The Prudential Implications for Banks and Investment Firms When They Hold or Trade Crypto-Assets

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Although the prudential treatment of crypto-assets in the banking book has recently begun to take shape after the BCBS' Crypto-Asset Standard, a specific framework for crypto-asset exposures of investment firms remains absent thus far. This article examines the current prudential implications for banks and investment firms holding or trading crypto-assets and explores solutions for addressing prudential requirements for both direct and indirect exposures to crypto-assets.

1. Introduction

On 18 July 2024, the Dutch Central Bank (*De Nederlandsche Bank*) published a news item highlighting two new regulatory developments relevant to banks regarding their crypto-asset exposures.[2] Firstly, the Capital Requirements Regulation 3[3] ("**CRR3**") introduced a transitional regime for banks' direct crypto-asset exposures entering into force on 1 January 2025. Secondly, the Basel Committee on Banking Supervision ("**BCBS**") released a revised version of the Basel crypto-standard on 17 July 2024 ("**Crypto-Asset Standard**").[4]

Additionally, on 3 June 2024, following a call for advice from the European Commission ("**Commission**"), the European Banking Authority ("**EBA**") and the European Securities and Markets Authority ("**ESMA**") published a discussion paper examining a potential review of the investment firms' prudential framework, including in respect of crypto-asset exposures. The Commission's request for advice on the future-proofing of the Investment Firm Regulation[5] ("**IFR**") and Investment Firm Directive[6] ("**IFD**") regime in respect of crypto-asset exposures signals that the market remains uncertain about the prudential treatment of crypto-assets.

Against this background, this article analyses the prudential implications for banks and investment firms when they hold or trade crypto-assets. We first provide a brief introduction of the regulatory framework of crypto-assets and clarify the distinction between the banking book and the trading book. Next, we explore the development of a regime for the prudential treatment of crypto-assets exposures of banks, with a specific emphasis on the Crypto-Asset Standard. We then examine the challenges surrounding the prudential treatment of crypto-asset exposures held by investment firms and conclude with potential solutions and recommendations to address regulatory gaps.

2. What is the Regulatory Framework?

2.1. Defining Crypto-Assets: A Brief Overview

The Markets in Crypto-Assets Regulation[7] ("**MiCAR**"), which applies from 30 December 2024, marks the EU's first major initiative to harmonise crypto-asset regulation. MiCAR defines a "crypto-asset" as a digital representation of a value or of a right that is able to be transferred and stored electronically using distributed ledger technology ("**DLT**") or similar technology.[8] MiCAR classifies crypto-assets into three types. The first type consists of "e-money tokens" ("**EMTs**"), being crypto-assets that aim to stabilise their value by referencing only one official currency.[9] The function of such crypto-assets is very similar to the function of electronic money as defined in EMD2[10]. Like electronic money, such crypto-assets are electronic surrogates for coins and

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2. DNB, *New rules for the crypto exposures of banks*, Press Release, 18 July 2024.
3. Regulation (EU) 2024/1623 of the European Parliament and of the Council of 31 May 2024 amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor.
4. BCBS, *SCO60 Cryptoasset exposures*, (2024). Where we refer to a SCO60 number, we refer to the provisions of this forthcoming, amended standard.
5. Regulation (EU) 2019/2033 of the European Parliament and of the Council of 27 November 2019 on the prudential requirements of investment firms.
6. Directive (EU) 2019/2034 of the European Parliament and of the Council of 27 November 2019 on the prudential supervision of investment firms.
7. Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets.
8. Article 3(1)(5) MiCAR.
9. Article 3(1)(7) MiCAR.
10. Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC.

banknotes and can be used for making payments (examples are USD Coin or EUR Coin).[11] The second type of crypto-assets concerns "asset-referenced tokens" ("**ARTs**"), which aim to stabilise their value by referencing another value or right, or combination thereof, including one or several currencies.[12] ARTs cover all other crypto-assets, other than EMTs, whose value are backed by assets. The third type of crypto-assets under MiCAR are crypto-assets other than ARTs and EMTs, and therefore covers a wide variety of crypto-assets, including utility tokens.[13]

Notably, some crypto-assets qualify as financial instruments as defined in MiFID II.[14] Those crypto-assets fall within the scope of MiFID II and outside the scope of MiCAR. For purposes of this article, where we refer to a "crypto-asset", we refer to a "crypto-asset" within the meaning of Article 3(1)(5) MiCAR.

2.2. Defining prudential treatment

Before delving into the prudential treatment of crypto-assets, we briefly set out some key concepts. Where we refer to "prudential treatment" we refer to the capitalisation of a bank's *exposures* by means of retaining a certain amount of *own funds*. In essence, banks are required to retain a portion of their own funds – composed primarily of equity and certain types of deeply subordinated debt – to cover the risks associated with their exposures. For example, when a bank issues a loan, it must hold a minimum of 8% (the "BIS-ratio") of the risk weighted value ("**RWA**") of that loan amount as own funds.[15] This capital functions as a buffer, designed to absorb unexpected losses.

In the so-called Standardised Approach for credit risk, the RWA is calculated for each exposure by applying a predetermined risk weight, reflecting the exposure's risk level. For example, a Dutch or other EU Member State government bond – considered a very safe asset – has a 0% risk weight, meaning the RWA of holding such bond is 0.[16] Conversely, an exposure to an unrated corporate, e.g., a loan, attracts a risk weight of up to 100%, reflecting the higher risk it attracts.[17]

2.3. Trading book vs. banking book

Two further essential concepts that relate to prudential treatment are the *trading book* and the *banking book*. The trading book encompasses positions in financial instruments and commodities held by an institution either with trading intent, or to hedge positions held with trading intent.[18] Positions not meeting these criteria must be included in the institution's banking book. Institutions have some margin of appreciation in categorizing exposures as either trading or banking book,[19] though this can sometimes lead to regulatory arbitrage, where institutions may assign positions to the book with more favorable capital requirements.[20]

CRR3 introduces changes, based on standards developed by the BCBS,[21] aimed at reducing regulatory arbitrage by providing a clearer delineation between a bank's trading and banking book.[22] CRR3 includes lists of assets that should, based on the circumstances under which they were obtained, principally be assigned to the trading or banking book.[23] In derogation of these lists, the CRR3 includes a provision allowing banks to assign, subject to supervisory approval, certain instruments to the other book than the CRR3 prescribes, provided that the bank can substantiate such deviation to the supervisory authorities' satisfaction.[24] Crypto-assets take a special position in this regard, as we will discuss further below.[25] Unlike banking book positions, trading book positions are not subject to a risk weight but directly attract a capital requirement for market risk. As such,

11. Recital (18) MiCAR.
12. Article 3(1)(6) MiCAR.
13. Article 3(1)(9) MiCAR; Though specifically excluding Central Bank Digital Currencies (CBDCs), which are out of the scope of this article, MiCAR and the Crypto-Asset Standard.
14. Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments.
15. Codified in the EU in art. 92(1)(c) CRR.
16. Art. 114(4) CRR.
17. Art. 122 CRR3; We note, however, that a risk weight of 100% does not mean that the bank has to hold 100% of the loan as own funds. Say the loan concerns EUR 1 million and attracts a 100% risk weight, the RWA are EUR 1 million. This must be multiplied by the applicable capital requirement, or buffer rate, floored at the 8% BIS-ratio, giving a capital requirement of EUR 100.000.
18. Art. 4(1)(86) CRR. In this context, "positions held with trading intent" include (a) proprietary positions and positions arising from client servicing and market making, (b) positions intended to be resold short term, or (c) positions intended to benefit from actual or expected short term price differences between buying and selling prices or from other price or interest rate variations.
19. Art. 104 CRR.
20. Recital (9) CRR3.
21. Recital (38) CRR3; As developed as part of the *Fundamental Review of the Trading Book* by the BCBS in two consultations in 2013 and 2014 and as later finalised in 2016.
22. Although the EBA and ESMA currently explore whether this revised delineation of the trading book should also be incorporated in the IFR, we believe that the regulatory arbitrage prevented by CRR3 may not directly be relevant to investment firms. Investment firms (dealing on own account) typically only have trading book positions or have limited positions in the banking book..
23. See art. 104 CRR3.
24. Art. 104(4) and (5) CRR3.
25. Principally, under the Crypto-Assets Standard (SCO60.23) crypto-assets are allocated using the revised delineation, subject to the following specifications and exceptions: (i) Group 1a must be assigned based on the application of the boundary criteria to their non-tokenised equivalents; (ii) Group 1b must be assigned based on the application of the boundary criteria to the reference asset(s); (iii) Group 2a must be treated according to the proposed market risk rules, independent of whether they stem from trading or banking book instruments; and (iv) Group 2b must be treated according to the standardised conservative prudential treatment (i.e. a risk weight of 1250%), see paragraph 3.4.

one generally refers to a *risk charge* instead of RWA where it concerns market risk.[26]

2.4. Pillar 1 and Pillar 2

Positions in the trading book and banking book are first and foremost subject to the capital requirements specified in the CRR and the IFR, known as the Pillar 1 requirements.[27] However, if specific risks are not fully captured by these requirements – such the absence of Pillar 1 requirements on banking book exposures under the IFR – banks and investment firms are expected to conduct their own risk estimates through an internal capital adequacy assessment procedure, known as ICAAP[28] or ICARAP[29]. The supervisory authority reviews these adequacy assessments,[30] and, if necessary, adjusts them with additional capital requirements (capital add-ons), that must be retained on top of the Pillar 1 requirements. This process is referred to as the Pillar 2 framework.[31]

2.5. What are the (prudential) risks related to crypto-assets?

A fair question at this point would be: why do crypto-assets have to be covered by a prudential regime? Perhaps a better question would even be: why do crypto-assets have to be covered by a *new* prudential regime? A first answer to this question can be found in the Recitals of CRR3, which also underlies the development of MiCAR. The existing (financial) regulatory framework is an uncomfortable fit to crypto-assets, as their use of DLT and cryptographic nature makes them difficult to classify as a traditional asset.[32] As such, instead of trying to fit crypto-assets within existing frameworks and definitions, the regulatory paradigm has (ultimately) settled on a preference to develop new regulation, as evidenced in the EU by MiCAR.[33] However, this only partly answers the question as to why a *new* prudential framework has been developed, instead of merely expanding the old framework.

A second answer therefore focusses on the financial risk profile of crypto-assets.[34] Compared to the average traditional financial asset, crypto-assets exhibit a considerable degree of volatility.[35] Moreover, crypto-assets are considered an immature asset class, with the necessary degree of expected future volatility.[36] Furthermore, the available historic data on crypto-asset markets, and stressed periods in those markets, is comparatively limited to traditional markets.[37] Together, this high volatility, the fundamentally novel nature of crypto-assets' technology, their frequent lack of inherent value and related uncertainties provide for an own distinct (high) risk profile of crypto-assets.

Prudential frameworks are ultimately codified eco-

26. For instance, under the simplified standardised approach, equity positions in the trading book are awarded a 8% risk charge on the gross position, art. 342 CRR, and a 8% risk charge on the net position, art. 343 CRR. Though this is set to increase with factor 3.5 pursuant to art. 325(2)(a)(ii) CRR3.
27. In short, Pillar 1 sets out minimum capital requirements that banks and investment firms must hold against different types of risks (e.g., credit risk, market risk, operational risk). Pillar 2 goes beyond the minimum requirements of Pillar 1 and introduces capital requirements following a supervisory review process. Pillar 2 capital requirements generally vary between institutions based on their risk profiles, and supervisors have discretion in determining if a firm should hold additional capital beyond Pillar 1.
28. Internal Capital Adequacy Assessment Process (ICAAP), as in used under CRD IV.
29. Internal Capital Adequacy Assessment Process and Internal Risk Assessment Process (ICARAP), as in used under the IFD.
30. Known as the Supervisory Review and Evaluation Procedure, or SREP. See for banks EBA, *Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP) and supervisory stress testing under Directive 2013/36/EU*, (2022); and for significant institutions further clarification in ECB, *SSM Supervisory Manual*, (2024), par. 4.5; and for investment firms EBA and ESMA, *Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP) under Directive (EU) 2019/2034*, (2022).
31. See SCO60.126 *et seq.* for the specific requirements banks are expected to observe in respect of crypto-assets in their Pillar 2 assessments, amongst which the requirement that: '*[…] banks must conduct ex-ante a prudent assessment of any cryptoasset exposures they intend to take on and verify the adequateness of existing processes and procedures.*' A third Pillar 3 is formed by mandatory disclosures banks and investment firms have to make, which are out of the scope of this paper. Nevertheless, we mention that the BCBS has also developed a Pillar 3 disclosure crypto-assets standard: BCBS, *Disclosure of cryptoasset exposures*, (2024).
32. See, for instance, for a discussion on the delineation of crypto-assets and financial instruments: M. Lehmann and F. Schinerl, *The Concept of Financial Instruments: Drawing the Borderline between MiFID and MiCAR*, 19 Capital Markets law Journal (2024), p. 330-351.
33. See, for instance Recital (4) and (5) MiCAR.
34. Where we focus on financial risks, this notwithstanding other substantial risks such as those related to AML/CTF infringements. Though we note that these may also be risk drivers of financial risk in their turn; see, for instance, FATF, *Virtual Currencies Key Definitions and Potential AML/CFT Risks*, (2014).
35. L. Hermans et al., *Decrypting financial stability risks in crypto-asset markets*, ECB Financial Stability Review (May 2022), p. 114-115; Though some authors also argue that although the volatility is extreme, this may also just be the manifestation of start-up risk similar to traditional businesses. It is argued that is only because crypto-assets are traded from day-one that we see this extreme volatility, whereas a start-ups shares will not quickly be traded on any market; O. Malekan, *What Skeptics Get Wrong About Crypto's Volatility*, Harvard Business Review (2022) (hbr.org/2022/07/what-skeptics-get-wrong-about-cryptos-volatility).
36. Something that also appears to play a role is the, perhaps reckless, behaviour of market participants; A. Brini and J. Lenz, *A comparison of cryptocurrency volatility-benchmarking new and mature asset classes*, 10 Financial Innovation 122, (2024), p. 2-3; L. Hermans et al., *Decrypting financial stability risks in crypto-asset markets*, ECB Financial Stability Review (May 2022), p. 113-123.
37. BCBS, *Discussion Paper: Designing a prudential treatment for crypto-assets*, (2019), p. 9.

nomic models in the sense that they contain rules that are based on certain economic dogmas which are then translated into *capital ratios*, *risk weights* and *capital charges*. They seek to express the measure of risk that an asset presents for its (regulated) holder and consequently require that holder to retain a certain amount of robust capital, *own funds*, to absorb losses on those assets in the event that their risk materialises and the holder incurs a loss. For example, fixed income instruments have a prudential (market risk) treatment that is predominantly tapered to interest rate risks whereas equities have a (market risk) framework centred around market price deviations. Now, when a new asset class appears that has fundamentally different economic characteristics than existing asset classes, and moreover, a high degree of unpredictability as to how it will develop, we understand the need to develop a new prudential treatment with its own, properly fitting economic parameters.

3. Prudential Treatment of Crypto-Assets in the Banking Book

3.1. Introduction to the Crypto-Asset Standard

To date, there is no comprehensive Pillar 1 prudential framework for crypto-assets in the EU, leading market participants to either rely on unregulated non-consolidated entities to stay outside the regulated arena[38] or to rely on Pillar 2 requirements for their crypto-asset exposures.[39] However, regulatory clarity is on the horizon, since CRR3 will introduce a temporary regime on 1 January 2025, and the BCBS has developed a comprehensive prudential standard, which is set to take effect on 1 January 2026.

Banking regulation, due to its cross-border nature, has for decades been a topic for discussions on a global level. The BCBS, known for its Basel accord and standards, has led efforts to standardize banking rules globally, with a renewed impetus following the 2008 financial crisis. Against this background, it is not unsurprising that the BCBS has been heavily involved in the development of a (global) prudential standard for crypto-assets: the Crypto-Asset Standard, which was finalised in December 2022[40] with revisions through July 2024.[41] The Crypto-Asset Standard is the result of a lengthy drafting process, with the first concept already published in December 2019[42], and followed by several consultation papers,[43] exemplifying the attempts by the BCBS to get a grip on the rapid developments in the crypto-asset markets over the period of 2019-2024.[44]

3.2. Principles underlying the Crypto-Asset Standard

In 2019, the BCBS established three key principles to guide the prudential treatment of crypto-assets. These principles, largely unaltered since then, aim to ensure a balanced regulatory framework that addresses crypto-assets' unique nature and risks.

The first principle, **simplicity**, reflects the BCBS' recognition of the crypto market's limited maturity (at least at the time). The framework was designed to avoid complex internal models for calculating pru-

38. Something that is made possible by the ambiguity of the authorisation requirement for dealing on own account in crypto-assets under MiCAR. This question, an issue that needs addressing entirely of its own, has been put to the European Commission/ESMA in a formal Q&A on 30 September 2024. See also J.J.F. van der Meer and S.W. van de Ven, *De implicaties van MiCAR op handelaren voor eigen rekening*, 6 Tijdschrift voor Financieel Recht, (2024), p. 78-84.
39. For instance, in the UK the Prudential Regulation Authority issued a letter in 2022 stating the following: *'We would expect firms to take into account and reflect the extreme volatility and/or limited price history of these assets in determining an appropriate capital requirement. For the vast majority of cryptoassets, particularly unbacked crypto, this suggests an appropriate capital requirement of 100% of the current value of the firm's position.'* PRA, *Letter from Sam Woods: 'Existing or planned exposure to cryptoassets'*, (2022), p. 4.
40. BCBS, *Prudential treatment of crypto-asset exposures*, (2022).
41. BCBS, *Cryptoasset standard amendments*, (2024); The implementation date was revised in May 2024, BCBS, *Governors and Heads of Supervision reiterate commitment to Basel III implementation and provide update on cryptoasset standard*, Press Release 13 May 2024; Although the Crypto-Asset Standard is set to enter into force on 1 January 2026, the BCBS standards are non-binding rules, meaning that the BCBS members are (only) expected to implement these in their jurisdictions. In the EU, BCBS standards have predominantly been implemented in the CRR and CRD IV.
42. BCBS, *Discussion Paper: Designing a prudential treatment for crypto-assets*, (2019); Building on the earlier BCBS, *Statement on crypto-assets*, (2019): *'The bank should have a clear and robust risk management framework that is appropriate for the risks of its crypto-asset exposures and related services. Given the anonymity and limited regulatory oversight of many crypto-assets, a bank's risk management framework for crypto-assets should be fully integrated into the overall risk management processes, including those related to anti-money laundering and combating the financing of terrorism and the evasion of sanctions, and heightened fraud monitoring. Given the risk associated with such exposures and services, banks are expected to implement risk management processes that are consistent with the high degree of risk of crypto-assets. Its relevant senior management functions are expected to be involved in overseeing the risk assessment framework. Board and senior management should be provided with timely and relevant information related to the bank's crypto-asset risk profile.'*
43. BCBS, *Consultative Document: Prudential treatment of cryptoasset exposures*, (2021); BCBS, *Consultative Document: Second consultation on the prudential treatment of crypto-asset exposures*, (2022); BCBS, *Consultative Document: Cryptoasset standard amendments*, (2023).
44. BCBS (2022a), p. 1; This is also recognized by the BCBS when it referred to the maturity of such market, from 'relatively small though potentially of issue for financial stability' in 2019 to 'rapidly evolving and volatile' in 2022; P. Bains et al, *Regulating the Crypto Ecosystem: The case of unbacked crypto assets*, IMF Fintech Notes 7, (2022), p. 16: *'After reaching a market capitalization of $1 billion in 2010, the crypto asset market had grown to almost $3 trillion in 2021 before falling to around $1 trillion in mid-2022.'*

dential requirements, prioritizing a straightforward approach that could adapt as the market evolves.[45] The second principle, **same risks, same rules**, promotes parity between tokenized traditional assets and their conventional counterparts, subject to any specific risks inherent to the tokenized form.[46] However, as subsequent drafts show, this principle has not always been consistently applied.

The third principle, **minimum requirements**, permits BCBS member states to implement more stringent rules or restrict banks from holding crypto-assets. This flexibility allows such member states to tailor the framework according to local regulatory perspectives and market conditions.[47]

3.3. Grouping of the different crypto-assets

The Crypto-Asset Standard uses a grouping system to categorize crypto-assets by risk, acknowledging that although crypto-assets in general present novel risks, not all crypto-assets are equally risky. Therefore, crypto-assets are, based on their characteristics, classified into Group 1 or Group 2, with both groups divided into two (2) sub-groups (i.e., 1a, 1b, 2a and 2b).

Broadly, **Group 1 assets** are seen as comparatively safe, either due to their resemblance to traditional financial instruments (Group 1a, "security tokens") or due to their stabilisation mechanisms (Group 1b, "stablecoins"). **Group 2 assets** include more 'traditional' crypto-assets with higher volatility and risk and that do not meet those criteria, such as so-called *algorithmic* stablecoins or crypto-assets without an inherent value.[48] Group 2 assets, viewed as high-risk, are subject to stricter and novel prudential treatment,[49] though some assets may qualify for more favourable treatment if they meet specific hedging criteria.

To classify as Group 1 assets, crypto-assets must meet the following conditions on an ongoing basis:

Condition 1: A crypto-asset must either (i) be a tokenised traditional asset (i.e., Group 1a) or (ii) have a stabilisation mechanism that at all times effectively links its value to a (pool of) traditional asset(s) (i.e., Group 1b). Under (i), the tokenised asset must (a) be a digital representations of traditional assets and (b) award its holder the same level of legal rights as ownership of the traditional forms of the asset.[50] Consequently, this excludes crypto-assets that can be redeemed for traditional assets.[51] Crypto-assets meet condition (ii) where, in short, they qualify as stablecoins that (a) effectively and reliably keep the reference, or 'peg', value and (b) are backed by a stable and prudent reserve of assets[52] that always represents a higher market value than the aggregate peg value of related stablecoins issued (the *redemption risk test*).[53]

Condition 2: Rights, obligations and interests related to the crypto-asset must be clearly defined and legally enforceable across all issuance and redemption jurisdictions.[54] In other words, the legal documentation and related (redemption) rights must be properly recorded by the crypto-asset issuer, which presumably will be the case if the crypto-asset offering to the public was subject to prior regulatory approval.

Condition 3: The functions of the crypto-asset and the network on which it operates (including any underlying DLT), are designed and operated to sufficiently mitigate and manage any material risks. To meet this condition, the key operators in the network, such as issuers, operators of the settlement systems, administrators of the stabilisation mechanism and custodians, must have robust risk management and governance frameworks in place.

Condition 4: Entities involved in the redemption, storage, transfer, management or settlement of the

45. BCBS, *Designing a prudential treatment for cryptoassets*, (2019), p. 8; and BCBS, *Consultative Document: Prudential treatment of cryptoasset exposures*, (2021), p.2.
46. Idem.
47. Idem; For instance, the BCBS does not exclude the possibility for member states to fully prohibit the holding of any crypto-asset exposures at all.
48. SCO60.13 and Footnote 10 thereto; BCBS (2019), p. 11.
49. We refer to paragraph 2.5 for a high-level discussion of the different prudential risk profile of crypto-assets.
50. Interestingly, the BCBS considers that if such (sub-)conditions are met, that the tokenised traditional asset represents a similar market and credit risk as the traditional asset. This seems to conflict with, for example, the infrastructure risk add-on (see paragraph 3.4).
51. I.e., as these expose its holders to the additional counterparty credit risk of the redeemer, SCO60.29-30.
52. Consisting of high-quality liquid assets (HQLA), see art. 460(1) CRR and Commission Delegated Regulation (EU) 2015/61 of 10 October 2014 to supplement Regulation (EU) No 575/2013 of the European Parliament and the Council with regard to liquidity coverage requirement for Credit Institutions. The very specific requirements on the composition of the reserve of assets, and the related requirement for banks to perform due diligence in respect of this, was something further clarified in the December 2023 and July 2024 amendments. We deem it likely that the BCBS took inspiration in respect of these requirements from MiCAR, which was adopted on 31 May 2023.
53. Originally, the BCBS also included a quantitative basis risk test that looked at deviations between the market value of the stablecoin and the peg value, though ultimately this test was not implemented by the BCBS. However, arguably the basis risk test found its way through the 'backdoor' as the standard now requires the stablecoins to be issued by supervised entities, which (as in the EU) will probably require (over)collateralisation requirements that have the same effect. We note that although the redemption risk test will most of the time cover the basis risk test, it is not said that where the market value of the reserve of assets is higher than the outstanding aggregate peg value, that the market value of the stablecoin follows suit. For instance, market participants may price in other risks into the market price leading to the difference between the two values.
54. In addition, the applicable legal framework(s) must ensure settlement finality in both primary and secondary markets. Banks are required to conduct a legal review of the cryptoasset arrangement to ensure this condition is met, and make the review available to their supervisors upon request.

crypto-asset or its reserves must (i) be regulated and supervised, or subject to appropriate risk management standards and (ii) have in place and disclose a comprehensive governance framework. This requirement intends to crowd-out stablecoins issued outside of the regulatory perimeter.[55]

These conditions require banks to undertake extensive due diligence when becoming exposed to crypto-assets. While banks are themselves responsible for assessing compliance, supervisors may review decisions on a controlling basis.[56] The reliance on bank self-assessment has some practical implications. Each bank must individually evaluate each crypto-asset, with no assurance that their assessment will hold up under supervisory review.[57]

3.4. Capital Requirements for Crypto-Asset Exposures: Starting with the Most Stringent

Group 2b crypto-assets

The prudential treatment of crypto-assets under the Crypto-Asset Standard is structured to be conservative, especially for Group 2 assets, which face stringent capital requirements. Though these stringent requirements are arguably commensurate to their risk profile. For Group 2b assets, the BCBS applies a 1250% risk weight to all exposures – whether direct or indirect and regardless of whether they are included in the banking or trading book.[58] The 1250% is designed as an indiscriminate, full capitalisation requirement in an as simple as possible manner. This treatment applies uniformly to long and short positions, direct and indirect exposures (e.g., exchange traded funds ("**ETFs**") and derivatives in Group 2b assets) prohibiting netting across different positions in a given asset. This requirement effectively mandates full capital backing on a one-to-one basis, meaning that each euro invested in a Group 2b crypto-asset must be matched by at least one euro of own funds. For derivatives referencing Group 2 assets (e.g., a Bitcoin future), exposures must be calculated based on the underlying asset's market value (i.e., Bitcoin in case of a Bitcoin future) though such (derivative) exposure may be limited to the maximum possible loss. However, short positions in these derivatives may require additional capital under Pillar 2 due to the theoretical potential for unlimited loss of short positions, which may require capitalisation even going beyond the 1250% mark.[59] Effectively, therefore, positions in a Group 2b asset may very well cost a bank more in own funds than the position is accounted for on the balance sheet of that bank. Consequently, the holding of Group 2b assets will be very expensive for banks and we therefore deem it unlikely to happen on a large scale in the future.

Originally, the BCBS foresaw a single treatment for all Group 2 assets.[60] However, recognizing the broad and prohibitive impact, the BCBS introduced a distinction between Group 2a and Group 2b assets in the final standard. Group 2a assets can receive a more lenient treatment if they meet specific hedging criteria. By admitting the risk-reducing effect of such hedging, the BCBS seems to recognize to a certain extent, that crypto-assets behave economically similar to traditional assets.

Group 2a crypto-assets

The treatment of Group 2a assets is based on the market risk framework, specifically on an amended version of the standardised approach or the simplified standardized approach ("**SSA**").[61] For an asset to qualify as Group 2a, it must meet three hedging criteria. **Firstly**, the crypto-asset exposure must be one of the following:

a. a direct holding of a spot Group 2 crypto-asset where there exists a derivative or ETF/exchange traded note ("**ETN**") that solely references the crypto-asset and that is traded on a regulated exchange and, in the case of a derivative, is cleared through a qualifying central counterparty ("**QCCP**");
b. a derivative or ETF/ETN that references a Group 2 crypto-asset, where the derivative or ETF/ETN has been explicitly approved by a jurisdiction's markets regulators for trading or the derivative is cleared by a QCCP;

55. However, node validators are exempt from supervision if they meet suitable risk management standards, recognizing their unique role within crypto networks.
56. Although the BCBS initially proposed requiring prior supervisory approval, see BCBS (2021), p. 6-7, this was deemed overly burdensome and changed to the self-assessment procedure, BCBS (2022b), p. 3.
57. The creation of, for example, a centralized database of supervisory decisions could offer consistency but may also create reliance problems and consequent reluctance on behalf of the supervisor to take verification decisions. Overall, the complexity of the classification process, coupled with strict capital requirements, may deter banks from holding significant crypto-asset exposures, as perhaps may have been intended by the BCBS.
58. SCO60.83: *'There is no separate trading book and banking book treatment for Group 2b cryptoassets.'*
59. The market value of the derivative is principally irrelevant for this purpose. Only where the resulting exposure value would be larger than the maximum loss that could be incurred under the derivative contract, the maximum loss (i.e. the market value) may be used instead. For example, a call option on 1 Bitcoin with a strike price of EUR 69.000 whilst Bitcoin is trading at EUR 70.000 can have a (simplified) market value of EUR 1.000. If a bank purchases this (long) derivative for EUR 1.000 it must either take the market value of the underlying asset (Bitcoin) into account, i.e. EUR 1*70.000, or the maximum loss, i.e. the market value EUR 1.000. This latter is the maximum loss as the bank would maximally lose its EUR 1.000 investment if the market price of Bitcoin would drop below the strike price. After all, the bank will not exercise the option when it is out-of-the-money, nor will be under any obligation to do so, and thus would only lose the initial EUR 1.000.
60. See: BCBS (2022a), p.2 and 4-5.
61. Meaning that an internal model based approach may not be used in respect of Group 2a assets, whilst it is possible to (partly) treat Group 1 assets with internal models.

c. a derivative or ETF/ETN that references a derivative or ETF/ETN that meets criterion b) above; or
d. a derivative or ETF/ETN that references a crypto-asset related reference rate published by a regulated exchange that clears trades using this reference rate through a QCCP.

Secondly, the crypto-asset exposure must be highly liquid.[62] **Thirdly**, sufficient market data must be available over the previous year.[63] While spot Bitcoin/Ethereum or derivatives or ETFs/ETNs referencing Bitcoin/Ethereum might meet the criteria to qualify as a Group 2a crypto-asset, the proper statistically relevant availability of market maturity, depth and data for other crypto-assets remains uncertain. Further limiting the scope of Group 2a assets, in July 2024, the BCBS clarified that *only* derivatives cleared through a QCCP can qualify as Group 2a, excluding over-the-counter derivatives. This limitation will likely pose significant challenges for the crypto-asset markets, given that QCCPs have been reluctant in providing clearing services in respect of crypto-asset derivatives and that novel market infrastructures trading crypto-asset derivatives are not always based on a 'traditionally' cleared model, which consequently are usually not qualified as QCCPs.[64]

This means that under the SSA, a new asset class should be introduced, namely: crypto-assets. The inclusion of such a specific class with its own parameters and systemic, i.e., in addition to asset classes such as equity and fixed income, answers to the longstanding ambiguity of market participants trying to fit crypto-assets into the SSA-framework without a specific asset class dedicated thereto. The crypto-asset class will have similar features to that of commodities, the latter which up until now has been usually chosen as a proxy to capitalise crypto-asset exposures in the trading book. Banks are first required to express their positions in units of the crypto-asset itself (e.g., 10 Bitcoin), whereafter they must convert those units to the reporting currency at the spot rate (e.g., 10 times the market value of Bitcoin, say EUR 70.000, yielding EUR 700.000). Unlike commodities, crypto-asset positions cannot be fully offset across different markets; instead, banks must calculate a gross consolidated long position and short position *per market* or *exchange*. These gross consolidated long and short positions per market or exchange may then be netted against each other, though only with a 65% efficiency rate.[65] The reason behind the discounted netting is not explicitly provided but may stem from concerns such as market fragmentation and liquidity concerns[66] or concerns about exchange specific events.[67]

The final net position per crypto-asset is subject to a 100% capital requirement, contrasting with commodities, which receives a 15% capital requirement over the net position[68] under the most conservative treatment in the CRR.[69] Notably, the BCBS sets a scalar of 1 for the application of the capital requirements based on the SSA.[70] Consequently, while netting is allowed for Group 2a crypto-assets (albeit at a 65% efficiency), the BCBS requires full capitalisation of the net position, akin to the 1250% risk weight of Group 2b. Nevertheless, the full capitalisation only has to be done of the *residual* (net) position, not for the *full* (gross) aggregate position of the bank. As the differentiation between Group 2a and 2b does not derive from fundamentally different risk profiles, we can follow the BCBS' reasoning in this respect. Both classes carry the same intrinsic risk in the end, where Group 2a only seeks to express hedging benefits available.

62. Or more precisely, if the crypto-asset met both of the following requirements: (a) The average market capitalisation was at least USD10 billion over the previous year; and (b) the 10% trimmed mean of daily trading volume with major fiat currencies is at least USD 50 million over the previous year.
63. There are (a) at least 100 real price observations over the previous year; and (b) sufficient data on trading volumes and market capitalisation.
64. Moreover, where banks hold derivatives they are also required to calculate the applicable counterparty credit risk ("**CCR**"). Only the use of the standardised approach for CCR ("**SA-CCR**") is permitted for Group 2a crypto-assets, which takes into account a series of amendments to the calculation of replacement cost and the potential future exposure add-on, for the purposes of which a new risk class 'crypto-assets' is created, see SCO60.98 *et seq.*. Group 2b assets are subject to a further amended version of the SA-CCR, though with an even more conservative calibration.
65. For example, if a bank holds, in addition to a 10 long Bitcoin position, also a 5 Bitcoin short position on Exchange A and a mirrored position on Exchange B, i.e. 10 short and 5 long Bitcoin. The gross consolidated position per exchange is 5 long at Exchange A and 5 short at Exchange B. These gross consolidated long and short positions are only netted against each other, though only with a 65% efficiency rate. This results in (assuming a Bitcoin price of EUR 70,000) a net position of EUR 122.500 net position, instead of a expected EUR 0 net position (i.e., 50.000 times 5 minus 0.65% times 50.000 times 5).
66. I.e., will all exchanges be equally liquid, and the prices prevailing on such markets be equivalent in periods of stress?
67. As has been seen in multiple instances before, crypto-asset exchanges may quickly falter or be subject to rapidly altering regulatory regimes, for instance an outright ban on crypto-asset trading. Though, we consider this reason to be less important, as the BCBS already requires the trading of the Group 2a (referencing) assets on regulated exchanges, which should reduce the idiosyncratic risks per exchange or market. What does seem a possible expedient of this regime, however, is that a winner takes all model arises. If banks are incentivised to trade on a single market as hedging is most effective there, they will probably concentrate their trading in one location. This may lead to the creation of a systemic market infrastructure, and related CCP, and consequent financial stability concerns.
68. Plus 3% over the gross position.
69. Art. 357(3) and 360 CRR (the simplified approach).
70. For comparison, the SSA scalars for other asset classes introduced by art. 325(2) CRR3 as the transposition of the BCBS Fundamental review of the trading book, are: 1.3 for debt instruments; 3.5 for equity instruments; 1.2 for FX positions; and 1.9 for commodities.

Group 1 crypto-assets

Group 1 crypto-assets follow the established prudential framework, with exposures assigned to either the banking book or trading book, and are thus subject to the credit or market risk frameworks. For Group 1a assets, the prudential treatment follows the treatment of the non-tokenised version and for Group 1b assets it is the referenced asset that is to be followed. So far, the BCBS – thus – adheres to the principle of "same risk, same rules".[71]

Group 1b crypto-assets

However, Group 1b assets held in the trading book must apply portions of the credit risk framework *in addition to* market risk, especially if the asset is exposed to the default risk of a redeemer or intermediary.[72] In the banking book, banks must assess and capitalize credit risks associated with both the issuing and intermediary parties, and any identified credit risk must be treated as an unsecured loan.[73]

For example, consider a scenario in which a bank holds a crypto-asset pegged to the EUR, issued by "Party A," and redeemable only through that same Party A. In this case, the bank must recognize at least the default risk of Party A as the redeemer. Thus, the capital requirement for the bank's position in the crypto-asset would be equivalent to the requirement for an unsecured loan to Party A, based on the full redemption value.

If, however, the crypto-asset is redeemable only through "Party B," with Party A as the ultimate redeemer and no binding commitment from Party B, the bank would need to account for two risks: (i) the default risk of Party A and (ii) the default risk of Party B. This second risk remains relevant because, in the event that Party A defaults, Party B's incentive to redeem the asset may be significantly diminished.

On the other hand, if Party B (the intermediary) provides a firm commitment to redeem the crypto-asset, the default risk associated with Party A (the ultimate redeemer) would become less relevant. The complexity increases further if the Group 1b crypto-asset references an asset rather than a currency, as the bank would then need to consider the direct credit risk of the referenced asset itself. For instance, if a Group 1b asset is convertible in a corporate bond issued by a Company X, then the bank would have to assess the credit risk related to that bond in addition to the credit risk of the Group 1b asset itself. After all, if Company X defaults, the value of the crypto-asset also reduces to zero.

What could be a mitigating factor for credit risk is the holding of the reserve of assets that back a Group 1b asset in a bankruptcy remote manner, e.g. through a custodian.[74] In such instance, banks may forego capitalising the credit risk of the redeemer. However, this would only protect the holder of the Group 1b asset against the default risk of the redeemer where the Group 1b asset would be a direct claim on the reserve of assets. If this was not the case, a holder of a Group 1b asset would still be exposed to the risk of default of its redeemer. Under MiCAR, EMTs for instance only grant a claim right on the issuer, wherefore holdings of EMTs could not be eligible for the exception to retain capital for the default risk of the redeemer. ARTs grant their holders a principal claim on the issuer and, where the issuer cannot redeem the ART, a secondary claim on the reserve of assets.[75] It seems that ARTs would therefore meet the BCBS requirements for not having to calculate the credit risk of the ART issuer, though, arguably, the claim awarded to the ART holder on the reserve of assets is not completely *direct*.

In summary, assessing these risks requires a careful, case-by-case analysis that may demand significant resources from the bank. To aid in this process, it would be helpful if (in Europe) the EBA could establish clear guidelines on the relevant risks and scenarios involved, i.e., exploring various distribution models involving intermediaries, redeemers, single reference assets or pools of reference assets, bankruptcy remote structures and non-bankruptcy remote structures.

Group 1a crypto-assets

The prudential treatment for Group 1a assets aligns with the approach applied to their traditional counterparts. For instance, a tokenized bond in the ban-

71. One deviation from the core principles can be seen in the prudential methodologies that are available to banks for the calculation of the credit risk weighted assets: the standardised approach ("**SA**") and the internal model approach ("**IMA**"). The latter, the IMA, is a complex methodology that requires a substantial level of sophistication, which seems not to align with the principle of simplicity. Originally, the BCBS considered the IMA unfit for use *vis-à-vis* crypto-asset exposures for the same reason. In 2021, the BCBS recanted and permitted the IMA approach, though it implored supervisory authorities to exercise restrain in permitting the use of the IMA in respect of crypto-assets. In that sense, it may be the expedient of the "same risk, same rules" principle that allows the use of the IMA for Group 1 assets, as their equivalent (or referenced) assets may also be treated using the IMA. In any case, for Group 2 assets no model-based approach can be used whatsoever. Regardless, in this paper we limit ourselves to the SA for credit risk and the SSA for market risk.
72. Aside from any CCR risk. The CCR capital requirement for Group 1 assets may be calculated using the SA-CCR or the internal models method, and generally follows the traditional versions of those regimes.
73. Where a Group 1b asset is structured to provide the holder a proportional claim directly to the reserve of assets, which a MiCAR EMT or ART does not, and the reserve of assets is held in a bankruptcy remote manner, holders of such Group 1b assets would not have to calculate a credit risk of the redeemer (or intermediary), see SCO60.35.
74. SCO60.35, provided that the bank also has a legal opinion attesting that such reserve assets are bankruptcy remote. Both the reserve of assets of ARTs (art. 36(2) MiCAR) and EMTs (art. 54 MiCAR) have to be held in a bankruptcy remote manner.
75. Art. 39(1) MiCAR.

king book is treated as a regular bond.[76] This treatment stems from the classification criteria: because these assets grant the same legal rights and payment flows to holders, they exhibit a similar (credit) risk profile. As a result, banks may also offset (converted) trading book positions in Group 1a crypto-assets against their traditional counterparts under SSA market risk framework.[77]

Infrastructure add-on and Group 2 exposure limit

The BCBS also considered a fixed capital add-on to account for the uncertainties of DLT-based assets. Given that Group 2 crypto-assets are already fully capitalised, this *infrastructure add-on* would only apply to Group 1 assets. Various calibrations were discussed, with initial levels set at 2.5% of the exposure value.[78] However, it was decided that no fixed infrastructure add-on should be imposed yet, though authorities may introduce one if they identify infrastructure weaknesses warranting such a measure.[79]

Additionally, the BCBS introduced a combined exposure limit for Group 2 crypto-assets, set at 1% of a bank's Tier 1 capital.[80] This restricts banks from holding more than 1% of their Tier 1 own funds in total Group 2 crypto-asset exposure[81], which represents only a portion (currently on average around 17.5%)[82] of a bank's risk-weighted assets. If a bank's exposure to Group 2 assets surpasses this 1% threshold, it must apply the stricter Group 2b treatment to the excess exposure. Furthermore, if total exposure exceeds 2% of Tier 1 capital, all Group 2 asset exposures will be subject to the Group 2b risk weight of 1250%, with considerable cliff-effects as a consequence.[83]

4. CRR3: A Stopgap Solution

The forthcoming CRR3 rules on crypto-assets align closely with the initial temporary 2019 BCBS standards. However, the CRR3 regime, effective from 1 January 2025, is only an interim solution. It also reflects the BCBS discussions from around 2021, when the CRR3 proposal was first tabled, and thus does not implement the finalized BCBS standards, which were completed too late for inclusion in the EU's institutional negotiations.[84] Consequently, CRR3 mandates the Commission to propose a comprehensive legislative framework for crypto-assets by 30 June 2025, aligned with the Crypto-Asset Standard.[85] Until then, the interim regime will apply.

4.1. Interim regime

Article 501d CRR3 provides a simplified treatment of crypto-assets, with three categories instead of the four proposed by the Crypto-Asset Standard:

i. Tokenised traditional assets, including EMTs, but excluding traditional assets that reference crypto-assets in their turn (e.g., derivatives);
ii. ARTs; and
iii. other crypto-assets.

Tokenised traditional assets are treated as equivalent to the traditional assets they represent[86], adhering to the "same risk, same rules" principle without any additional prudential requirements. ARTs receive a flat 250% risk weight[87], while other crypto-assets are assigned a 1250% risk weight.[88] The EBA will develop technical standards specifying capital calculation methods for categories (ii) and (iii), which we expect to largely incorporate the Crypto-Asset Standard, as well as potentially forming part of the Commission's future legislative proposal.

Notably, the EBA has no mandate to clarify the treatment of group (i) crypto-assets, which includes EMTs. According to the Crypto-Asset Standard, EMTs fall under Group 1b, yet CRR3 provisionally

76. The underlying rationale is that, pursuant to the classification criteria, the assets award the same legal rights and payment flows to their holders, thus attracting a similar (credit) risk profile. Therefore, under the SSA market risk rules, banks may also net (converted) positions in Group 1a crypto-assets and the respective regular assets.
77. However, tokenized assets may differ in liquidity compared to their traditional counterparts. Thus, before using Group 1a assets as collateral, banks must ensure that liquidity requirements are adequately met. This DLT-based nature of Group 1a crypto-assets can introduce distinct liquidity challenges compared to the underlying instrument. For example, is the market for tokenized bonds as liquid as that for the corresponding traditional bonds?
78. BCBS (2022a), p. 4.
79. BCBS (2022b), p. 2.
80. First proposed in BCBS (2022a) and further developed in BCBS (2022b) and BCBS 2023.
81. Where the total exposure is calculated in the same manner as under the capital calculation for Group 2b assets, i.e. the larger of the absolute aggregate value of Group 2a + 2b longs or shorts. Derivatives are taken into account using the delta-equivalent methodology, see SCO60.119. Originally, the BCBS proposed an exposure limit with no ability to net or apply diversification benefits, which would have led to an even more restricting exposure limit, see BCBS (2022a), p. 6.
82. EBA, *Risk Dashboard Q2 2024*, (2024).
83. This approach explicitly aims to incorporate Group 2 assets into a modified large exposures framework that would otherwise not apply. Implicitly, it also seems to seek limiting banks' total exposure to Group 2 assets, especially if the assigned risk weights does not already provide a sufficiently deterring effect. Originally, the BCBS foresaw the cliff-effect of applying the 1250% risk weight to all positions if the 1% was transgressed, calculated on a gross basis, but this was considered excessively strict and changed to also acknowledge hedging, see BCBS (2022a), p. 6 and BCBS (2022b), p.3.
84. European Commission, Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor, (2021), p. 33: '*Since the BCBS only recently started exploring the question of whether a dedicated treatment should be developed for those assets, and if so, what should that treatment be, it was not possible to include specific measures on this topic in this proposal.*'
85. Art. 501d(1) CRR3.
86. Art. 501d(2)(a) CRR3.
87. Art. 501d(2)(b) CRR3.
88. Art. 501d(2)(c) CRR3.

classifies them as Group (i) assets (akin to Group 1a under the Crypto-Asset Standard). CRR3 defines tokenised traditional assets as *'a type of crypto-asset that represents a traditional asset, including an [EMT]'*.[89] This suggests that EMTs are treated according to the traditional assets they represent, raising questions regarding their classification: should EMTs in a CRR-context be treated as currency, e-money (i.e., a claim on the issuer), or as the reserve assets held by EMT issuers?

Recital (59) of CRR3 offers some insight, suggesting that during the transition, tokenized traditional assets (including EMTs) should be treated similarly to traditional assets, with ARTs (those referencing non-currency traditional assets under MiCAR) assigned a 250% risk weight. Since ARTs are given a risk weight without a "look-through" approach, it seems unlikely that EMTs should be treated through a look-through approach to the reserve assets. Furthermore, categorizing EMTs directly as currency would imply no capital requirement, conflicting with the rationale of Article 501d or Recital (59). Therefore, it seems more consistent to treat EMTs similarly to e-money exposures (i.e., as exposures to an institution or electronic money institution).[90] It is yet unclear whether EMTs could therefore under CRR3 also be used as collateral for credit risk mitigation purposes, contrary to the BCBS' exclusion of stablecoins as collateral.[91]

Additionally, CRR3's 250% risk weight for ARTs represents a notable deviation of the Crypto-Asset Standard. The BCBS' approach involves assessing whether a Group 1b asset is held in the banking or trading book and evaluating its credit risks, generally attracting risk weights of 20%-150% depending on the credit rating of the counterparties involved.[92] In contrast, CRR3 applies a flat 250% risk weight for ARTs, irrespective of credit risk or book classification, representing a conservative capital requirement. This 250% risk weight might cover both the credit exposure to the ART-issuer and an additional charge for market risk.

By following an earlier BCBS draft, CRR3 signals pre-alignment with the final Crypto-Asset Standard. However, we deem it possible that the EU's final regulatory approach for EMTs and ARTs under MiCAR may diverge from the BCBS regime. Such regulated stablecoins will presumably benefit from a more preferential treatment than the Group 1b asset regime of the BCBS, provided their issuers are properly authorised, including their eligibility as collateral, distinguishing MiCAR stablecoins from third-country stablecoins. Moreover, the specific regulatory framework of EMTs and ARTs under MiCAR could eventually render some of the BCBS classification conditions redundant, if the European legislature only allows ARTs and EMTs to qualify as Group 1b assets, or even non-tokenised Group 1a assets in the case of EMTs.[93]

5. Remaining challenges in the Prudential Treatment of Crypto-Assets

The implementation of the CRR3 regime will introduce a temporary prudential treatment for crypto-asset exposures in the EU, providing banks with a clear framework to follow. However, this does not eliminate all uncertainties, particularly for investment firms. In the EU, investment firms operate under a distinct prudential framework, the IFR and IFD, which, while based on and referencing CRR and CRD IV, is not identical. Generally, the IFR defines most Pillar I capital requirements for investment firms, either by directly adopting CRR methodologies or using simplified versions.

When investment firms hold trading book positions, they must apply one of the market risk methodologies under Article 22 IFR and Article 325 CRR, among which the SSA is commonly used. In the rare case of banking book positions, Pillar 1 credit risk requirements do not apply to investment firms, with such exposures currently addressed through the Pillar 2 framework. However, this structure poses challenges in view of the interim CRR3 crypto-asset regime, as there is no specific guidance for investment firms' crypto-asset exposures in the IFR. Moreover, the CRR's market risk provisions, as referenced by the IFR, do not address crypto-assets. Instead, Article 501d CRR3 defining the prudential treatment of crypto-assets (as discussed above) is not cross-referenced by the IFR, potentially leaving investment firms in the same uncertain position as be-

89. Though arguably, the inclusion in art. 5a(4)(b) CRR3 of funds in the sense of art. 4(25) PSD2, comprising *inter alia* E-money, in the CRR3 list of traditional assets could be construed to mean that EMTs would already qualify as tokenised traditional assets, arguably being a form of tokenised E-money. The EP originally proposed what is now art. 5a CRR3, where it explicitly mentioned e-money as being included in funds, see EP, *Provisional Agreement Resulting from Interinstitutional Negotiations*, (2023), p. 75. Ultimately, this specification was removed in favour of a reference to funds as defined in PSD2, further removing direct insinuations that EMTs are tokenised E-money.
90. Depending on whether the EMT or E-money is issued by a credit institution or an electronic money institution; Nevertheless, we note that EMTs should not be understood to (directly) represent 'funds' (specifically e-money). Rather, EMTs represent a similar claim on the EMT issuer as e-money awards its holder a claim on the e-money issuer.
91. See SCO60.39 and 60.94. Since CRR3 does not state anything specific on this, we believe two opposing arguments could be made. On the one hand, it could be argued that since EMTs are listed in the forms of eligible collateral in art. 197 or 198 CRR, they are not eligible as collateral. On the other hand, where an EMT would be seen as tokenised e-money issued by a bank, it may be argued that EMTs qualify as cash or cash assimilated instruments pursuant to art. 197(1)(a) CRR.
92. Art. 120, 121 and 122 CRR3.
93. We mention the regime included in SCO60.35 here, which could exempt banks from having to take into account the credit risk of the Group 1b asset redeemer where the crypto-assets entitle the holders to a direct claim on the reserve of assets, which are held by the redeemer on behalf of the holders in a bankruptcy remote entity.

fore CRR3's adoption. CRR3 could have amended the IFR so as to include a reference to art. 501d CRR3, applying the interim regime to firms, but it did not. As a result, legally there seems to be little ground for assuming the direct application of the CRR3 interim regime to investment firms.

In our view there are, therefore, three potential options for investment firms dealing on own account for managing crypto-asset exposures: (i) follow the CRR3 interim regime; (ii) follow the Crypto-Asset Standard, or (iii) continue with a best-estimate approach. In each case, capital requirements would fall under the Pillar 2 framework since no specific Pillar 1 requirement for crypto-assets will apply to investment firms after 1 January 2025.

5.1. Use the CRR3 interim regime

Option (i), applying the CRR3 regime, would result in high capital requirements as it covers both credit and market risk. Since investment firms typically do not capitalize credit risks, the applicability of this approach may be debatable. However, it would offer market clarity and provide prudent capital coverage against the risks associated with crypto-assets.

5.2. Applying the Crypto-Asset Standard

Option (ii), applying the Crypto-Asset Standard, would require investment firms to anticipate the implementation of the Crypto-Asset Standard in the EU. This approach offers more flexibility in recognizing hedging and netting benefits, which fits well in SSA-based market risk calculations. Notably, the Crypto-Asset Standard introduces a specific "crypto-asset" asset class in the SSA for Group 1b assets, which could be advantageous. Nevertheless, Group 2 assets, typically traded by investment firms, would still attract a high 100% capital charge, although Group 2a hedging rules could provide some relief due to netting. However, the BCBS Standard does not accommodate the EU-specific regulatory framework of MiCAR, leading to potential interpretation challenges and the risk of regulatory fragmentation or arbitrage.

5.3. A best-estimate approach

Option (iii), adopting a best-estimate approach, could draw upon the Crypto-Asset Standard, the CRR3 interim regime, and the existing regime. Some market participants currently apply the SSA market risk framework for commodities to their crypto-asset exposures. However, commodities are generally less volatile than crypto-assets, making this calibration potentially insufficiently conservative. Another common best-estimate applied is to apply full capitalization of crypto-asset exposures (i.e., a 1250% risk weight or 100% capital charge), though perhaps with recognition of hedging benefits.[94]

Alternatively, a suitable approach for investment firms might be to adopt a combination of the Group 1b altered SSA framework[95] and the Group 2a altered SSA framework with an amended capital charge[96] for the highly volatile Group 2 assets, shifting slightly away from the more conservative 'regular' Group 2 treatment.[97] Moreover, this amended SSA framework could copy the preferential treatment of ARTs[98] and EMTs from the CRR3 interim regime and should include an infrastructure add-on (where necessary).[99] While this could expose investment firms to greater risk, it could be argued that investment firms do not need to meet the same prudential standards as banks. Nevertheless, an exposure limit could mitigate excessive risk, potentially based on the BCBS limit but adapted for the IFR.[100]

6. Concluding Remarks

Crypto-assets, once a niche interest, have transformed into a multi trillion-dollar market, raising potential financial stability concerns. This rapid growth has spurred regulatory bodies and standard-setters to urgently address the prudential risks of crypto-asset exposures. While most advanced economies initially focused on market conduct rules, developing a prudential treatment for financial institutions' crypto-asset exposures took longer. In early 2019, the BCBS began designing a prudential framework, ultimately issuing a finalized standard in late 2022. This Crypto-Asset Standard requires banks to maintain substantial capital cushions to offset the inherent risks in crypto-asset hol-

94. For instance see PRA, *Letter from Sam Woods: 'Existing or planned exposure to cryptoassets'*, (2022), p. 5-6; which championed a similar best-estimate approach based on some elements of the commodities regime together with a 100% risk charge.
95. E.g., permitting the netting of Group 1a and 1b assets with their underlying (traditional) exposures, see SCO60.41; And applying the Group 2a assets counterparty credit risk regime, e.g. in the case of OTC derivatives, as set out in SCO60.98.
96. Of more than the 15% applied to (net) positions in commodities under the simplest approach (art. 360 CRR), possibly setting the capital charge at 50%+ as an expression of the (substantially) higher volatility of crypto-assets, but lower than the 100% set in SCO60.62.
97. For instance through an iteration of the basis risk test, where instead of the peg value, investment firms would assess whether the volatility of the crypto-assets in their trading book test the regulatory assumptions of the Group 1b asset parameters over a certain period of time, e.g. one year.
98. I.e., a 20% market risk charge (8% (the BIS-ratio)*250% Risk Weight = a 20% capital charge).
99. The concrete calibration of such a framework would preferably be supported by a quantitative assessment of appropriate sensitivities.
100. For instance lowering the 25% concentration limit of art. 37(1) IFR to somewhere between 5% and 10% for all Group 2 crypto-assets together (since they do not always have an issuer) and perhaps the regular 25% per Group 1 crypto-asset, where crypto-assets with, for instance, a 0.9 correlation factor or higher would be treated as one group.

dings. Although conservative, the final Crypto-Asset Standard is more aligned with existing prudential frameworks than earlier drafts. Nevertheless, it does not encourage banks to engage in crypto-asset activities, meaning Group 2 crypto-assets (such as Bitcoin and Ethereum) are unlikely to become a significant part of bank portfolios.

The Crypto-Asset Standard is set to enter into force on 1 January 2026. As a BCBS member, the EU, will propose legislation to implement this standard in June 2025, making its adoption in the EU likely by late 2026 at the earliest. Until then, the EU has introduced an interim regime based on the BCBS' preparatory work at the time of drafting the CRR3. This interim regime is conservative but acknowledges the EU's efforts in regulating stablecoins (i.e., EMTs and ARTs). When the European Commission presents its implementation proposal in June 2025, we expect it to follow the Crypto-Asset Standard while making necessary adjustments to align with the specifics of MiCAR. Furthermore, we recommend the European legislature to consider the new market infrastructures evolving in the EU, which may be unduly excluded from favorable treatment under the Crypto-Asset Standard.

While the interim framework provides more clarity for banks, investment firms are left in the same uncertain position as before. Consequently, incorporating crypto-asset exposures within the IFR's framework will be challenging. Investment firms are therefore in our view left with three options: adhere to the Crypto-Asset Standard, follow the CRR3 interim regime, or create a best-estimate solution. In any scenario, investment firms must actively engage with regulators to ensure that their chosen prudential approach aligns with supervisory expectations. This risk perpetuates the disseminated landscape in the EU, potentially leading to an unfair playing field. Moreover, due to the absence of a prudential regime under MiCAR, the threat of regulatory arbitrage by investment firms looms large.

To address these issues, there is a pressing need for an industry standard that incorporates elements from both the Crypto-Asset Standard and CRR3 interim regime. At a minimum, clarification from the EBA would help ensure consistency across jurisdictions and foster a level playing field for investment firms operating in the crypto-asset space.