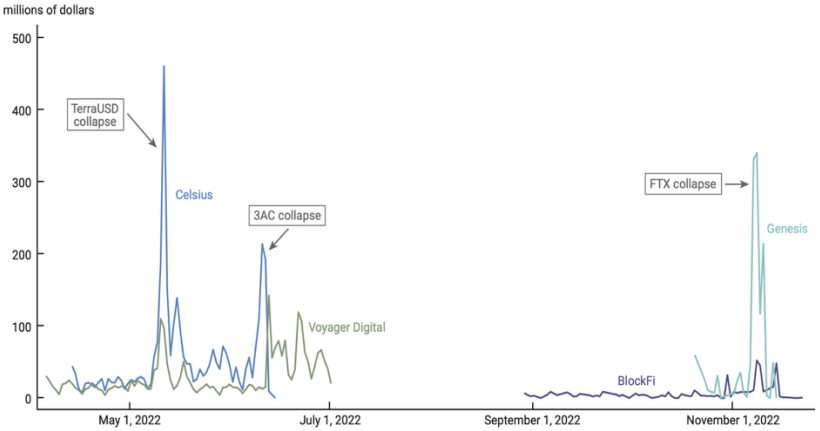
This situation is exacerbated when these intermediaries perform maturity transformation,[80] an inherently unstable practice when left unregulated or poorly supervised.[81] Maturity transformation relies on a confidence trick: clients must believe both that (a) the entity is financially sound and capable of honouring its obligations, and (b) other clients will not simultaneously call in loans beyond customary levels.[82] If confidence is shaken, this fragile equilibrium collapses, incentivising first movers.[83] The phenomenon of first-mover advantage refers to clients rushing to exit positions to avoid incurring losses that might be borne by others.[84] This dynamic contributes to the self-fulfilling nature of runs and ensuing liquidity problems. The root cause often lies in a maturity mismatch—that is, the misalignment between short-term liabilities and long-term assets—which creates acute liquidity risk that can rapidly escalate into insolvency risk.[85]

Regulation, in essence, seeks to establish the necessary conditions for this confidence trick through the provision of conditions which centralised crypto lending and borrowing service providers currently lack.[86] Furthermore, the absence of appropriate regulation allows maturity, liquidity, and credit transformation to be increasingly conducted through networks outside the regulatory perimeter. The proliferation of such shadow banking networks, in both traditional and crypto contexts, tends to increase structural complexity and, as a direct consequence, heighten legal uncertainty within financial regulation.[87]

In the traditional financial system, NBFIs engaged in credit intermediation involving maturity and liquidity transformation are inherently susceptible to runs in the absence of regulatory frameworks. For instance, collective investment vehicles (CIVs), including funds and accounts established for pooling client assets, are vulnerable to sudden redemption pressures if investors perceive a shift in risk exposure.[88] This vulnerability is not unique to traditional finance. A similar pattern is evident in the cryptoeconomy as well, particularly among crypto lending and borrowing platforms, which perform comparable economic functions. These platforms, inter alia, use short-term client funds to finance illiquid, high-risk positions. This run dynamic materialised during the most recent crypto winter, affecting platforms such as Celsius, Voyager, and BlockFi, as examined further in the following chapter.

[80] See eg Gorton and Zhang (n 41) 332 ("if an entity is borrowing short and lending long, it is in the business of maturity transformation".).
[81] Phillips and Bruckner (n 28) 236.
[82] Armour and others, (n 47) 278; cf Anil K Kashyap, Raghuram Rajan and Jeremy C Stein, 'Banks as Liquidity Providers: An Explanation for the Coexistence of Lending and Deposit-Taking' (2002) 57 Journal of Finance 33, 34–35.
[83] Armour and others, (n 47) 278.
[84] Patel and Rose (n 23) 5.
[85] Kokorin (n 33) 522.
[86] Phillips and Bruckner (n 28) 237.
[87] Dell'Erba (n 9) 41–42.
[88] FSB 'Global Shadow Banking Monitoring Report' (2015), 20–21.

Figure 4: Customer Fund Withdrawals 90 Days Prior to Bankruptcy[89]



(a) Liquidity risk

Liquidity risk, often inherent in maturity transformation processes, is the risk that a firm will be unable to meet its short-term cash flow obligations.[90] In the case of centralised lending and borrowing platforms, their business model relies on lending or investing the borrowed crypto-assets into illiquid and often risky investments in an attempt to generate the high returns promised to customers. A recent FCA discussion paper found that such platforms frequently hold high proportions of illiquid assets or maintain insufficient liquidity on their balance sheets.[91]

In the events leading up to the most recent crypto winter, these illiquid and risky investments included loans to the hedge fund Three Arrows Capital and stakes in the Anchor Protocol.[92] Three Arrows Capital, a crypto-asset hedge fund, used high levels of leverage to engage in large directional trades.[93] The Anchor Protocol, a decentralised borrowing and lending application built on the Terra blockchain, subsidised and fixed annual returns for lenders at 20%, rather than allowing returns to be determined by market borrowing demand.[94] Such reinvestments and onward lending of assets also created interconnected obligations, which made it difficult for these firms to meet their liabilities during periods of market stress.[95]

89 Patel and Rose (n 23) 4.
90 Peter Mülbert, 'Managing Risk in the Financial System' in Niamh Moloney, Eilís Ferran and Jennifer Payne (eds), *The Oxford Handbook of Financial Regulation* (OUP 2015) 369.
91 FCA (n 19) para 4.8.
92 Patel and Rose (n 23) 5.
93 Douglas W Arner and others, 'The Financialisation of Crypto' (2024) 53 Computer Law & Security Review 105970-1, 105970-7.
94 George Steer and Scott Chipolina, 'The Terra/Luna Hall of Shame' (*Financial Times*, 25 May 2022) <https://www.ft.com/content/40c06a4f-3586-40be-b5ad-b836b5dcdc0d> accessed 20 July 2025; Levine (n 4).
95 FCA (n 19) para 4.8.

(b) Excessive leverage

Leverage, typically measured as the ratio of total borrowed capital to equity,[96] is a mechanism through which both returns and risks are amplified.[97] In the cryptoeconomy, it is common for platforms to borrow crypto-assets, lend them out, and then use the proceeds to seek further borrowing.[98] This cycle contributes significantly to the accumulation of leverage in the market.[99] The practice of rehypothecation, whereby collateral pledged is reused to secure more loans, exacerbates the situation. This practice, often permitted under the platforms' terms and conditions,[100] creates collateral chains that increase systemic fragility and contagion risk.[101]

The now-bankrupt service providers were characterised by particularly high leverage ratios during the crypto winter. Celsius operated at a leverage ratio of 19-to-1, while Voyager's was 23-to-1. In practical terms, this means that Celsius and Voyager held debt (mostly funds borrowed from users) 19 and 23 times the value of their equity, respectively.[102] This level of leverage is highly risky, as even a modest decline in asset values—5.3% for Celsius or 4.3% for Voyager—was sufficient to render them insolvent.[103]

(c) Concentration risk

Concentration risk refers to the potential for loss arising from excessive exposure to a single counterparty or to multiple counterparties that share common characteristics such as belonging to the same corporate group, operating within the same industry or geographic region, or being linked to a specific class of assets.[104]

This risk was particularly evident during the most recent crypto winter. A common factor contributing to the downturn was the significant exposure many service providers had to the aforementioned crypto hedge fund Three Arrows Capital.[105] The fund borrowed from over 20 institutions, making it a single point of failure and a substantial source of contagion across the sector.[106] Specifically, Three Arrows Capital received loans amounting to approximately USD 75 million from Celsius, USD 1 billion from BlockFi, and more than USD 600 million from Voyager.[107] In Voyager's case, the exposure was especially acute: Three Arrows Capital was its largest borrower, accounting for roughly 58% of total loan obligations, a clear example of an overly concentrated loan book and poor risk diversification.[108]

96 Kern Alexander, 'The Role of Capital in Supporting Banking Stability' in Niamh Moloney, Eilís Ferran and Jennifer Payne (eds), *The Oxford Handbook of Financial Regulation* (OUP 2015) 352 Footnote 46; Phillips and Bruckner (n 28) 244 Footnote 89.
97 Levine (n 4).
98 EBA and ESMA (n 2) para 196.
99 ibid.
100 See eg Celsius Terms (n 43).
101 EBA and ESMA (n 2) para 197.
102 Levine (n 4).
103 Phillips and Bruckner (n 28) 244.
104 Mülbert (n 91) 369–70.
105 Patel and Rose (n 23) 4.
106 Arner and others (n 94) 105970-7.
107 Patel and Rose (n 23) 4.
108 Kokorin (n 33) 515; Gorton and Zhang (n 41) 312–13.

Figure 5: Voyager's Loan Counterparty[109]

Company	Borrowing Rate	Outstanding Amount (thousands)
Alameda Research Ltd.	1% - 11.5%	$376,784
Three Arrows Capital	3% - 10%	$654,195
Genesis Global Capital	4% - 13.5%	$17,556
Wintermute Trading Ltd.	1% - 14%	$27,342
Galaxy Digital LLC	1% - 30%	$34,427
Tai Mo Shan Limited	10%	$13,779
Other	4% - 8%	$751
Total		**$1,124,825**

(d) Credit risk

As lending and borrowing platforms engage in credit transformation, credit risk is another major concern. It arises when borrowers default on their obligations to repay principal or interest,[110] stemming from both on- and off-balance sheet exposures such as loans, investments, and trading activities.[111] Despite acting as credit intermediaries, these platforms often fail to perform creditworthiness assessments, neglecting to evaluate borrowers' financial situations, repayment capacity, or risk tolerance, thereby increasing the risk of borrower default.[112]

The recent crypto downturn again illustrates this point. Voyager's more than USD 600 million in loans to Three Arrows Capital were unsecured.[113] Similarly, Celsius' loans to the same fund were not collateralised.[114] The widespread willingness of crypto firms to assume such credit risk can largely be attributed to Three Arrows Capital's reputation at the time as one of the most prominent and well-known hedge funds in the crypto sector. For many platforms, lending to such a high-profile firm was seen as a form of endorsement that could enhance credibility in the eyes of other clients.[115] This instance of inadequate creditworthiness assessment, involving the extension of unsecured credit based solely on perceived reputation, significantly heightened credit risk and later complicated the process of recovering funds. According to investigative reports from the bankruptcy proceedings, many clients of Voyager and Celsius expressed surprise upon learning that the loans made by both companies were not collateralised.[116]

109 Declaration of Stephen Ehrlich in Support of Chapter 11 Petitions and First Day Motions, *In re Voyager Digital Holdings Inc*, No 22-10943 (Bankr SDNY 2022), para 29.
110 Mülbert (n 91) 369.
111 Basel Committee on Banking Supervision (BCBS) 'The Basel Framework' (2024), Principle 17 BCP40.39 Footnote 42.
112 EBA and ESMA (n 2) para 201; FCA (n 19) para 4.8.
113 Levine (n 4).
114 Patel and Rose (n 23) 4.
115 Levine (n 4).
116 Patel and Rose (n 23) 4.

B. CONDUCT PERSPECTIVE

(i) Drivers of Conduct Risks

Conduct risks mainly arise from asymmetric information, a classic manifestation of the principal-agent problem, where two parties have access to different information.[117] This imbalance creates incentives for the informed party (platform) to withhold or distort relevant information, to the detriment of the less-informed party (client).[118] While such principal-agent failures are not exclusive to NBFIs, the nature of NBFIs combined with the technological complexity underpinning their operations can significantly magnify the problem.[119] This is particularly evident in the cryptoeconomy, where complex technological architecture such as DLT is involved. As retail customers tend to be less knowledgeable and more vulnerable to information asymmetries,[120] many may lack a full understanding of both the technical aspects of crypto and their financial implications, limiting their ability to identify and manage associated risks.[121]

In markets with high information asymmetry, resources may not be allocated efficiently,[122] leading to adverse selection, a situation where uninformed customers transact with parties they would otherwise avoid if they had full knowledge.[123] The 2007 financial crisis exemplifies this dynamic: investment banks packaged high-risk mortgage assets into complex financial products and many clients, unaware of the underlying risk, were left exposed to substantial losses.[124] Similar patterns of adverse selection were observed during the latest crypto winter.[125] As revealed in bankruptcy proceedings, a client in Celsius' bankruptcy filings remarked:

> I initially signed up with Celsius due to... advertising campaigns, weekly AMAs, website, and interviews... all adamant that our funds are used in over-collateralized loans... Celsius has failed to properly disclose the investments... they were not purely using over-collateralized loans...[126]

This highlights one of the key reasons why regulators cannot rely solely on the assumption of market self-correction. Such an assumption suggests that regulatory intervention is unnecessary on the basis that the financial system is inherently stable and efficient. Instability is instead attributed to exogenous shocks.[127] However, markets can and are often irrational. As argued by Minsky, rather than existing in a state of self-equilibrium,[128] the financial system is inherently unstable and becomes increasingly fragile during periods of sustained prosperity.[129]

117 Mankiw and Taylor (n 79) 404.
118 ibid.
119 Schwarcz (n 54) 635.
120 FCA (n 19) para 3.2.
121 Arner and others (n 94) 105970-11; Pan (n 76) 191.
122 Mankiw and Taylor (n 79) 409.
123 ibid 405.
124 ibid 406.
125 Phillips and Bruckner (n 28) 230.
126 Memorandum of Jason Pukalo, *In re Celsius Network LLC*, Docket No 90, No 22-10964 (Bankr SDNY 2022), para 2.
127 Savvas Zachariadis, 'Why Has Minsky's Economic Theory Been Ignored?' (2026) The Economic and Labour Relations Review 1, 9–10.
128 Nicholas Gregory Mankiw and Mark P Taylor, 'Economic Shocks' *Economics* (6th edn, Cengage 2023) 734.
129 Minsky (n 75) 194–96. See also Zachariadis (n 128) 3–4.

Indeed, leading up to the 2007 financial crisis, the belief in efficient, self-correcting markets contributed to the relaxation or removal of regulatory constraints.[130] A notable consequence of this deregulation was the expansion of access to mortgage credit for a broader segment of the population.[131] This, coupled with the so-called "Great Moderation", a period of relative economic stability prior to the crisis,[132] pushed the market towards instability and speculative behaviour, often described as "animal spirits" or "irrational exuberance".[133] This weakening of market discipline was reflected in both over-optimistic borrowing and the willingness of lenders to extend credit.[134] Ultimately, the subprime lending practices and securitisation, whereby mortgage-backed assets were pooled and sold to investors,[135] precipitated the crisis.

As observed in the traditional financial system, particularly during 2007, crises can be exacerbated by a failure of regulatory intervention.[136] In the cryptoeconomy, the 2022–23 downturn, discussed in the following chapter, can similarly be attributed to a lack of regulatory frameworks. Therefore, the lack of regulation in both traditional and crypto contexts, whether due to an absence of regulatory intent or the challenges of addressing disruptive innovation, can lead to unintended consequences, particularly given that markets are not always rational.

(ii) Nature of Conduct Risks

(a) Consumer protection risk

One of the most significant concerns in the current crypto lending and borrowing model is the heightened consumer protection risk stemming from poor consumer understanding.[137] This risk may arise due to either the absence of clear and accessible information or, more worryingly, deliberately misleading advertising practices.

Information made available to consumers is often fragmented, unstructured, and disseminated through private, unregulated channels, making it difficult for the average user to fully comprehend the opportunities presented or the risks involved.[138] This contributes directly to the adverse selection effects associated with information asymmetry. This challenge was explicitly identified by the joint EBA-ESMA report, which highlighted significant ambiguity in disclosure across several critical areas, including: (a) pricing and fees, (b) interest rates, (c) changes to collateral requirements, including margin calls, (d) collateral management, particularly regarding rehypothecation rights,[139] and (e) users' rights and obligations in cases of dispute or insolvency.[140]

Even where relevant information is disclosed, such documentation is frequently drafted in sophisticated language.[141] Moreover, the tone of these documents may be misleadingly reassuring, giving consumers a false sense of security. While platforms may assert that

130 Mankiw and Taylor (n 129) 732.
131 ibid 730.
132 ibid.
133 ibid 734.
134 Minsky (n 75) 233–35. See also Zachariadis (n 128) 4–5.
135 Orkun Akseli, 'Vulnerability and Access to Low Cost Credit' in James Devenney and Mel Kenny (eds), *Consumer Credit, Debt and Investment in Europe* (Cambridge University Press 2012) 7.
136 Mankiw and Taylor (n 129) 734–35.
137 EBA and ESMA (n 2) para 188; FCA (n 19) para 4.8.
138 Arner and others (n 94) 105970-11.
139 See eg Celsius Terms (n 43).
140 EBA and ESMA (n 2) para 187.
141 ibid.

customer assets will be treated in a certain way, they often do not account for how those assets may be treated under the law, particularly in the event of bankruptcy.[142]

Furthermore, deliberate or negligent misrepresentation in advertising has been a recurring issue. Confusion about the level of risk posed by these novel financial products can easily arise, particularly when crypto-asset loans are linked to fiat-denominated credit cards, which may create the misleading impression that these are conventional products, further obscuring the actual level of risk involved.[143]

Several documented instances illustrate these concerns. Prior to the 2022–23 crypto winter, Voyager falsely made representations that it was FDIC-insured, prompting a cease and desist order from US regulators.[144] Another example is Alex Mashinsky, co-founder and CEO of Celsius, who used marketing campaigns to portray the platform as safer and more rewarding than traditional financial products.[145] Later sentenced to 12 years for fraud and market manipulation,[146] he once claimed:

> It's the traditional financial system that's ripping people off... Somebody is lying... Either the bank is lying or Celsius is lying.[147]

(b) Conflicts of interest

A further area of concern is the conflict of interest arising from the use of platforms' own native tokens within their services. This is analogous to the well-documented issue of crypto exchanges listing and promoting their own tokens.[148] Similarly, lending and borrowing platforms often integrate their proprietary tokens into their service offerings—using them as interest payments (for lending services) or as collateral (for borrowing services), and offering preferential treatment to incentivise their use.[149] For example, Celsius, the issuer and largest holder of CEL tokens, offered its highest interest rates to clients who chose to receive their interest payments in CEL.[150]

Because these tokens are issued and controlled by the platform itself, there exists a clear incentive and capacity for platforms to artificially drive demand by offering favourable terms and managing token supply.[151] Through this dual control and potential for market manipulation,[152] platforms are able to offer inflated yields to lenders while misleading investors

142 Adam J Levitin, 'Not Your Keys, Not Your Coins' (2023) 101 Texas Law Review 877, 901.
143 FCA (n 19) para 4.8.
144 Federal Deposit Insurance Corporation and Board of Governors of the Federal Reserve System 'Joint Letter Regarding Potential Violations of Section 18(a)(4) of the Federal Deposit Insurance Act' (2022), para 4. See also Avgouleas and Seretakis (n 40) 429; Patel and Rose (n 23) 5.
145 Gorton and Zhang (n 41) 299; Levine (n 4).
146 George Steer, 'Crypto Lenders Dial Up Risk with "Microfinance on Steroids"' (*Financial Times*, 27 July 2025) <https://www.ft.com/content/c531a2bc-d258-431b-855c-2a6aaf230661> accessed 31 July 2025.
147 Zeke Faux and Joe Light, 'Celsius's 18% Yields on Crypto Are Tempting—and Drawing Scrutiny' *Bloomberg* (27 January 2022) <https://www.bloomberg.com/news/articles/2022-01-27/celsius-s-18-yields-on-crypto-are-tempting-and-drawing-scrutiny> accessed 20 July 2025.
148 Marco Dell'Erba, 'Enhancing Disruption', *Technology in Financial Markets* (OUP 2024) 173 ("such as the scandal involving Bitfinex and its stablecoin, Tether...").
149 FCA (n 19) para 4.25.
150 Arthur E Wilmarth, 'We Must Protect Investors and Our Banking System from the Crypto Industry' (2023) 101 Washington University Law Review 235, 261.
151 ibid 262; FCA (n 19) paras 4.3, 4.25.
152 cf Dell'Erba, 'Enhancing Disruption' (n 149) 173.

into believing that the token's value reflects genuine market forces.[153] The inherent link between native tokens and platforms' internal ecosystems creates a feedback loop, where borrowers pledge tokens with low and highly volatile intrinsic value as collateral, increasing the risk of cascading failures in the event of a price collapse.[154]

(c) Operational risk

Operational risk, the risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events,[155] takes on slightly more unique dimensions within the cryptoeconomy due to the complexity of the underlying technological architecture.[156] Nonetheless, at its core, the risk fundamentally stems from fraud and theft risks—including the hacking of centralised entities, theft of users' private keys, fraudulent schemes, and scams—as well as cyber risks—such as hacking and phishing[157]—akin to the classic agency risks found in traditional finance.[158]

This is a particular concern for clients of lending and borrowing service providers due to the significant consequences involved. Clients are required to transfer both legal and beneficial ownership of their crypto-assets, whether they are being lent or used as collateral, to the service provider.[159] As a result, the client no longer retains *in rem* rights over the transferred crypto-assets but rather holds an *in personam* unsecured claim against the platform.[160] In the event of a failure from operational risk combined with a lack of adequate dispute resolution and recourse mechanisms,[161] these clients are treated as unsecured creditors, significantly increasing their legal risk in recovering funds.[162]

(d) Money laundering and terrorist financing risk

Although not a direct catalyst of the most recent crypto winter, money laundering and terrorist financing risk has long been identified as a significant concern within the cryptoeconomy. These concerns have been pronounced since the advent of DeFi which, particularly in its early stages, was characterised as a zone of near-complete legal and regulatory absence.[163]

The root of this risk lies in the fundamental technological architecture of DeFi. As previously noted in the context of DLT such as blockchain, ownership and transfers are recorded in a decentralised manner. However, the owners are not identified by name on the ledger but rather by an alphanumeric string representing their public address, commonly referred to as a crypto-asset wallet.[164] While these wallets are not anonymous, they offer a

153 FCA (n 19) para 4.26.
154 EBA and ESMA (n 2) para 198.
155 cf Basel Framework, Principle 25 BCP40.56 Footnote 69.
156 EBA and ESMA (n 2) para 54.
157 ibid para 192.
158 Arner and others (n 94) 105970-8; Georgios Dimitropoulos, 'Global Currencies and Domestic Regulation' in Philipp Hacker and others (eds), *Regulating Blockchain* (OUP 2019) 129.
159 FCA (n 19) para 4.8. See eg Celsius Terms (n 43).
160 Kokorin (n 33) 504–05.
161 EBA and ESMA (n 2) para 190.
162 FCA (n 19) para 4.8; Kokorin (n 33) 507.
163 Levine (n 4).
164 Dimitropoulos (n 159) 128.

pseudo-identity.[165] This pseudonymous nature of wallet addresses, particularly when combined with the absence of mandatory identity verification requirements,[166] raises concerns about the potential misuse of crypto lending and borrowing platforms for illicit purposes, including money laundering, tax evasion, and terrorist financing.[167]

IV. REGULATORY SOLUTIONS

Building on the risks identified in the previous chapter, this chapter seeks to propose regulatory solutions that address those risks while acknowledging the existing framework of MiCAR. Although the analysis focuses on MiCAR, it may be of broader relevance to other jurisdictions seeking to regulate centralised crypto lending and borrowing, as the proposed recommendations can also be applied beyond the EU context. The use of MiCAR's baseline principles allows this chapter to concentrate on the specific issue of crypto-asset lending and borrowing without the need to restate general regulatory provisions—such as definitions or the licensing and authorisation process—that apply across all CASPs. Each category is presented alongside an overview of the current MiCAR framework in the corresponding area.

A. ADDRESSING PRUDENTIAL RISKS

(i) Current MiCAR Landscape

Due to the scope of the listed crypto-asset services under MiCAR, CASPs are, for the most part, off-balance-sheet intermediaries akin to investment firms or fund managers.[168] As such, the prudential requirements under MiCAR are generally less focused on protecting against contractual obligations.[169]

The existing prudential requirements for CASPs under Title V are limited in scope and include detailed conditions that apply only to providers of specific services. Examples include liquidity thresholds and capital requirements. Liquidity thresholds are mandated only for CASPs operating as trading platforms.[170] While capital requirements apply to all CASPs, the minimum thresholds vary depending on the type of service provided,[171] ranging from EUR 50,000 (e.g. for providers of transfer services) to EUR 150,000 (e.g. for operators of trading platforms).[172]

(ii) Regulatory Recommendations

The primary objective of prudential regulation is to mitigate prudential risk by imposing rules on what entities can and cannot do, thereby protecting their balance sheets from

165 Arvind Narayanan and others, 'Bitcoin and Anonymity', *Bitcoin and Cryptocurrency Technologies* (Princeton University Press 2016) 139 ("You don't need to use your real name… but... anyone can look up all… transactions that involved a given address…").
166 EBA and ESMA (n 2) para 193 Box 5.
167 Avgouleas and Seretakis (n 40) 430.
168 Zetzsche and Woxholth (n 63) 112.
169 ibid.
170 MiCAR, Article 76(1)(f).
171 MiCAR, Article 67(1).
172 MiCAR, Annex IV.

excessive risk-taking and ultimately ensuring a strong balance sheet.[173] In traditional financial markets, a commonly suggested approach to regulating NBFIs is to extend the perimeter of prudential regulation to such entities.[174]

A similar approach may be adopted in the cryptoeconomy. From a supervisory perspective, regulation should be based on the economic function performed by the service rather than the underlying technology. Technology does not alter the fundamental rights and obligations involved in financial relationships.[175] Nonetheless, rather than extending existing rules, a separately inspired set of rules appears more appropriate, as the cryptoeconomy possesses its own unique characteristics.[176] In line with the FSB's recommendation for crypto-asset activities, the principle of "same activity, same risk, same regulation",[177] the following recommendations outline prudential regulatory measures appropriate for centralised crypto lending and borrowing.

(a) Liquidity requirement

A regulatory framework requiring centralised crypto lending and borrowing platforms to maintain sufficient liquidity to withstand a range of stress events should be implemented.[178] To achieve this, a platform must establish metrics to forecast its prospective cash inflows against its outflows as well as the liquidity value of its assets.[179] This requirement is critical, as demonstrated by the most recent crypto winter, where liquidity shortfalls were a significant contributing factor to the collapse of several platforms. The liquidity threshold should therefore be calibrated to reflect the liquidity risk profile specific to each platform.[180] In addition to maintaining sufficient liquid assets to fund ongoing business operations, platforms should also take into account a reasonable estimate of the liquid assets required to facilitate an orderly wind-down without causing material harm.[181]

Liquidity stress tests should be conducted, and their results should be used to adjust and enhance platforms' liquidity risk management strategies.[182] Platforms should be able to execute these strategies, as the basic liquid asset requirement typically captures only liabilities due within a short timeframe.[183] For instance, the recent UK FCA consultation paper suggests that platforms should assess their liquidity needs over a rolling 90-day period and consider funding needs over a forward-looking 12-month horizon.[184] These measures would help ensure that platforms maintain enough liquid assets to meet their obligations to users, thereby reducing potential runs.[185]

173 Zetzsche and Woxholth (n 46) 32.
174 See eg Mülbert (n 91) 398; Gorton and Zhang (n 41) 332–33.
175 Gorton and Zhang (n 41) 332; Avgouleas and Seretakis (n 40) 432; Elizabeth McCaul, 'Mind the Gap' (*European Central Bank*, 5 April 2023) <https://www.bankingsupervision.europa.eu/press/blog/2023/html/ssm.blog230405~03fd3d664f.en.html> accessed 20 July 2025.
176 Kokorin (n 33) 522 ("similarities do not per se justify an extension... Yet… the present-day regulation of financial intermediaries… inspiration for… the regulation of crypto lenders".).
177 FSB (n 25) 3.
178 cf Basel Framework, Principle 24 BCP40.55(3).
179 cf BCBS 'Principles for Sound Liquidity Risk Management and Supervision' (2008) principle 5 para 26.
180 cf Basel Framework, Principle 24 BCP40.55(1).
181 FCA 'A Prudential Regime for Cryptoasset Firms' CP25/42 (December 2025), para 4.53.
182 cf Basel Framework, Principle 24 BCP40.55(7).
183 FCA 'A Prudential Regime for Cryptoasset Firms' CP25/15 (May 2025), para 5.9.
184 FCA (n 182) paras 4.58–4.59.
185 Avgouleas and Seretakis (n 40) 433.

(b) Own funds requirements

A key prudential safeguard for lending and borrowing activities is the establishment of appropriate own funds requirements, intended to ensure that capital is permanently available to absorb losses on a going concern basis, thereby enhancing the resilience of the platform.[186] In practice, this includes requirements relating to capital adequacy, minimum capital levels, and leverage ratios.

MiCAR already lays the groundwork regarding the form of such capital: it must consist of high-quality own funds aligned with the Capital Requirements Regulation's Common Equity Tier 1 definitions[187] and/or a compliant insurance policy.[188] However, as noted, the amount of capital currently required under MiCAR depends on the type of crypto-asset service offered.[189] Since lending and borrowing are not yet included among regulated activities, the existing permanent minimum requirements designed for largely off-balance-sheet intermediaries are significantly low, with the highest threshold set at EUR 150,000. This threshold is arguably inappropriate for on-balance-sheet businesses[190] like crypto lending and borrowing platforms, as these firms carry intermediation risks directly on their balance sheets. The FCA consultation paper, for example, proposes that firms dealing as principals, including those offering lending and borrowing products,[191] should operate with a permanent minimum level of own funds of GBP 750,000 (around EUR 860,000) at all times.[192]

There should also be a capital requirement that is risk-weighted to reflect the capacity to absorb potential losses. Without risk sensitivity, firms would be incentivised to engage in riskier lending, as they would not be required to hold proportionately more capital for riskier exposures. By recognising risk differentials, the framework would promote more prudent lending.[193] As illustrated by the case of Celsius and Voyager, unsecured loans, being inherently riskier, would attract a higher capital charge under a properly calibrated risk-weighting methodology.[194] In addition, risk factors could take into account counterparty type. Taking the FCA consultation paper as an example, it proposes a risk factor of 83.33% for retail clients, but only 1.6% for central governments, public sector entities, and other compliant firms.[195] By addressing potential balance sheet deficits, such a mitigant would contribute to financial stability and reduce the likelihood of bankruptcy.[196]

Given that the valuation of crypto-assets is characterised by high volatility,[197] one potential concern is the prudential compliance risk arising from fluctuating thresholds.[198] In

186 cf Basel Framework, Principle 16 BCP40.37(1); John Armour and others, 'Capital Regulation', *Principles of Financial Regulation* (OUP 2016) 290–91.
187 Regulation (EU) No 575/2013 [2013] of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 OJ L176 (CRR), Articles 26–30.
188 MiCAR, Article 67(4).
189 MiCAR, Article 67(1) and Annex IV.
190 Zetzsche and Woxholth (n 63) 122.
191 FCA (n 182) para 2.1.
192 ibid para 3.4 table 3.
193 Alexander (n 97) 337; Armour and others, 'Capital Regulation' (n 187) 299; Phillips and Bruckner (n 28) 238.
194 cf Armour and others, 'Capital Regulation' (n 187) 300.
195 FCA (n 182) para 3.59.
196 Avgouleas and Seretakis (n 40) 432.
197 ibid 245.
198 cf Iris HY Chiu, 'Prudential Regulation Policy Responses to Financial Technological Innovations: The Future for Banks and Crypto-Finance?' in Marco Bodellini, Gabriella Gimigliano and Dalvinder Singh (eds), *Commercial Banking in Transition* (Springer International Publishing 2024) 64–65.

particular, the value of required capital may become insufficient following market devaluation. To address this issue, significant volatility adjustments should be introduced. For example, the FCA proposal applies a 0% adjustment to authorised qualifying stablecoins, while a 100% adjustment is applied to Category B crypto-assets,[199] namely those with low levels of market maturity, liquidity, and resilience.[200]

To supplement risk-based capital requirements, non-risk-based measures should also be introduced to constrain the build-up of leverage.[201] Risk-weighted requirements alone may not fully reflect portfolio risk.[202] A leverage ratio requirement, which measures the maximum potential loss that can be absorbed by equity, can serve as a backstop and stabilising complement. The leverage ratio, unlike risk-weighted assets, is unaffected by changes in the economic cycle. It functions as a hard limit on the total size of a firm's balance sheet relative to its equity, regardless of how safe those assets are perceived to be. Once a platform's total exposure reaches this cap, it is prohibited from extending new credit or acquiring further assets. This provides a vital backstop by neutralising the tendency for firms to underestimate the risk of their own portfolios to lower their capital requirements.[203] For reference, the leverage ratio for banks under Basel III, even when calculated on total assets relative to Tier 1 capital, is capped at 33-to-1.[204] Against this benchmark, the ratios of 19-to-1 for Celsius and 23-to-1 for Voyager, calculated solely on borrowed capital relative to equity, appear notably high.[205] This is particularly the case considering that these platforms operate without the host of additional prudential standards[206] and safety nets available to banks, such as deposit insurance or access to a lender of last resort.[207]

(c) Large exposure limits

The experience of the most recent crypto winter, particularly the case of Three Arrows Capital, highlights the urgent need for prudential limits on credit, market, and other risk exposures to single counterparties or groups of connected counterparties.[208] These large exposure limits should take into account sectoral, geographical, and currency concentrations, with acceptable levels aligned to the service provider's risk profile and capital strength.[209] For example, Voyager's exposure to Three Arrows Capital amounted to 58% of its total loan obligations, a level that clearly exceeded any reasonable concentration threshold.[210] For reference, under the Basel standards applicable to non-global systemically important banks, the aggregate exposure must not exceed 25% of Tier 1 capital at all times.[211]

199 FCA (n 182) para 3.61.
200 ibid para 3.48.
201 cf Basel Framework, Principle 16 BCP40.37(7)
202 Alexander (n 97) 336.
203 cf Basel Framework, LEV20.1; ibid 352–53; Kokorin (n 33) 515. Also cf Gorton and Zhang (n 41) 326.
204 Basel Framework, LEV20.7.
205 Levine (n 4).
206 Phillips and Bruckner (n 28) 244.
207 This exclusion is arguably justified as extending safety nets could heighten moral hazard. See Avgouleas and Seretakis (n 40) 432–33. Moreover, see also Jackson (n 55) 380 ("taking deposits from the public… would have required a banking license...").
208 cf Basel Framework, Principle 19 BCP40.43.
209 cf ibid BCP40.44(3)(4).
210 Kokorin (n 33) 515.
211 Basel Framework, LEX20.1. See also Alexander (n 97) 352 Footnote 46.

In contrast to the risk-weighted capital requirements discussed earlier, large exposure limits should be calculated based on the maximum possible loss resulting from a counterparty's default, including all claims and transactions,[212] actual and potential exposures, as well as contingent liabilities. This ensures the provider's true exposure to concentration risk is accurately reflected.[213]

(d) Credit risk management

While different channels deploy different risk mitigants, with banks generally possessing more developed credit assessment mechanisms, NBFIs in traditional markets still rely on alternative mechanisms and mitigants.[214] For instance, traditional finance companies are heavily dependent on collateral[215] and are less likely than banks to extend credit without it.[216]

Similarly, centralised crypto lending and borrowing platforms must adopt sound credit risk management frameworks to avoid repeating the mistakes seen in the Voyager and Celsius cases, where large unsecured loans were issued without proper assessments.[217] To establish a well-controlled credit risk environment, there should be clearly defined policies, procedures, and criteria for screening and monitoring credit risk. The screening process, when approving new exposures as well as renewals and refinancing, should involve a thorough understanding of the borrower's financial situation, risk profile, and repayment capacity.[218] Meanwhile, monitoring should include regular reassessments of the borrower's ability and willingness to meet their obligations, as well as oversight of contractual terms, collateral sufficiency and other credit risk mitigants.[219]

Nevertheless, from a forward-looking perspective, assuming a mature cryptoeconomy characterised by self-sustaining economic activity and endogenous growth, a potential concern is that overregulation may undermine financial accessibility. Excessive regulation may constrain the efficient functioning of the supply side of the economy.[220] Lessons can be drawn from the response of financial institutions following the 2007 financial crisis, where financiers and banks adopted a markedly more cautious approach to lending, often to the detriment of small and medium sized borrowers.[221] Credit was increasingly extended on a secured basis, frequently accompanied by higher interest rates reflecting perceived default risk, thereby raising the overall cost of borrowing.[222] This contraction in credit availability contributed, at least in part, to an economic slowdown in the UK and elsewhere.[223]

It is important to note, however, that such outcomes were not solely attributable to post-crisis regulatory frameworks, but rather to the preceding absence of adequate regulation, which facilitated irrational exuberance in the first place. The key implication, therefore, is the need to avoid regulatory overcorrection. Credit risk management frameworks that are overly

212 cf Basel Framework, Principle 19 BCP40.44(6).
213 cf ibid BCP40.44(2) Footnote 54.
214 Jackson (n 55) 407.
215 ibid 406.
216 ibid 381.
217 FSB and International Monetary Fund (IMF), 'Synthesis Paper: Policies for Crypto-Assets' (2023) Annex 2 Recommendation 5.
218 cf Basel Framework, Principle 17 BCP40.40(3)(b).
219 cf ibid BCP40.40(3)(c).
220 Mankiw and Taylor (n 129) 732.
221 Akseli (n 136) 9.
222 ibid 5.
223 ibid 9.

stringent may unduly restrict access to credit. Accordingly, regulatory approaches to screening and monitoring should promote prudent lending practices while ensuring that retail consumers and SMEs retain access to affordable credit within the cryptoeconomy.

B. ADDRESSING CONDUCT RISKS

(i) Current MiCAR Landscape

In contrast to the prudential aspect of regulation, conduct regulation under MiCAR receives greater emphasis, given its closer relevance to off-balance sheet intermediaries, which currently characterise the general state of CASPs.[224] While many have expressed satisfaction with the inclusion of strong governance principles, such as requirements for external audits,[225] MiCAR does not currently apply to non-CASPs offering only lending and borrowing services and, where it does apply, more targeted rules may still be needed. Such targeted rules are, in certain respects, consistent with regulatory approaches applied to high-risk investment products, in relation to the heightened risk profile of crypto-asset lending and borrowing services.[226]

(ii) Regulatory Recommendations

(a) Fiduciary duties

MiCAR establishes that CASPs must act as fiduciaries. Under Chapter 2 of Title V, all CASPs are required to act honestly, fairly, and professionally,[227] in accordance with the principle that the interests of clients take precedence unless clients have been fully informed and have explicitly consented to being treated otherwise.[228] This obligation includes providing clients with fair, clear, and not misleading information;[229] issuing warnings on associated risks;[230] and prominently disclosing policies on pricing, costs, and fees via their websites.[231]

Should lending and borrowing services be brought within the scope of regulated activities, these fiduciary obligations would similarly apply. However, given the complexity of crypto lending and borrowing as well as the nature of how such services have often been advertised, as evidenced during the latest crypto winter, more specific provisions could be introduced under Chapter 3 of Title V.

These provisions should include, first and foremost, the most fundamental regulatory tool for addressing information asymmetry: the disclosure requirement. Providers of lending and borrowing services should be obliged to disclose comprehensive, clear, and transparent information concerning their financial products.[232] Particularly in the case of retail clients, this information should be presented in a standardised key features document.[233] This document should highlight crucial details that are frequently ambiguous, as identified in the joint EBA-

[224] Zetzsche and Woxholth (n 63) 112.
[225] McCaul (n 176).
[226] FCA 'Regulating Cryptoasset Activities' CP25/40 (December 2025), paras 5.13 and 5.18.
[227] MiCAR, Article 66(1).
[228] Zetzsche, Sinnig and Nikolakopoulou (n 32) 217.
[229] MiCAR, Article 66(2).
[230] MiCAR, Article 66(3).
[231] MiCAR, Article 66(4).
[232] FSB and IMF (n 218) Annex 2 Recommendation 7.
[233] FCA (n 19) paras 4.19–4.22.

ESMA report,[234] including, for instance, fees, interest rates, product risks, loan term lengths, and the transfer of ownership of assets. Regulation should focus on standardising disclosure formats and ensuring the quality of such information.[235]

However, while disclosure remains a critical regulatory tool, it is not sufficient in isolation to address conduct risks. Its effectiveness relies on the "Efficient Markets Hypothesis", which presumes that markets are informationally efficient and self-correcting.[236] This assumption in turn depends on a sufficient number of rational actors within the market to counterbalance the irrational ones.[237] Yet, in reality, market participants often exhibit herd behaviour, imitating others rather than making individual, rational assessments based on available information.[238]

This problem is further compounded when key financial concepts, such as margin calls[239] and automatic collateral top-ups,[240] are difficult for retail customers to understand. Given the volatility of crypto-asset prices, which affects collateral value,[241] and the perception of over-collateralisation as capital-inefficient and unattractive,[242] margin calls to maintain the loan-to-value (LTV) ratio are more likely to occur.[243] If the consumer fails to meet a margin call, the provider may liquidate part or all of the collateral to restore the LTV ratio or automatically withdraw assets from the consumer's wallet.[244]

Therefore, in addition to disclosure, further safeguards are needed to ensure that consumers, particularly retail clients, understand and properly analyse the information provided. Appropriateness tests should be introduced to assess whether a client possesses sufficient knowledge and experience to understand the associated risks.[245] These tests should assess comprehension of key elements such as interest rates, fees, asset ownership implications, and mechanics including margin calls.[246] Platforms should be required to ensure that retail consumers complete these tests before entering into any contractual agreement for crypto-asset lending or borrowing.[247] Such tests are comparable to those applied to firms offering complex investment and insurance products, as reflected in the suitability and appropriateness assessments under the EU's Markets in Financial Instruments Directive[248] and the UK's Conduct of Business Sourcebook.[249]

234 See (n 128) (a)–(e).
235 Arner and others (n 94) 105970-11.
236 Mankiw and Taylor (n 129) 732.
237 ibid 733.
238 ibid.
239 Margin calls are requests by a platform for a borrower to restore the required collateral level when the value of pledged collateral falls and the LTV ratio exceeds a predetermined threshold. The borrower must typically either deposit additional collateral or repay part of the loan, otherwise the platform may liquidate the collateral.
240 Automatic collateral top-ups are mechanisms to automatically add additional collateral from a borrower's other platform wallets when the LTV ratio exceeds a predetermined threshold, reducing the likelihood of liquidation.
241 Dimitropoulos (n 159) 129; EBA and ESMA (n 2) para 191.
242 Levine (n 4).
243 FCA (n 19) para 4.8.
244 ibid.
245 cf Pan (n 76) 165; cf the potential applicability in the context of execution, placing, reception, and transmission of crypto-assets see MiCAR, Article 140(2)(p).
246 FCA (n 19) para 4.24.
247 FCA (n 227) para 5.24.
248 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on Markets in Financial Instruments and Amending Directive 2002/92/EC and Directive 2011/61/EU (Recast) [2014] L 173/350 (MiFID II), Article 25(3).
249 FCA 'Conduct of Business Sourcebook (COBS)' (2026), COBS 10 and COBS 10A.

In parallel, platforms should be required to obtain explicit consent from clients before entering into any crypto lending or borrowing arrangement.[250] Moreover, in the event of any significant amendments to contractual terms[251] or prior to the activation of automatic collateral top-ups,[252] further consent should be expressly obtained from the client.

(b) Conflicts management

Chapter 2 of Title V includes provisions requiring all CASPs to identify, prevent, manage, and disclose conflicts of interest.[253] Additionally, CASPs must disclose such conflicts, along with the steps taken to mitigate them, in a prominent location on their website.[254] According to MiCAR's Regulatory Technical Standards on Conflicts of Interest, conflicts potentially detrimental to clients include situations where a CASP:

> (a) is likely to make a financial gain, avoid a financial loss, or receive another benefit, at the expense of the client;
>
> (b) has an interest in the outcome of a crypto-asset service provided to the client... which is distinct from the client's interest in that outcome;[255] ...

If lending and borrowing platforms were to be classified as CASPs, the aforementioned standards would also apply to them. Specifically, in relation to the practice of incentivising consumers to buy and hold a platform's native tokens through favourable lending and borrowing terms, such conduct would constitute a conflict of interest under the aforementioned provisions and should therefore be prohibited.[256]

While the general provisions on conflicts of interest may be applied, the use of proprietary tokens in lending and borrowing services is, in itself, sufficient to generate undesirable conduct risks. Beyond the acute conflict of interest, concerns arise regarding price manipulation and self-reinforcing feedback loops. Given their control over the supply of such tokens, including the ability to mint or burn them, these platforms can readily manipulate the market.[257] Furthermore, the intrinsic value of a platform-native token is contingent upon the stability of the platform's own ecosystem. If native tokens are accepted as collateral, the value of the collateral backing the platform's loans, during a crisis, evaporates at the exact moment the platform requires that collateral to remain solvent.[258] Consequently, it would be appropriate to introduce dedicated provisions under Chapter 3 of Title V to prohibit the use of platform-native tokens in crypto lending and borrowing.[259] Indeed, a regulatory approach similar to the

250 FCA (n 19) para 4.23; see eg FCA Draft Handbook (December 2025) Cryptoasset Trading Platforms, Transparency And Records Instrument 202X (December 2025), Article 10.3.
251 FCA (n 19) para 4.23.
252 ibid para 4.18.
253 MiCAR, Article 72(1).
254 MiCAR, Article 72(2).
255 Commission Delegated Regulation (EU) 2025/1142 of 27 February 2025 supplementing Regulation (EU) 2023/1114 of the European Parliament and of the Council with regard to regulatory technical standards specifying the requirements for policies and procedures on conflicts of interest for crypto-asset service providers and the details and methodology for the content of disclosures on conflicts of interest [2025] OJ L 2025/1142, Article 3.
256 cf FCA (n 19) paras 4.25–4.26.
257 cf Dell'Erba, 'Enhancing Disruption' (n 149) 173.
258 EBA and ESMA (n 2) para 198.
259 FCA (n 227) para 5.31; FCA (n 19) para 4.27.

Volcker Rule,[260] which imposes restrictions by limiting the scope of activities a financial institution may undertake to reduce risky activities, could prove beneficial.[261]

Regarding such a ban, some may argue it could stifle innovation. However, it is important to emphasise that this restriction is limited to the use of proprietary tokens within lending and borrowing activities, rather than a blanket ban on native tokens altogether. In this narrow context of centralised lending and borrowing, these platforms are not introducing fundamentally new financial products or services, but are rather replicating traditional ones.[262] The recent downturn demonstrated that their business models were characterised more by regulatory arbitrage, excessive risk-taking, and weak corporate governance, than by true innovation.[263] Moreover, providing legal certainty through a clear, future-proof framework can attract serious developers and institutional investors, ultimately encouraging responsible innovation.[264]

(c) Corporate governance

Clear and sound governance frameworks are essential to prevent internal failures and mitigate losses resulting from external events.[265] In the context of the cryptoeconomy, a key distinction from traditional corporate governance lies in the emphasis on the technological expertise used for crypto-related activities.[266]

In this regard, MiCAR provides commendable coverage for all CASPs under Chapter 2 of Title V, supported by extensive guidelines issued by the EBA and ESMA. These include, for instance, fit and proper requirements applicable to executives and shareholders.[267] MiCAR also imposes fit and proper requirements on relevant personnel, mandating that individuals involved in the provision of crypto-asset services possess the necessary knowledge, skills, and expertise.[268] Moreover, MiCAR mandates stringent requirements for CASPs to ensure operational continuity and regularity, including the establishment of resilient and secure ICT systems and a business continuity policy adherent to the Digital Operational Resilience Act (DORA).[269]

In order for lending and borrowing platforms to be brought within the scope of these comprehensive governance requirements, it is necessary for such platforms to be classified as

260 The Volcker Rule, a regulatory measure introduced under the Dodd–Frank Act in the US following the 2007–08 financial crisis, was designed to limit banks' exposure to the risky activities of private funds. It, therefore, inter alia, prohibits proprietary trading.

261 cf on exchange platforms and ICO tokens see Dell'Erba (n 58) 352.

262 cf Hilary Allen, 'DeFi: Shadow Banking 2.0?' (2023) 64 William & Mary Law Review 919, 924–25.

263 ibid ("This approach will admittedly limit innovation in the DeFi ecosystem, but not all innovation is good innovation. If the risks of innovation outweigh any possible benefits it might deliver, then preventing that innovation is good public policy".); Avgouleas and Seretakis (n 40) 434.

264 Dirk Zetzsche and Jannik Woxholth (eds), 'Introduction' *The EU Law on Crypto-Assets: A Guide to European FinTech Regulation* (Cambridge University Press 2025) 8–10.

265 cf Basel Framework, Principle 25 BCP40.56 Footnote 69.

266 Zetzsche and Woxholth (n 63) 115; McCaul (n 176).

267 MiCAR, Article 68(1)–(4). See also EBA and ESMA Guidelines on the Suitability Assessment of Members of Management Body of Issuers of Asset-Referenced Tokens and of Crypto-Asset Service Providers, and Guidelines on the Suitability Assessment of Shareholders and Members, Whether Direct or Indirect, With Qualifying Holdings in Issuers of Asset-Referenced Tokens and in Crypto-Asset Service Providers' EBA/GL/2024/09 ESMA75-453128700-10 (2024).

268 MiCAR, Article 68(5).

269 MiCAR, Article 68(7)–(8). See also ESMA 'Draft Technical Standards specifying certain requirements of the MiCA — second package' ESMA75-453128700-1229 (2024).

CASPs under MiCAR, which could be achieved by including lending and borrowing among the list of regulated crypto-asset services.

(d) Anti-Money Laundering and Counter-Terrorism Financing (AML/CTF) obligations

Given the well-known association between crypto-assets and illicit value transfers,[270] MiCAR provides a comprehensive regulatory framework addressing various aspects of AML/CTF, covering both corporate governance and transactional dimensions.

Regarding the corporate governance aspect, in comparison to other EU law,[271] MiCAR extends its fit and proper test for executives and shareholders under Chapter 2 of Title V to place greater emphasis on AML/CTF measures[272] by requiring that they have not been convicted of offences relating to money laundering or terrorist financing.[273]

From a transactional dimension, all categories of CASPs are classified as obliged entities under AMLD.[274] As such, they are required to identify, assess, and manage money laundering and terrorism financing risks associated with their business activities in accordance with AMLD provisions.[275]

Accordingly, in line with other regulatory responses on the conduct side, it would be highly beneficial to include lending and borrowing platforms within the scope of CASPs, thereby subjecting them to these robust AML/CTF obligations. This inclusion would address the existing inconsistency whereby CASPs offering lending and borrowing as ancillary services are subject to AML/CTF rules, while non-CASPs offering only lending and borrowing services remain outside the scope of such obligations.[276]

V. Conclusion

Levine offers a cohesive characterisation of the crypto-assets financial system:

> In some ways it looks a lot like a copy of the traditional financial system. In other ways it looks totally different. In some ways it's a streamlined and modernized and innovative evolution of the traditional system. In other ways it's a chaotic and stupid devolution of the traditional system, a version of traditional finance that unlearned important historic lessons...[277]

270 Dimitropoulos (n 159) 128–29.

271 For MiCAR Article 86(1) cf CRD Article 91(1), MiFID Article 9(4), AIFMD Article 8(1)(c), and UCITSD Article 7(1)(b); for MiCAR Article 86(2) cf EMD Article 9(1)(b), MiFID Article 10(1), AIFMD Article 8(1)(d), and UCITSD Article 8(1).

272 Zetzsche and Woxholth (n 63) 114.

273 MiCAR, Article 68(1)–(2).

274 Directive (EU) 2024/1640 of the European Parliament and of the Council of 31 May 2024 on the mechanisms to be put in place by Member States for the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Directive (EU) 2019/1937, and amending and repealing Directive (EU) 2015/849 [2024] OJ 2024/1640 (AMLD), Article 3(2)(g).

275 EBA and ESMA (n 2) para 195 Box 6.

276 ibid.

277 Levine (n 4). See also Arner and others (n 94) 105970-2; Gorton and Zhang (n 41) 311; Avgouleas and Seretakis (n 40) 432; Dimitropoulos (n 159) 129.

This characterisation resonates particularly well when applied to crypto lending and borrowing service providers. As discussed in Chapter II, these centralised entities exhibit notable parallels with traditional NBFIs, including their roles in maturity, liquidity, and credit transformation. They also present familiar intermediation risks, as evidenced during the most recent crypto winter. In Chapter III, these risks were explored through both prudential and conduct lenses. The findings reveal that lending and borrowing platforms currently exist in a state of devolution, replicating the risk-laden behaviours of traditional finance without the associated oversight. The resulting downturn demonstrated that these entities are not immune to the classic failures traditionally associated with financial intermediation.

Returning to Lessig's four modalities of regulation,[278] although DeFi emphasises architectural or code-based control, largely resistant to the direct effects of the law,[279] the presence of centralised intermediaries paradoxically reintroduces a point of regulatory entry. These centralised service providers reintroduce institutional layers that legal regulation is well equipped to address. Thus, in the context of crypto lending and borrowing platforms, there remains a viable path to building regulatory guardrails around these entities. Chapter IV provided regulatory recommendations anchored in the existing principles of MiCAR. While the regulation currently lacks a prudential regulatory framework tailored to lending and borrowing activities—such as liquidity requirements, capital adequacy standards, large exposure limits, and credit risk management—it nonetheless offers a commendable conduct framework. This includes obligations around fiduciary duties, conflict of interest management, corporate governance, and AML/CTF. Still, further targeted conduct measures are warranted. These include the introduction of standardised key features documents, appropriateness tests, consent obligations, and restrictions on the use of platform-native tokens in lending and borrowing.

Following the catastrophic market downturn, several firms withdrew their products, leaving crypto lending and borrowing a relatively small segment of the overall crypto market.[280] Nevertheless, with Bitcoin reaching new highs and the current US administration adopting a generally more favourable stance towards crypto-assets, crypto lending and borrowing appear to be regaining traction.[281] Although DeFi was initially conceived as a radically novel financial paradigm, the emergence of intermediaries, particularly in the domain of lending and borrowing, undermines this premise by reintroducing classical financial intermediation risks. Regulatory tools honed over decades in traditional finance have proved effective in addressing such risks. Thus, if regulation is to be introduced for crypto lending and borrowing platforms, the most effective path forward lies in drawing inspiration from traditional financial regulation, adapted appropriately for the cryptoeconomy.

[278] Lessig (n 3) 124–25.
[279] Tasca and Piselli (n 1) 35.
[280] FCA (n 19) para 4.5; EBA and ESMA (n 2) paras 183–86.
[281] Steer (n 147).