

# “Virtual assets in non-bank financial institutions: A conceptual prudential compatibility index”

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# VIRTUAL ASSETS IN NON-BANK FINANCIAL INSTITUTIONS: A CONCEPTUAL PRUDENTIAL COMPATIBILITY INDEX

## Abstract

Virtual assets are integrated into financial markets, but legal recognition and tradability do not determine whether an instrument can support regulated liabilities in non-bank financial institutions (NBFIs). This theoretical study develops the Conceptual Prudential Compatibility Index (CPCI) as an ordinal framework for prudential screening. It combines peer-reviewed research with primary-source analysis of the European Union, the United States, and Ukraine, using a regulatory cut-off date of August 4, 2026. To avoid unsupported precision, the CPCI does not assign scalar scores. It separates a core economic-prudential profile – liquidity, value stability, and predictability/valuation reliability – from a non-compensatory regulatory overlay,  $R(a, j, s, u)$ , defined by instrument, jurisdiction, NBFI sector, and intended prudential use. Each dimension is classified through fixed documentary anchors as high, moderate, limited, very low, or insufficient evidence. Traditional reference archetypes show stronger core profiles than large-cap unbacked crypto-assets, with stress-sensitive liquidity and very low value stability and predictability. Fiat-backed stablecoins require separate assessment of redemption rights, reserve quality, and segregation. Tokenized securities and real-world claims require look-through assessment of the underlying asset and legal, custody, and operational risks. The regulatory comparison confirms that market regulation does not create reserve eligibility: MiCA is distinct from Solvency II and IORP rules; U.S. insurance accounting treats directly held crypto-assets as non-admitted under the cited NAIC guidance; and reviewed Ukrainian sectoral rules do not expressly identify virtual assets as eligible prudential assets. The CPCI is a documentary screening framework, not an externally validated quantitative risk model.

## Keywords

crypto-assets, prudential compatibility, insurance  
solvency, pension funds, reserve eligibility, regulatory  
admissibility, stablecoins, asset tokenization

## JEL Classification

G22, G23, G28, K23

## INTRODUCTION

Virtual assets have evolved from a specialized technological phenomenon into a material component of digital finance. Their use for investment, exchange, settlement and tokenization has increased interaction between digital-asset markets and conventional financial institutions. For NBFIs, however, market access is only one dimension of admissibility. Insurance companies and private pension funds must maintain liquidity, solvency and reliable support for long-term obligations, while leasing companies rely more directly on legally enforceable ownership, collateral, residual-value and contractual mechanisms. An instrument may therefore be legally recognized and actively traded without being suitable for a specified prudential function.

The scientific problem arises from the absence of a coherent framework that translates general prudential principles into a reproducible

assessment of heterogeneous assets. Existing regulation addresses separate elements of the problem, including market conduct, financial stability, accounting, valuation and sectoral solvency requirements. It does not provide a universal rule for determining how liquidity, value stability, predictability and regulatory admissibility should be interpreted together for a particular institution and use. The consequences of valuation error or rapid price deterioration are materially different for institutions responsible for policyholder claims, pension benefits or other long-term contractual obligations.

Regulatory fragmentation intensifies the problem. In the European Union, Regulation (EU) 2023/1114 on markets in crypto-assets (MiCA) governs issuance and crypto-asset services, whereas Solvency II, IORP II and EIOPA materials apply distinct prudential logic to insurers and occupational pension institutions (European Parliament and Council of the European Union, 2009, 2016, 2023a; EIOPA, 2025). In the United States, insurer statutory accounting and retirement-plan fiduciary obligations arise from different authorities. In Ukraine, the Law “On Virtual Assets” has been enacted but had not entered into force by the regulatory cut-off date, while sectoral insurance and pension rules continued to determine prudential asset treatment (Verkhovna Rada of Ukraine, 2003, 2021, 2022).

The category of virtual assets is itself internally heterogeneous. Large-cap unbacked crypto-assets, fiat-backed stablecoins, crypto-collateralized or algorithmic stablecoins, tokenized securities and tokenized claims on real-world assets differ in volatility, redemption rights, legal enforceability, custody, settlement and connection to underlying value. A single numerical score for “virtual assets” would therefore conceal rather than resolve the prudential question.

The purpose of this study is to develop and substantiate the CPCI as an ordinal framework that distinguishes market recognition from prudential admissibility, defines transparent documentary anchors for four dimensions, and illustrates instrument-, jurisdiction-, sector- and use-specific application in the European Union, the United States and Ukraine. The contribution is methodological rather than predictive: the CPCI structures prudential reasoning and evidence collection but does not estimate loss distributions, forecast prices or determine legal eligibility independently of applicable law.

## 1. THEORETICAL BASIS

### 1.1. Prudential functions and the economic nature of assets in NBFIs

Early research on crypto-assets concentrated on their technological and economic nature. Narayanan et al. (2016) describe blockchain as an infrastructure for decentralized value transfer, while Cong et al. (2021) and Schär (2021) analyze the emergence of blockchain-based financial ecosystems and decentralized finance. The literature nevertheless remains divided on whether unbacked crypto-assets perform monetary or predominantly speculative functions. Yermack (2015) emphasizes Bitcoin’s limitations as money, and Baur et al. (2018) identify predominantly speculative use, whereas other studies consider crypto-assets a distinct investment class.

From a prudential perspective, economic classification does not determine an asset’s capacity to support regulated liabilities. NBFIs require assets that can preserve value, remain liquid under stress, be measured with sufficient reliability, and satisfy the rules applicable to the institution and intended use. Episodes of deteriorating asset quality and payment discipline may amplify insolvency risk through interconnected obligations (Dankiewicz et al., 2021). Prudential compatibility must therefore be assessed separately from technological novelty, market capitalization, or expected return.

Institutional function is central to that assessment. For insurers, the relevant questions include technical-reserve coverage, solvency capital, asset-liability matching, liquidity and reliable valuation. For private pension funds, beneficiary protection, fiduciary prudence, diversification and long-term preservation of value are central. Leasing companies do not perform the same reserve-coverage

function; their digital-asset questions concern legal title, collateral enforceability, residual-value reliability, repossession, asset traceability and operational control. A single institutional interpretation of the CPCI would therefore be conceptually inappropriate.

## 1.2. Market use, volatility and prudential admissibility

Research on cryptocurrency markets documents lower efficiency, substantial volatility and sensitivity to speculative trading and information shocks (Corbet et al., 2019; Liu & Tsyvinski, 2021; Makarov & Schoar, 2020). These characteristics do not prevent market trading, but they materially affect an instrument's capacity to support obligations that must be met at defined horizons and under adverse conditions.

Financial management research also emphasizes that expected return must be considered together with liquidity, financing risk and financial stability (Dokienko et al., 2024; Hrynyuk et al., 2023). For insurers and pension funds, potential profitability cannot compensate for an inability to provide reliable value, meet cash-flow needs or satisfy a binding legal eligibility rule. This is the basis for treating regulatory admissibility as non-compensatory in the revised CPCI.

Market participation is therefore evidence of relevance, not proof of prudential suitability. The appropriate question is not whether an asset is popular or tradable, but whether a specifically defined instrument can perform a specified prudential function within a specified legal and institutional context.

## 1.3. Accounting, valuation and predictability

Accounting and financial-reporting research identifies continuing challenges in the classification, measurement and disclosure of crypto-assets (Han et al., 2023; Luo & Yu, 2024). The FASB has introduced specific fair-value accounting and disclosure requirements for qualifying crypto-assets, while the IFRS Interpretations Committee has addressed holdings of cryptocurrencies under existing IFRS standards (FASB, 2023; IFRS

Interpretations Committee, 2019). These developments improve reporting structure but do not by themselves establish prudential eligibility.

For insurers and pension institutions, valuation uncertainty has direct supervisory consequences. Assets must be measured consistently enough to support solvency calculations, portfolio monitoring and timely intervention. Predictability in the CPCI does not mean accurate point forecasting. It refers to whether valuation inputs, contractual cash flows and stress scenarios are sufficiently observable and stable to support repeatable prudential analysis.

Unbacked crypto-asset prices remain highly dependent on expectations, market structure and non-fundamental shocks (Corbet et al., 2019; Liu & Tsyvinski, 2021; Makarov & Schoar, 2020). Stablecoins and tokenized claims require different analysis because their prudential profile depends on enforceable redemption, reserve assets, the legal relationship to an underlying claim, and the operational architecture that connects the token to that claim.

## 1.4. Regulatory separation of market recognition and prudential use

International bodies have developed recommendations on crypto-asset market integrity, financial stability, anti-money-laundering controls and tax transparency (FATF, 2021, 2025; Financial Stability Board, 2023; International Organization of Securities Commissions, 2023; OECD, 2023, 2024). These instruments address important risks, but market regulation and prudential asset eligibility remain distinct legal functions.

The European Union provides the clearest illustration. MiCA establishes rules for issuance, offers, admission to trading and crypto-asset services. Solvency II Article 132 separately requires insurers to invest under the prudent-person principle and to ensure the security, quality, liquidity and profitability of the portfolio. EIOPA's 2025 technical advice recommends a conservative 100% stress without diversification benefit for direct crypto-asset exposures in the standard formula and notes that evidence was not yet sufficient to support differentiated treatment or a tokenized-asset

look-through approach in that calibration (EIOPA, 2025). IORP II likewise applies a prudent-person framework and places conditions on investments in regulated and unregulated markets (European Parliament and Council of the European Union, 2016).

In the United States, the cited NAIC statutory-accounting action clarifies that directly held crypto-assets are non-admitted under SSAP No. 20, while retirement-plan fiduciaries remain subject to ERISA duties of prudence and diversification. The U.S. Department of Labor rescinded its 2022 crypto-specific “extreme care” release in 2025, but that rescission did not remove the underlying fiduciary obligations (NAIC, 2024; U.S. Department of Labor, 2025; United States Congress, 1974).

In Ukraine, the Law “On Virtual Assets” No. 2074-IX remained not in force as of August 4, 2026, and draft law No. 10225-d had been adopted in the first reading but had not become effective legislation. Insurance prudential rules continued to arise from the Law “On Insurance” and National Bank regulations on solvency, investment activity, technical reserves and asset valuation. The non-state pension framework continued to define permitted asset categories and investment restrictions under the Law “On Non-State Pension Provision” (NBU, 2023a, 2023b, 2024; Verkhovna Rada of Ukraine, 2003, 2021, 2022, 2025).

The resulting theoretical premise is functional separation: an instrument may be legally issued, traded or serviced without being eligible for reserve coverage, solvency support or a fiduciary portfolio. Prudential admissibility must therefore be defined for the instrument, jurisdiction, sector and intended use rather than inferred from market recognition.

### 1.5. Theoretical gap and framework requirements

Most studies examine the technology, investment properties, accounting or market regulation of virtual assets. Research on NBFIs also emphasizes adaptation of business models and governance while preserving financial stability (Khovrak et al., 2021; Polinkevych et al., 2021). The literature nevertheless lacks a compact, reproducible structure

that links an asset’s economic-prudential characteristics to the legal function for which it is held.

A suitable framework must meet five requirements. It must distinguish market recognition from prudential eligibility; define instrument archetypes narrowly enough to avoid category error; separate core economic-prudential characteristics from legal admissibility; apply sector- and use-specific rules; and make uncertainty visible instead of replacing it with unsupported decimal precision.

These requirements support the CPCI as an ordinal documentary framework rather than an econometric risk measure. The term “index” denotes a structured classification based on explicit decision rules. It does not imply that the output is a market-calibrated scalar estimate.

## 2. METHODS: DEVELOPMENT AND DOCUMENTARY APPLICATION OF THE CPCI

### 2.1. Source selection, scope and regulatory cut-off

The study uses comparative legal analysis, formal legal analysis, systems analysis and conceptual modelling. The source hierarchy gives priority to enacted legislation, official consolidated legal texts, binding or formally adopted prudential instruments and official supervisory materials. Peer-reviewed research and international-policy publications are used to characterize market, valuation and operational risks. Commercial market statistics are not used as evidence of prudential suitability.

The comparative frame covers the European Union, the United States and Ukraine. The institutional scope includes insurers and private or occupational pension institutions for formal prudential application. Leasing companies are retained only for a qualitative adaptation because their collateral and contractual functions differ from reserve coverage and solvency support. The regulatory cut-off date is August 4, 2026.

For negative legal propositions, the study avoids asserting that a rule is “absent” unless the re-

viewed source expressly establishes that conclusion. Where no relevant provision was located, the formulation is limited to: “no explicit provision was identified in the reviewed primary sources as of the cut-off date.” This wording distinguishes documentary coverage from a definitive legal opinion.

## 2.2. Internal developer panel and evidentiary limits

The six authors collectively provide disclosed academic or professional qualifications in economics and finance, prudential supervision and bank audit, public administration, law, and accounting or taxation. Their anonymized qualifications are summarized in Appendix A, Table A1. They acted as framework developers and internal documentary reviewers rather than as an independent external validation panel.

No independent prudential, actuarial, regulatory or market-expert panel was used. No contemporaneous dataset of independently completed pre-consensus ratings was available for the final analysis. The study therefore does not report individual ratings, dispersion or inter-rater reliability. The revised methodology replaces the earlier scalar consensus scores with fixed ordinal anchors and a source-to-assessment matrix. Independent expert appraisal and inter-rater testing remain future validation tasks.

## 2.3. CPCI architecture

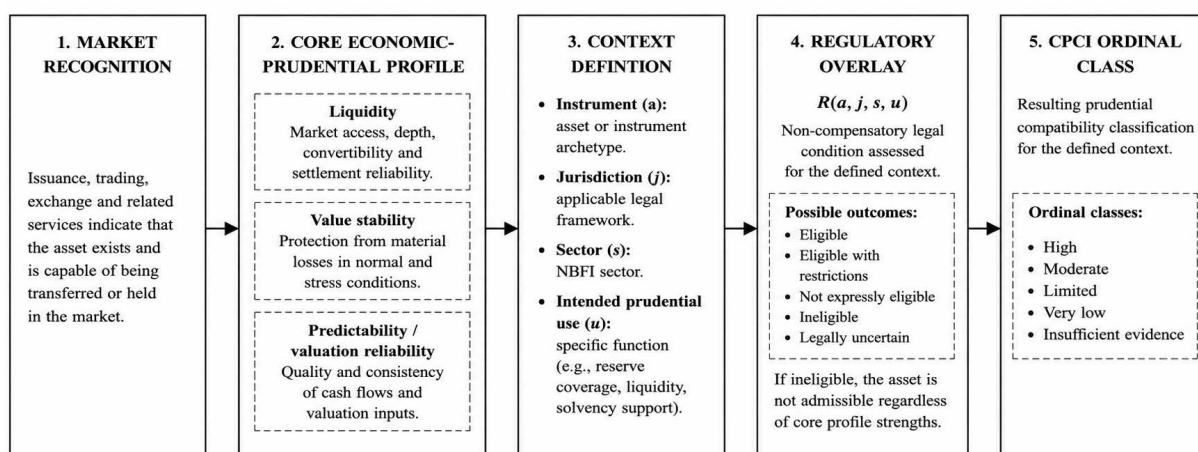
The revised CPCI preserves four dimensions but changes their relationship. Liquidity (L), value stability (S) and predictability/valuation reliability (P) form the core economic-prudential profile. Regulatory admissibility is represented by the context-dependent overlay  $R(a, j, s, u)$ , where  $a$  is the asset or instrument archetype,  $j$  is the jurisdiction,  $s$  is the NBFIs sector, and  $u$  is the intended prudential use.

The CPCI output is an ordinal class generated by a non-compensatory decision rule rather than an arithmetic average:

$$\begin{aligned} \text{CPCIclass}(a, j, s, u) \\ = g[L(a), S(a), P(a); R(a, j, s, u)]. \end{aligned} \quad (1)$$

The function  $g$  follows the rules in Table 2. Regulatory admissibility is non-compensatory: high liquidity, stability or predictability cannot create eligibility when the applicable legal rule makes the asset explicitly ineligible for the specified use. Likewise, a market-regulation regime does not substitute for a sectoral prudential rule.

Each dimension is classified as high, moderate, limited, very low or insufficient evidence. The anchors are fixed documentary conditions, not numerical intervals. When evidence is mixed, the



*Note:* Market recognition is a necessary contextual fact but is not a prudential decision. The regulatory overlay is applied after the core profile and cannot be offset by stronger market characteristics.

**Figure 1.** Separation of market recognition from sector-specific prudential admissibility

lower supported category is used; when a material condition cannot be assessed, the result is “insufficient evidence.” This rule reduces discretion and makes uncertainty visible.

## 2.4. Reference archetypes, sectoral use and documentary coding

To avoid overly broad asset categories, the application uses stylized reference archetypes defined by credit quality, maturity, currency, seniority, guarantees, diversification, marketability and pricing.

The resulting profiles apply only to the stated assumptions and not to every instrument within the legal asset class.

For insurers, the intended uses considered are technical-reserve coverage, solvency support and liquidity management. For pension institutions, the uses are fiduciary portfolio investment, long-term value preservation and benefit protection. Leasing companies are not assigned the same CPCI class because their prudential functions differ; the framework is used only to identify the ad-

**Table 1.** Operational CPCI dimensions and fixed documentary anchors

| Dimension                                  | Observable evidence elements                                                                                                                                                     | Fixed ordinal anchors                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Liquidity (L)                              | Continuous market access; reliable price discovery; settlement and convertibility; market depth; concentration; bid–ask conditions; stress-period liquidity                      | High: deep and continuous market with reliable near-cash conversion, including under ordinary stress. Moderate: active market but material stress sensitivity, concentration or settlement constraints. Limited: thin, intermittent or restricted convertibility. Very low: no reliable market or convertibility                                   |
| Value stability (S)                        | Contractual principal protection; volatility and drawdown; issuer, reserve or peg risk; currency and maturity mismatch; dependence on speculative expectations                   | High: contractual capital protection or consistently low variability under the defined archetype. Moderate: bounded variability with identifiable and manageable risk drivers. Limited: high variability, material issuer/reserve risk or weak protection. Very low: extreme or unanchored value changes or failure of the stabilization mechanism |
| Predictability / valuation reliability (P) | Contractual cash flows; observable inputs; standardized valuation method; historical evidence; modelability; stress-test feasibility; dependence on non-fundamental shocks       | High: contractual or highly observable valuation with repeatable stress assumptions. Moderate: modelable with material but bounded uncertainty. Limited: unstable inputs, short history or strong model dependence. Very low: no reliable valuation basis or dominant non-fundamental shocks                                                       |
| Regulatory admissibility R(a, j, s, u)     | Legal recognition; explicit eligibility for the intended prudential use; valuation and capital treatment; concentration, custody and reporting requirements; sector restrictions | Explicitly eligible; eligible with restrictions; not expressly eligible in reviewed sources; explicitly ineligible; legally uncertain; or insufficient evidence. This overlay is categorical and non-compensatory, not a scalar score                                                                                                              |

*Note:* The anchors define documentary conditions. They do not represent statistical confidence levels or market-risk parameters.

**Table 2.** CPCI ordinal classes and decision rules

| CPCI class            | Core economic-prudential profile                                                                                 | Required regulatory overlay                                                                                                     | Interpretation                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| High                  | All three core dimensions are high, or no more than one is moderate; no material evidence gap                    | Explicitly eligible for the specified sector and use                                                                            | Strong prudential compatibility under the stated archetype and legal context; not an automatic approval             |
| Moderate              | Predominantly high or moderate; no more than one limited dimension and no very-low dimension                     | Eligible with restrictions, or explicitly eligible subject to material concentration, valuation, custody or capital constraints | Potential compatibility only within the identified restrictions and institution-specific controls                   |
| Limited               | One very-low dimension, two limited dimensions, or material uncertainty in a core dimension                      | Not expressly eligible in the reviewed sources or legally uncertain for the specified use                                       | Generally unsuitable for a core prudential function unless further evidence and a clear legal basis are established |
| Very low              | Two or more core dimensions are very low, or the instrument lacks an enforceable value basis relevant to the use | Explicitly ineligible for the specified use, or a binding rule prevents recognition as the relevant prudential asset            | Unsuitable for the specified prudential function under the stated context                                           |
| Insufficient evidence | Material evidence required for one or more dimensions cannot be verified                                         | The governing rule or its application cannot be determined from the reviewed primary sources                                    | No CPCI conclusion should be drawn until the missing evidence is obtained                                           |

*Note:* Explicit legal ineligibility overrides the core profile. A limited or uncertain regulatory overlay cannot be upgraded by stronger liquidity, stability or predictability.

ditional criteria required for tokenized collateral or contractual claims.

Documentary coding is recorded in a source-to-assessment matrix. Each entry identifies the archetype, criterion, ordinal assessment, evidence, source, context and limitations. Appendix A (Tables A2-A4) provides the operational checklist, selected source mappings and the primary regulatory-source inventory.

## 2.5. Internal coherence assessment and uncertainty

The revised study does not conduct a weight-sensitivity exercise because no numerical weights or scalar component scores are used. Instead, internal coherence is assessed through criterion-to-source mapping, a benchmark-order plausibility check and explicit review of four uncertainty types: instrument-definition uncertainty, evidence uncertainty, legal-context uncertainty and assessor uncertainty.

Instrument-definition uncertainty is controlled by reference archetypes. Evidence uncertainty is addressed through source hierarchy and the “insufficient evidence” category. Legal-context uncertainty is addressed through  $R(a, j, s, u)$  and a fixed cut-off date. Assessor uncertainty is not sta-

tistically estimated because independent pre-consensus ratings are unavailable; it is disclosed as a limitation requiring future external assessment.

These procedures evaluate transparency and internal consistency only. They do not constitute theoretical, content, face, empirical or external validation. Future validation should use independent experts, documented individual ratings, agreement statistics, supervisory or institutional portfolios and observed outcomes.

## 3. RESULTS

### 3.1. Primary-source regulatory comparison

The regulatory comparison confirms that the fourth CPCI dimension cannot be universal. The same instrument may be non-admitted for one statutory-accounting purpose, subject to fiduciary assessment in another sector and not expressly addressed in a third jurisdiction. Table 3 therefore reports context-specific legal propositions rather than broad labels such as “high,” “medium” or “low” regulation.

The European Union separates MiCA market rules from sectoral prudential requirements. The United States separates insurer statutory account-

**Table 3.** Primary-source regulatory matrix by jurisdiction, sector and prudential use

| Jurisdiction / sector                  | Market-regulation context                                                       | Prudential asset rule                                                                                                                                        | Crypto-specific treatment identified                                                                                                                                                         | CPCI regulatory-overlay implication                                                                                  | Primary sources                                                           |
|----------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| European Union / insurers              | MiCA regulates issuance, offers, admission to trading and crypto-asset services | Solvency II Article 132 requires prudent-person investment and portfolio security, quality, liquidity and profitability                                      | EIOPA (2025) recommends a 100% stress without diversification benefit for direct crypto exposures in the standard formula; differentiated treatment was not supported by sufficient evidence | No automatic eligibility follows from MiCA. Eligibility and capital treatment remain exposure- and use-specific      | Regulation (EU) 2023/1114; Directive 2009/138/EC, Art. 132; EIOPA (2025). |
| European Union / occupational pensions | MiCA market rules apply according to instrument and activity                    | IORP II Article 19 applies the prudent-person rule, beneficiary interests, security/quality/liquidity/profitability, and limits on unregulated-market assets | No universal crypto-specific pension-asset eligibility rule was identified in the reviewed primary sources                                                                                   | Institution-specific prudent-person assessment; no reserve or portfolio eligibility inferred from market recognition | Directive (EU) 2016/2341, Art. 19; Regulation (EU) 2023/1114.             |

**Table 3 (cont.).** Primary-source regulatory matrix by jurisdiction, sector and prudential use

| Jurisdiction / sector                    | Market-regulation context                                                                                                        | Prudential asset rule                                                                                                                                                                                                                                                                                                                          | Crypto-specific treatment identified                                                                                                                         | CPCI regulatory-overlay implication                                                                                                                                    | Primary sources                                                                      |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| United States / insurers                 | Market regulation is distributed among federal and state authorities by instrument and activity                                  | Statutory accounting and admitted-asset treatment are state-based and informed by NAIC standards                                                                                                                                                                                                                                               | The cited NAIC action revised SSAP No. 20 to clarify that directly held crypto-assets are non-admitted assets                                                | Explicitly ineligible as an admitted asset under the cited statutory-accounting guidance, subject to the governing state framework; holding is distinct from admission | NAIC Statutory Accounting Principles (E) Working Group (2024), Ref. 2024-03          |
| United States / ERISA retirement plans   | No single market statute determines plan-menu eligibility                                                                        | ERISA §404(a) requires loyalty, prudence, diversification, and attention to plan circumstances                                                                                                                                                                                                                                                 | DOL Compliance Assistance Release 2025-01 rescinded the 2022 crypto-specific “extreme care” release but preserved neutral application of fiduciary standards | No blanket federal crypto-specific prohibition identified in the cited sources; case-specific fiduciary analysis remains necessary                                     | 29 U.S.C. §1104; U.S. Department of Labor (2025)                                     |
| Ukraine / virtual-asset market framework | Law No. 2074-IX was enacted but had not entered into force by August 4, 2026. Draft law No. 10225-d had passed the first reading | Market-framework status does not determine insurer or pension asset eligibility                                                                                                                                                                                                                                                                | No effective general virtual-asset market law was relied upon as a source of prudential eligibility at the cut-off date                                      | Legally transitional; sectoral prudential sources control the CPCI overlay.                                                                                            | Law No. 2074-IX; draft law No. 10225-d and related parliamentary record              |
| Ukraine / insurers                       | Virtual-asset market legislation remained transitional                                                                           | Law No. 1909-IX and NBU Resolutions Nos. 201, 203 and 71 govern solvency, accepted assets, technical reserves and regulatory-capital valuation. Resolution No. 201 addresses accepted assets in Chapter 6 of Section II and technical-reserve coverage in points 69–71 of Chapter 12, Section V, with asset categories specified in Appendix 1 | No explicit virtual-asset category was identified in the reviewed accepted-asset provisions of Resolution No. 201                                            | Not expressly eligible in the reviewed accepted-asset list for the specified prudential uses; this statement is narrower than a general prohibition on holding         | Law No. 1909-IX; NBU Resolutions Nos. 201 (2023), 203 (2023) and 71 (2024)           |
| Ukraine / non-state pension funds        | General virtual-asset market framework remained not effective.                                                                   | Law No. 1057-IV defines pension-asset categories and investment restrictions, including the investment limits in Article 49.                                                                                                                                                                                                                   | No explicit virtual-asset category was identified in the reviewed statutory asset categories as of the cut-off date.                                         | Not expressly eligible in the reviewed statutory framework; instrument-specific legal analysis is required.                                                            | Law No. 1057-IV, including provisions on pension assets and investment restrictions. |

*Note:* Regulatory cut-off date: August 4, 2026. “No explicit provision was identified” reports the reviewed documentary record and should not be read as a definitive legal opinion beyond the stated sector and use.

ing from retirement-plan fiduciary law. Ukraine’s current position reflects an enacted but not yet effective virtual-asset law, an active legislative process and sectoral prudential rules that do not expressly identify virtual assets in the reviewed accepted-asset categories.

These findings mean that market recognition is not a transferable proxy for reserve eligibility. The regulatory overlay must be applied to the defined instrument, sector and use before a CPCI class can be interpreted.

### 3.2. Defined reference archetypes and core profiles

Table 4 replaces broad legal asset classes with defined reference archetypes. The assumptions are intentionally restrictive: changing credit quality, maturity, currency, seniority, guarantee, diversification or market-liquidity conditions may change the core profile and the regulatory overlay.

Table 5 presents the core documentary profile without a universal regulatory score or aggregate decimal value. The regulatory overlay must be taken from Table 3 or an equivalent jurisdiction-, sector- and use-specific analysis.

### 3.3. Instrument-specific implications for digital assets

The broad “virtual assets” category is not used as an assessment unit. Table 6 separates instrument archetypes by redemption, collateral, underlying claims and operational architecture. It also distinguishes a conceptual look-through principle from current legal treatment. EIOPA considered but did not recommend a tokenized-asset look-through calibration in its 2025 advice because the available evidence was insufficient; the CPCI uses look-through only as a documentary analytical principle, not as a statement of current regulatory permission.

**Table 4.** Definitions and assumptions of the reference asset archetypes

| Reference archetype   | Defining assumptions                                                                                                                                            | Boundary of inference                                                                                              |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Government bond       | Domestic-currency, short- or medium-term, investment-grade sovereign obligation with active secondary-market pricing and no material convertibility restriction | Does not represent long-duration, foreign-currency, distressed or illiquid sovereign debt                          |
| Bank deposit          | Short-term deposit with a prudentially regulated, high-credit-quality bank, subject to applicable withdrawal, deposit-protection and concentration conditions   | Does not represent subordinated, uninsured, concentrated or restricted deposits with a weak institution            |
| Corporate bond        | Senior investment-grade fixed-income instrument with defined maturity, observable pricing and no complex embedded loss-absorption feature                       | Does not represent high-yield, subordinated, perpetual, structured or illiquid corporate debt                      |
| Equity                | Diversified exposure to liquid large-cap listed shares in a regulated market                                                                                    | Does not represent a concentrated holding, small-cap or unlisted shares, or a single speculative issuer            |
| Unbacked crypto-asset | Large-cap, actively traded crypto-asset without a legally enforceable redemption claim on an issuer or identifiable underlying asset                            | Does not represent a regulated fiat-backed stablecoin, tokenized security or tokenized claim on a real-world asset |

*Note:* The archetypes are analytical benchmarks. They do not state that every instrument within a legal asset class has the same prudential profile.

**Table 5.** Documentary core profiles of selected reference archetypes

| Reference archetype                            | Liquidity | Value stability | Predictability / valuation reliability | Core-profile interpretation                                                                                    |
|------------------------------------------------|-----------|-----------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Government bond (defined in Table 4)           | High      | High            | High                                   | Strong under the stated credit, currency, maturity and marketability assumptions.                              |
| Bank deposit (defined in Table 4)              | High      | High            | High                                   | Strong, subject to bank credit quality, withdrawal and concentration conditions.                               |
| Corporate bond (defined in Table 4)            | Moderate  | Moderate        | Moderate                               | Conditionally compatible; highly sensitive to rating, maturity, seniority and market depth.                    |
| Diversified listed equity (defined in Table 4) | High      | Limited         | Limited                                | Liquid but materially exposed to market-value variability and uncertain cash-flow realization.                 |
| Large-cap unbacked crypto-asset                | Moderate  | Very low        | Very low                               | Active trading does not offset stress-sensitive liquidity, unanchored value and weak valuation predictability. |

*Note:* These are documentary ordinal profiles, not expert scores or empirical estimates. A CPCI class is complete only after the context-specific regulatory overlay is applied.

Fiat-backed stablecoins cannot be evaluated solely by observed price behavior. Prudential analysis requires enforceable redemption rights, reserve composition and segregation, custody, attestation or audit quality, insolvency treatment, and applicable regulation. Crypto-collateralized and algorithmic designs have materially different risk transmission and therefore cannot share a single stablecoin classification.

Tokenized securities and tokenized real-world claims inherit much of the core profile of the underlying asset but add legal and operational layers. The token holder's claim must be enforceable, equivalent to the stated underlying right and robust to intermediary insolvency. Settlement finality, custody, smart-contract risk, asset segregation and reliable valuation remain separate conditions.

The classifications in Table 6 are framework-derived hypotheses. They are not independently validated or empirically calibrated CPCI estimates.

### 3.4. Uncertainty and reproducibility

The revised results make four forms of uncertainty explicit. Instrument-definition uncertainty re-

mains when an archetype is not sufficiently specific. Evidence uncertainty remains when market, valuation or legal facts cannot be verified. Legal-context uncertainty remains where the applicable sectoral rule is silent, transitional or dependent on supervisory interpretation. Assessor uncertainty remains because no independent pre-consensus ratings or external panel data are available.

Reproducibility is supported by the fixed anchor definitions, reference archetypes, primary-source matrix and selected source-to-assessment mappings in the Supplementary Materials. A future researcher can challenge a category by identifying a different instrument definition, new evidence, or a different binding rule without reconstructing an undocumented decimal score.

## 4. DISCUSSION

The revised CPCI extends the literature by shifting the question from whether virtual assets are investable to whether a defined instrument can perform a specified prudential function. This distinction is consistent with research showing that crypto-assets may have active markets while re-

**Table 6.** Instrument-specific digital-asset assessment under the CPCI framework

| Instrument archetype                                       | Liquidity            | Value stability      | Predictability       | Evidence required before any favorable prudential conclusion                                                                                   | Framework-derived implication                                                                                         |
|------------------------------------------------------------|----------------------|----------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Large-cap unbacked crypto-asset without redemption claim   | Moderate             | Very low             | Very low             | Stress-period market depth; custody and settlement controls; explicit sector/use eligibility.                                                  | Core profile is very weak for reserve or long-term liability support; legal overlay remains context-specific.         |
| Fiat-backed redeemable stablecoin with identified reserves | Moderate to high     | Moderate             | Moderate             | Enforceable par redemption; reserve quality and segregation; independent assurance; custody; insolvency treatment; applicable prudential rule. | May warrant a separate conditional assessment, but "stablecoin" status alone does not establish compatibility.        |
| Crypto-collateralized stablecoin                           | Moderate             | Limited              | Limited              | Collateral quality, overcollateralization, liquidation mechanics, oracle risk, governance and legal enforceability.                            | Generally weaker than a fully reserved redeemable structure and sensitive to collateral-market stress.                |
| Algorithmic or insufficiently collateralized stablecoin    | Variable             | Very low             | Very low             | Demonstrated stabilization resilience, governance, liquidity backstop and legal claim—usually absent or fragile.                               | Very weak core profile for prudential use.                                                                            |
| Tokenized government bond matching the Table 4 archetype   | Underlying-dependent | Underlying-dependent | Underlying-dependent | Legal equivalence to the bond; ownership record; custody; settlement finality; insolvency remoteness; applicable eligibility rule.             | Potentially follows the underlying bond, reduced for additional legal and operational risk; no automatic eligibility. |

**Table 6 (cont.).** Instrument-specific digital-asset assessment under the CPCI framework

| Instrument archetype                            | Liquidity            | Value stability      | Predictability       | Evidence required before any favorable prudential conclusion                                                                  | Framework-derived implication                                                                                 |
|-------------------------------------------------|----------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Tokenized investment-grade corporate bond       | Underlying-dependent | Underlying-dependent | Underlying-dependent | Same conditions as above plus issuer credit, seniority, maturity and market-depth evidence.                                   | Potentially follows the underlying corporate bond, subject to tokenization-specific risk and legal overlay.   |
| Tokenized claim on income-producing real estate | Limited              | Moderate to limited  | Moderate to limited  | Enforceable property or cash-flow claim; valuation; lien priority; servicing; transferability; custody; insolvency treatment. | Requires instrument-level assessment; generic “tokenized real-world asset” classification is not supportable. |

*Note:* These classifications represent framework-derived hypotheses and should not be interpreted as independently validated or empirically calibrated CPCI estimates. “Underlying-dependent” requires a look-through assessment and a separate legal overlay.

maintaining exposed to volatility, speculative demand and information shocks (Baur et al., 2018; Corbet et al., 2019; Liu & Tsyvinski, 2021; Makarov & Schoar, 2020). The framework does not convert these findings into an unsupported scalar score; it organizes the evidence into transparent categories.

The non-compensatory regulatory overlay is a central methodological change. In the earlier additive structure, a high market-liquidity score could partly offset weak legal admissibility. That result is not defensible where a binding prudential rule expressly excludes an asset from the specified use. The revised model therefore treats legal eligibility as a gate or restriction rather than as a freely substitutable component.

The sectoral distinction is equally important. Insurance portfolios are assessed against technical-reserve coverage, solvency capital, asset-liability management and claims-paying capacity. Pension institutions are assessed through fiduciary prudence, diversification, liquidity and long-term beneficiary protection. Leasing companies do not require the same reserve-screening output; for them, tokenization is more relevant to ownership records, collateral enforceability, residual value, repossession, servicing and accounting. A leasing-specific CPCI would require a different operational specification and is not claimed in this article.

The digital-asset differentiation shows why a single “virtual assets” score is methodologically misleading. Large-cap unbacked crypto-assets lack an enforceable redemption claim and exhibit weak

stability and predictability. Fiat-backed stablecoins may reduce observed price variation, but their prudential profile depends on the legal and operational quality of the reserve and redemption arrangement. Tokenized securities and real-world claims may inherit stronger characteristics from an underlying asset, yet tokenization introduces additional custody, settlement, smart-contract and insolvency risks.

The jurisdictional comparison reinforces the separation between market and prudential regulation. MiCA provides a harmonized European market framework but does not displace Solvency II or IORP prudent-person requirements. In the United States, directly held crypto-assets receive non-admitted treatment under the cited NAIC statutory-accounting action, while ERISA plans remain governed by case-specific fiduciary duties rather than a universal crypto rule. In Ukraine, the reviewed insurance and pension asset rules remain the controlling prudential sources while the general virtual-asset framework is not yet effective.

For Ukraine, the policy implication is not that one blanket rule should be imposed on every digital instrument. Sectoral regulation should identify the intended use, define instrument eligibility, specify valuation, custody, concentration and capital consequences, and distinguish unbacked crypto-assets from enforceable tokenized claims. Any future market law should be connected expressly to the prudential regimes governing insurers and pension funds rather than assumed to alter them indirectly.

The scientific contribution of the study is the articulation of prudential compatibility as a conditional four-dimensional concept. The first three dimensions describe a core economic-prudential profile; the fourth applies the binding legal context. The framework also introduces an explicit “insufficient evidence” outcome, which is preferable to false precision when a material fact cannot be verified.

The practical value of the CPCI lies in documentary screening, supervisory discussion and research design. It can identify which evidence is missing, where a legal rule acts as a gate and why superficially similar tokens require different treatment. It should not be used as an automatic investment approval, reserve-eligibility determination, actuarial model, capital formula or substitute for legal advice.

The study remains limited by its theoretical design and source coverage. The six authors were internal developers and reviewers, not an independent panel. Individual pre-consensus ratings and inter-rater reliability are unavailable. The framework has not been tested against supervisory portfolios, observed losses, solvency outcomes or institution-specific stress data. Legal treatment is time-sensitive and may change after the August 4, 2026 cut-off.

Future research should use independent prudential, actuarial, legal and market experts; retain individual ratings; estimate agreement on the ordinal anchors; test alternative instrument definitions; and compare CPCI classifications with observed portfolio and supervisory outcomes. Separate specifications should be developed for insurance, pension and leasing functions rather than assuming a universal institutional model.

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## CONCLUSION

The purpose of this study was to develop the CPCI as a transparent conceptual framework for assessing whether defined traditional and digital instruments can support specified prudential functions in NBFIs. The final design retains liquidity, value stability, predictability/valuation reliability and regulatory admissibility but removes unsupported decimal scores and additive weighting.

The resulting CPCI is an ordinal, non-compensatory framework. A core profile is constructed for liquidity, stability and predictability; the regulatory overlay  $R(a, j, s, u)$  is then applied for a particular instrument, jurisdiction, sector and use. Explicit legal ineligibility cannot be offset by stronger market characteristics, and market recognition cannot be treated as reserve eligibility.

The documentary application indicates that large-cap unbacked crypto-assets have a weak core profile for reserve and long-term liability support, whereas fiat-backed stablecoins and tokenized claims require instrument-specific analysis of redemption, reserves, underlying rights, custody, settlement and insolvency treatment. Tokenized instruments may resemble the underlying asset only when legal equivalence and operational integrity are established; tokenization itself does not create prudential compatibility.

The comparative analysis shows distinct prudential pathways in the European Union, the United States and Ukraine. The CPCI can support structured screening and identify missing evidence, but it remains a theoretical framework requiring independent expert assessment, inter-rater testing and empirical calibration before any quantitative or decision-automating use.

## AUTHOR CONTRIBUTIONS

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## DATA AVAILABILITY STATEMENT

No empirical or individual-rating dataset was generated for the revised analysis. The operational rubric, anonymized qualification profile, selected source-to-assessment matrix, and primary regulatory-source inventory are included in Appendix A (Tables A2-A4). Additional documentary working notes are available from the corresponding author upon reasonable request.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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## APPENDIX A

**Table A1.** Anonymized profile of the internal framework-development team

| Code | Disclosed qualification / role                                                                        | Relevant domain supported by the disclosed profile               | Methodological role in this study                                         |
|------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------|
| A1   | Doctor of Economics; Professor                                                                        | Economics and academic financial research                        | Internal framework development and documentary review                     |
| A2   | PhD in Economics; expert in financial regulation and prudential supervision; Certified Bank Auditor   | Prudential supervision, financial regulation and bank audit      | Internal framework development, regulatory mapping and documentary review |
| A3   | Doctor of Economics; Professor                                                                        | Economics and academic financial research                        | Internal framework development and documentary review                     |
| A4   | Doctor of Science in Public Administration; Doctor of Economic Sciences; Professor; First Vice-Rector | Public administration, economics and institutional governance    | Internal framework development and documentary review                     |
| A5   | Master of Law; Master of Public Administration; Chair of Attorneys' Association "IT Lawyers"          | Law, public administration and technology-related legal practice | Legal-source review and framework development                             |
| A6   | MBA; Enrolled Agent                                                                                   | Management, accounting and taxation practice                     | Accounting/tax source review and framework development                    |

*Note:* The six individuals are the article's authors and constitute an internal developer/reviewer group. They are not an independent external validation panel, and no actuarial qualification is claimed.

**Table A2.** Detailed CPCI documentary checklist

| Dimension                              | Checklist questions                                                                                                                                                        | Evidence that supports a stronger category                                                                                     | Downgrade / uncertainty triggers                                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Liquidity                              | Is there continuous market access? Are prices observable and executable? Can settlement and conversion occur within the required horizon? Does depth persist under stress? | Multiple reliable venues; narrow and executable spreads; robust settlement; low concentration; demonstrated stress resilience. | Thin or fragmented markets; withdrawal or settlement restrictions; concentration; unreliable price formation; stress-period collapse.             |
| Value stability                        | Is principal contractually protected? What are the volatility, drawdown, issuer, reserve, peg, currency and maturity risks?                                                | Enforceable principal/redemption claim; high-quality backing; bounded risk drivers; low mismatch.                              | Unanchored value; weak or opaque reserves; reflexive stabilization; high drawdown; speculative dependence.                                        |
| Predictability / valuation reliability | Are cash flows contractual? Are valuation inputs observable? Is there a repeatable model and sufficient history? Can the instrument be stress-tested?                      | Standardized valuation; observable inputs; reliable cash-flow model; repeatable stress assumptions.                            | Unstable or non-observable inputs; short history; model fragility; dominant behavioral or non-fundamental shocks.                                 |
| Regulatory admissibility               | Is the instrument expressly eligible for the sector and use? What valuation, capital, concentration, custody and reporting rules apply?                                    | Explicit eligibility and established supervisory treatment for the defined use.                                                | Explicit ineligibility; silence in an exhaustive accepted-asset list; transitional law; conflicting rules; unresolved supervisory interpretation. |

**Table A3.** Selected source-to-assessment matrix

| Archetype / criterion   | Assessment                    | Evidence basis                                                                           | Principal sources                                             | Assumptions and limitations                                                              |
|-------------------------|-------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Government bond / L-S-P | High under Table 4 definition | Active market, contractual cash flows and defined maturity are built into the archetype. | Solvency II Art. 132; IORP II Art. 19; archetype assumptions. | Changes in credit, currency, duration or liquidity can lower the profile.                |
| Bank deposit / L-S-P    | High under Table 4 definition | Short maturity, regulated institution and defined claim.                                 | Archetype assumptions; sectoral accepted-asset rules.         | Credit quality, insurance coverage, withdrawal and concentration limits remain material. |
| Corporate bond / L-S-P  | Moderate                      | Observable cash flows and maturity, but credit and market-depth risk remain.             | Archetype assumptions; sectoral prudential rules.             | Not applicable to high-yield, subordinated, structured or illiquid debt.                 |

**Table A3 (cont.).** Selected source-to-assessment matrix

| Archetype / criterion           | Assessment                                             | Evidence basis                                                                                                                                                                                            | Principal sources                                                          | Assumptions and limitations                                                                      |
|---------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Diversified listed equity / L   | High                                                   | Active regulated market and diversified large-cap exposure.                                                                                                                                               | Archetype assumptions.                                                     | Stress liquidity and market closures can reduce this category.                                   |
| Diversified listed equity / S–P | Limited                                                | Market-value variability and non-contractual return.                                                                                                                                                      | Dokiienko et al. (2024); general market-risk literature.                   | Does not imply that every equity portfolio has identical risk.                                   |
| Unbacked crypto / L             | Moderate                                               | Active trading, but fragmentation, concentration and stress sensitivity.                                                                                                                                  | Corbet et al. (2019); Makarov and Schoar (2020); FSB (2023); EIOPA (2025). | Applies to large-cap actively traded unbacked assets only.                                       |
| Unbacked crypto / S             | Very low                                               | High volatility, drawdowns and no enforceable redemption claim.                                                                                                                                           | Baur et al. (2018); Liu and Tsyvinski (2021); EIOPA (2025).                | Does not apply to a qualifying redeemable stablecoin or tokenized security.                      |
| Unbacked crypto / P             | Very low                                               | Strong dependence on expectations and information shocks; no contractual cash flows.                                                                                                                      | Corbet et al. (2019); Liu and Tsyvinski (2021); Makarov and Schoar (2020). | Predictability refers to prudential valuation reliability, not short-term technical forecasting. |
| Fiat-backed stablecoin / S–P    | Conditional; no universal class                        | Depends on redemption, reserve quality, segregation, assurance and insolvency treatment.                                                                                                                  | Aldasoro et al. (2025); MiCA; instrument documentation.                    | A stable price history alone is insufficient.                                                    |
| Tokenized security / L–S–P      | Underlying-dependent                                   | Core profile follows the enforceable underlying claim, reduced for custody, settlement and smart-contract risk.                                                                                           | EIOPA (2025) option analysis; instrument and legal documentation.          | Conceptual look-through is not a statement of current regulatory permission.                     |
| EU insurer / R                  | Context-specific; conservative treatment               | Solvency II prudent-person rule and EIOPA 100% stress advice for direct crypto.                                                                                                                           | Directive 2009/138/EC; EIOPA (2025).                                       | Capital treatment does not by itself resolve asset eligibility for every use.                    |
| U.S. insurer / R                | Direct holdings nonadmitted under cited guidance       | SSAP No. 20 revision.                                                                                                                                                                                     | NAIC (2024).                                                               | Application remains within state statutory-accounting frameworks.                                |
| Ukraine insurer / R             | Not expressly eligible in reviewed accepted-asset list | Resolution No. 201 identifies accepted assets in Chapter 6 of Section II and points 69–71 of Chapter 12, Section V, with Appendix 1; no virtual-asset category was identified in the reviewed provisions. | Law No. 1909-IX; NBU Resolution No. 201.                                   | Narrow documentary conclusion, not a general prohibition beyond the specified prudential use.    |

**Table A4.** Primary regulatory-source inventory

| Jurisdiction   | Source                                                             | Function in the analysis                                               | Status / cut-off treatment                                    | Official location                                                                                                                                                                                                                               |
|----------------|--------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| European Union | Directive 2009/138/EC (Solvency II), Art. 132                      | Insurer prudent-person and portfolio-quality requirements              | Effective EU prudential source; reviewed as of August 4, 2026 | <a href="https://eur-lex.europa.eu/eli/dir/2009/138/oj">https://eur-lex.europa.eu/eli/dir/2009/138/oj</a>                                                                                                                                       |
| European Union | Directive (EU) 2016/2341 (IORP II), Art. 19                        | Occupational-pension prudent-person and investment rules               | Effective EU prudential source                                | <a href="https://eur-lex.europa.eu/eli/dir/2016/2341/oj">https://eur-lex.europa.eu/eli/dir/2016/2341/oj</a>                                                                                                                                     |
| European Union | Regulation (EU) 2023/1114 (MiCA)                                   | Crypto-asset market regulation; separation from prudential eligibility | Applicable market-regulation source                           | <a href="https://eur-lex.europa.eu/eli/reg/2023/1114/oj">https://eur-lex.europa.eu/eli/reg/2023/1114/oj</a>                                                                                                                                     |
| European Union | EIOPA technical advice on crypto-asset capital requirements (2025) | Standard-formula treatment and evidence limits                         | Official supervisory technical advice                         | <a href="https://www.eiopa.europa.eu/publications/technical-advice-standard-formula-capital-requirements-crypto-assets_en">https://www.eiopa.europa.eu/publications/technical-advice-standard-formula-capital-requirements-crypto-assets_en</a> |
| United States  | 29 U.S.C. §1104 (ERISA §404)                                       | Fiduciary prudence and diversification                                 | Federal statutory source                                      | <a href="https://uscode.house.gov/view.xhtml?req=(title:29%20section:1104%20edition:prelim)">https://uscode.house.gov/view.xhtml?req=(title:29%20section:1104%20edition:prelim)</a>                                                             |

**Table A4 (cont.).** Primary regulatory-source inventory

| Jurisdiction  | Source                                                           | Function in the analysis                                                                                            | Status / cut-off treatment                                                 | Official location                                                                                                                                                                                                                                                                   |
|---------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| United States | DOL Compliance Assistance Release No. 2025-01                    | Rescission of 2022 crypto-specific release; neutral fiduciary approach                                              | Effective official guidance as of cut-off                                  | <a href="https://www.dol.gov/agencies/ebsa/employers-and-advisers/plan-administration-and-compliance/compliance-assistance-releases/2025-01">https://www.dol.gov/agencies/ebsa/employers-and-advisers/plan-administration-and-compliance/compliance-assistance-releases/2025-01</a> |
| United States | NAIC SAP Working Group 2024 Summer Meeting Summary, Ref. 2024-03 | Directly held crypto-assets as nonadmitted under SSAP No. 20                                                        | Adopted NAIC statutory-accounting revision; state context remains relevant | <a href="https://content.naic.org/sites/default/files/national_meeting/sapwg-summary-081324.pdf">https://content.naic.org/sites/default/files/national_meeting/sapwg-summary-081324.pdf</a>                                                                                         |
| Ukraine       | Law No. 1909-IX “On Insurance”                                   | Insurance solvency and supervisory framework                                                                        | In force; current official text reviewed                                   | <a href="https://zakon.rada.gov.ua/laws/show/1909-20">https://zakon.rada.gov.ua/laws/show/1909-20</a>                                                                                                                                                                               |
| Ukraine       | NBU Resolution No. 201 of December 29, 2023                      | Accepted assets: Chapter 6, Section II; technical-reserve coverage: points 69–71, Chapter 12, Section V; Appendix 1 | In force as amended; official NBU source reviewed                          | <a href="https://bank.gov.ua/ua/legislation/Resolution_29122023_201">https://bank.gov.ua/ua/legislation/Resolution_29122023_201</a>                                                                                                                                                 |
| Ukraine       | NBU Resolution No. 203 of December 29, 2023                      | Technical-reserve formation and accounting                                                                          | In force as amended; official NBU source reviewed                          | <a href="https://bank.gov.ua/ua/legislation/Resolution_29122023_203">https://bank.gov.ua/ua/legislation/Resolution_29122023_203</a>                                                                                                                                                 |
| Ukraine       | NBU Resolution No. 71 of June 21, 2024                           | Valuation of assets and liabilities for regulatory capital                                                          | In force as amended; official NBU source reviewed                          | <a href="https://bank.gov.ua/ua/legislation/Resolution_21062024_71">https://bank.gov.ua/ua/legislation/Resolution_21062024_71</a>                                                                                                                                                   |
| Ukraine       | Law No. 1057-IV “On Non-State Pension Provision”                 | Pension-asset categories and investment restrictions, including Article 49 limits                                   | In force; current official text reviewed                                   | <a href="https://zakon.rada.gov.ua/laws/show/1057-15">https://zakon.rada.gov.ua/laws/show/1057-15</a>                                                                                                                                                                               |
| Ukraine       | Law No. 2074-IX “On Virtual Assets”                              | Status of general virtual-asset framework                                                                           | Not in force as of August 4, 2026                                          | <a href="https://zakon.rada.gov.ua/laws/show/2074-20">https://zakon.rada.gov.ua/laws/show/2074-20</a>                                                                                                                                                                               |
| Ukraine       | Draft law No. 10225-d and parliamentary record                   | Pending replacement / implementation framework                                                                      | Passed first reading; not effective law at cut-off                         | <a href="https://itd.rada.gov.ua/billinfo/Bills/Card/56271">https://itd.rada.gov.ua/billinfo/Bills/Card/56271</a>                                                                                                                                                                   |