

CRYPTOCURRENCY-RELATED RISKS IN BANKING UNDER UNREGULATED OR WEAKLY REGULATED ENVIRONMENTS: A SYSTEMATIC LITERATURE REVIEW

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Abstract: Crypto-assets now circulate globally, exposing banks to money-laundering and terrorist-financing, operational, market and systemic risks that conventional prudential frameworks were not designed to address. Where no enforceable legal framework governs the activity, these risks do not disappear; they become invisible to supervisors. This review systematically maps what the literature establishes about cryptocurrency-related risks for banks and the mechanisms that mitigate them, with a focus on weakly legislated contexts and emerging economies. Following PRISMA 2020, Scopus and Web of Science were searched for peer-reviewed, open-access, English-language articles (2021-2026), complemented by citation tracking, yielding 109 eligible studies and a maximum-variation analytical corpus of 35. Six themes structure the field, and three findings recur: anonymity is a matter of degree, the bank-crypto interconnection is bidirectional, and the absence of law obscures rather than removes risk.

Keywords: cryptocurrency risk, banking supervision, money laundering, financial stability, systematic literature review

INTRODUCTION

In fifteen years, crypto-assets have moved from a confidential technological curiosity to a global asset class whose capitalization, volatility and entanglement with traditional finance now concern regulators, central banks and credit institutions. This diffusion has occurred on uneven regulatory ground. Some jurisdictions have adopted dedicated frameworks (the European MiCA regulation, the United States and the United Arab Emirates), while many economies, mostly emerging, have remained at de facto prohibition or warning, without ever equipping supervision.

We define a *non- or weakly legislated environment* as a jurisdiction combining three traits at once: no dedicated and enforceable legal framework covers crypto-asset activities; no financial authority exercises prudential control or imposes AML/CFT obligations on providers; and the activity continues nonetheless, often informally. The notion covers a continuum, from prohibition without means of control, to tolerance or silence, up to a framework enacted but not yet operational. This in-between poses a problem practitioners know well and theory has rarely treated: how to control, supervise and manage the risk of an activity the law does not yet recognize? The difficulty sharpens during transition phases, when a country leaves prohibition for a regulation still under construction, and exposure tends to rise while supervisory devices remain incomplete.

The literature on crypto risk has grown quickly but speaks little across fields: the econometrics of contagion, the law of regulation, the criminology of laundering and the engineering of detection advance in parallel and rarely cite one another. Available syntheses privilege market regulation or macro-systemic risk, leaving the properly banking management of risk and the specificity of unregulated environments in the shadow. This review occupies that space through a reproducible protocol, structured around four research questions: (RQ1) the typology of crypto-related risks for banks and the financial system; (RQ2) the role of anonymity and pseudo-anonymity in money laundering and terrorist financing; (RQ3) the regulation and supervision of crypto-assets in jurisdictions lacking a framework, where regulatory arbitrage may develop; and (RQ4) the prevention and mitigation mechanisms documented, and the conditions under which they are deemed effective.

METHODOLOGY

The review is designed and reported following PRISMA 2020 (Page et al., 2021). Two databases were searched, Scopus and Web of Science Core Collection, using three conceptual blocks (crypto-assets; banks and the financial system; risk, laundering, regulation and supervision) combined with the Boolean operator AND, each block gathering synonyms with OR. Eligible studies were peer-reviewed, open-access, English-language articles published between 2021 and 2026 in economics and management, addressing crypto-related risks for banks or the financial system, or their regulation, supervision and prevention. Database querying was complemented by backward and forward citation tracking (Greenhalgh & Peacock, 2005; Wohlin, 2014). Reference management and decision tracking relied on

Zotero and a spreadsheet procedure; a single exclusion reason was recorded per reference to keep the flow-diagram arithmetic auditable.

The design distinguishes two stages, reported separately so each can be audited independently. The first is a systematic identification stage, conducted and reported in full through PRISMA to the count of 109 eligible studies (Table 1), which forms the quantitative map of the field. The second is an analytical corpus of 35 studies, constituted through maximum-variation purposive sampling (Patton, 2015) combining a relevance score and thematic quotas, so that under-represented but theoretically decisive axes (AML/CFT and anonymity; banking mitigation) are preserved. Synthesis is qualitative and configurative, through thematic coding (Braun & Clarke, 2006), not meta-analytic. Methodological quality was appraised with the Mixed Methods Appraisal Tool (Hong et al., 2018), complemented by a tailored grid for conceptual and legal work; quality weighted interpretation rather than filtering the corpus. Selection and extraction were performed by a single reviewer, with a deferred second pass to limit subjectivity, a limitation assumed as such.

FINDINGS

The analytical corpus is recent (30 of 35 studies published between 2024 and 2026) and methodologically diverse, dominated by legal-doctrinal and empirical-quantitative work, with qualitative field studies almost absent (Figure 1). Six themes organize the literature (Table 2), and three cross-cutting findings recur.

First, anonymity is not an absolute but a degree. Almeida (2025) decomposes ten laundering techniques and shows a trade-off between concealment and execution complexity, so anonymity is set in steps by the tools used. Benson (2024) locates the weak point at decentralized obfuscation ramps, noting that MiCA addresses neither DeFi nor anonymity, while Ncube (2023) and Kim (2021) place the bank at the fiat-crypto interface, where wallet custody and suspicious-activity reporting make flows traceable. The control point is therefore tangible rather than abstract.

Second, the bank-crypto interconnection is bidirectional. Chen (2025) models how stablecoin issuance compresses banks' deposit margins and, in one scenario, raises the probability of a banking crisis from 2.99% to 7.20%. Diop (2024) documents the reverse direction through Silicon Valley Bank, whose failure depegged USDC to 0.87 USD because part of its reserves sat at the bank, dragging DAI and FRAX with it. Curcio et al. (2024) qualify the magnitude but expose a design flaw, the absence of circuit breakers in crypto markets. The idea of a watertight crypto sphere no longer holds.

Third, and most counter-intuitive for decision-makers, the absence of law does not remove risk. It renders risk invisible to the supervisor and pushes activity toward informal channels or low-capacity jurisdictions, a result triangulated across multi-country studies (Dufouleur, 2026; Isaak, 2025; Ylonen, 2024). Between the regulatory void and total control, the whole policy space unfolds, from the fragmented frameworks of the Western Balkans and post-Soviet states (Krasniqi, 2025) to China's surveillance-oriented model (Meng, 2026). On the mitigation side, once supervised, the very technology that creates the risk becomes an instrument of traceability: graph neural networks detect crypto fraud and laundering with high precision (Pavlova, 2025), and banks appropriate blockchain and tokenization to stay at the center of the infrastructure (Goghie, 2024).

CONCLUSIONS

Recent research characterizes crypto risk for banks well and catalogues a broad range of regulatory and operational responses. It remains thin, however, on a point essential to practitioners: the actual management of these risks inside banks of emerging economies and in zones of regulatory void or transition, precisely where exposure is highest. The review contributes a transparent, reproducible protocol; it brings rarely connected literatures into dialogue under six shared themes; and it treats the unregulated environment as an explanatory variable in its own right, distinct from the absence of risk.

The main limitations follow from the design. Selection and extraction rest on a single reviewer, with deferred re-verification but no independent double coding or inter-rater agreement; restriction to two databases, English, open access and 2021-2026 may have excluded relevant closed-access and grey literature, confirmed to exist by citation tracking; and the second-stage sample retains a share of judgment. These caveats temper fine counts but not the tendencies identified.

The review derives a focused research agenda. The priority is to observe what banks actually do when the law is silent, through qualitative field studies in emerging economies undergoing regulatory transition, where vulnerabilities concentrate and evidence is scarce. A setting such as Morocco, which

is beginning its exit from prohibition with the draft law 42-25 (Office des Changes, Bank Al-Maghrib & AMMC, 2017; Abdallah-Ou-Moussa et al., 2025), offers an observation case that is difficult to match, and one this research program will pursue.

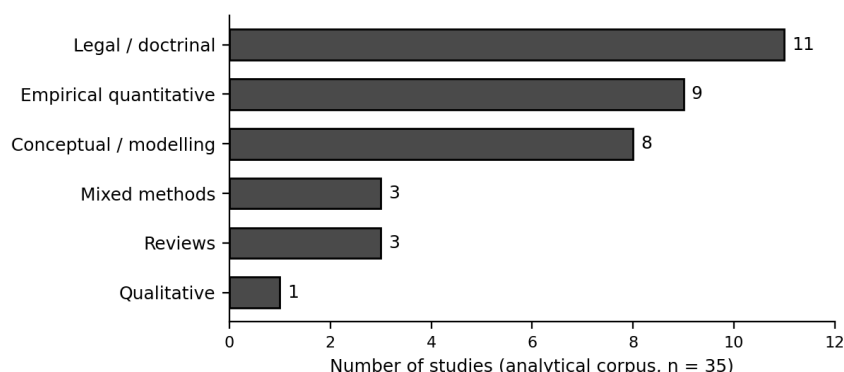


Figure 1. Methodological composition of the analytical corpus (n = 35)

Source: authors.

Table 1. Corpus construction (PRISMA 2020 flow)

Selection stage	Records
Identified (Scopus 73; Web of Science 170)	243
After duplicate removal	207 (36 duplicates removed)
Title/abstract screening	110 retained (97 excluded)
Full-text eligibility	109 eligible (1 excluded)
Analytical corpus (maximum-variation sample)	35

Source: authors, following Page et al. (2021).

Table 2. Six thematic clusters of the literature

Theme	Key insight	Representative studies
T1. Risk typologies	Crypto risk for banks is multidimensional; the decentralized system lacks the shock absorbers of traditional finance (no lender of last resort, no deposit insurance).	Kochergin (2024); Gramlich et al. (2023); Teng (2026); Joebges (2025)
T2. AML/CFT and anonymity	Anonymity is a matter of degree set by the tools used; the control point is the fiat-crypto interface and wallet custody.	Almeida (2025); Benson (2024); Ncube (2023); Kim (2021); Spyra (2025)
T3. Systemic risk and stability	Bank-crypto interconnection runs both ways; stablecoin issuance can raise bank-crisis probability, and bank failure can depeg stablecoins.	Chen (2025); Diop (2024); Curcio et al. (2024); Andolfatto (2024)
T4. Regulation and supervision	Fragmentation drives regulatory arbitrage; prohibition without supervision shifts activity to informal channels.	Dufouleur (2026); Isaak (2025); Wong (2025); Arner (2024); Meng (2026)
T5. Prudential and banking mitigation	Once supervised, the technology that creates the risk becomes an instrument of traceability (chain analytics, machine learning).	Warren (2025); Pavlova (2025); Mukhanbetali (2026); Goghie (2024)
T6. Emerging economies and cases	Adoption outpaces oversight; low-visibility uptake, weak supervision and fragmented law recur across regions.	Bespalova (2025); Esu (2026); Krasniqi (2025)

Source: authors.

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