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# Regulatory Mitigation of Digital Bank-Run Risk in Indonesia's Rupiah Digital: A Normative Legal Framework for Monetary and Financial Stability

**Mochamad Ilham Fatahillah**
Faculty of Law, Universitas Brawijaya, Malang, Indonesia
Corresponding author: mochammadil23@gmail.com

**Abstract**
Indonesia's development of the Rupiah Digital, the country's prospective central bank digital currency (CBDC), offers a strategic opportunity to modernise the payment system, strengthen monetary sovereignty in the digital sphere, and broaden access to central-bank money. Yet a retail CBDC also creates a distinctive financial-stability risk: a digital bank run in which depositors rapidly migrate funds from commercial bank deposits to risk-free central-bank liabilities. This article examines the urgency of regulating digital bank-run risk in the circulation of the Rupiah Digital and reconstructs an ideal regulatory model for Indonesia. Using normative legal research with statutory, conceptual, and comparative-institutional approaches, the article analyses the 1945 Constitution, the Currency Law, the Banking Law, the Bank Indonesia Law, the Financial System Crisis Prevention and Resolution Law, the Financial Services Authority Law, and Law No. 4 of 2023 on Financial Sector Development and Strengthening. The study finds five structural gaps in Indonesia's existing legal framework: the absence of retail CBDC holding limits, tiered remuneration rules, digital-run crisis protocols, CBDC-specific emergency liquidity arrangements, and ecosystem-wide cyber-risk governance. These gaps are legally significant because the Digital Rupiah's status as a direct liability of Bank Indonesia may accelerate systemic disintermediation under conditions of panic. The article proposes a five-pillar regulatory architecture comprising dynamic holding limits, tiered remuneration, statutory crisis protocols and circuit breakers, an emergency CBDC liquidity facility, and cyber-risk governance. It argues that these safeguards should be enacted at the statutory level and integrated into the Financial System Stability Committee framework before full public deployment of the Rupiah Digital.

**Keywords:** Rupiah Digital; central bank digital currency; digital bank run; monetary stability; banking disintermediation; financial regulation; Indonesia

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## INTRODUCTION

Central bank digital currency (CBDC) has moved from a theoretical innovation in monetary law and payment-system studies into a central policy agenda for many monetary authorities. The Committee on Payments and Market Infrastructures and the Markets Committee (2018) had already warned that a general-purpose CBDC would require central banks to evaluate implications for monetary policy and financial stability. Subsequent BIS surveys confirm that CBDC work remains widespread, with the 2024 survey reporting extensive central-bank engagement across retail and wholesale CBDC projects (Bank for International Settlements [BIS], 2025). Indonesia is part of this global trajectory. Through Proyek Garuda, Bank Indonesia issued a high-level design for the Rupiah Digital on 30 November 2022 and positioned it as a digital representation of sovereign Rupiah in the national monetary architecture (Bank Indonesia, 2022).

The juridical foundation of the Rupiah Digital was strengthened through Law No. 4 of 2023 on Financial Sector Development and Strengthening, commonly referred to as the P2SK Law. This statute amended the Indonesian financial-sector framework and

recognised digital forms of the Rupiah within Bank Indonesia's monetary authority. From a policy perspective, the Rupiah Digital promises faster settlement, greater resilience of public payment infrastructure, potential financial inclusion, and the preservation of the Rupiah's sovereignty amid private crypto-assets and stablecoins. However, these benefits must be balanced against the distinct risk created by an easily accessible retail CBDC: the possibility of instantaneous migration of deposits from commercial banks to the central bank.

The most important risk in this regard is a digital bank run. In a conventional bank run, depositors withdraw funds from a bank because they doubt its liquidity or solvency. In a digital bank run involving CBDC, the logic is intensified: the public can move deposits from commercial bank money into a direct central-bank liability through a digital interface. The migration can occur without queuing, without branch-office constraints, and without the ordinary frictions of physical cash withdrawal. The risk is therefore not merely a technological issue. It is a structural interaction between legal status, public confidence, banking intermediation, and the design of monetary instruments.

This problem is especially relevant for Indonesia because the banking sector remains a central channel of financial intermediation. Commercial banks collect third-party funds (Dana Pihak Ketiga, DPK) and transform them into credit for households, micro, small, and medium enterprises, corporations, housing, and infrastructure. If the introduction of the Rupiah Digital enables large-scale and rapid conversion of DPK into central-bank money, the banking system may face liquidity stress, credit contraction, and ultimately macroeconomic instability. The research problem addressed in this article is therefore not whether Indonesia should develop a Digital Rupiah, but whether the existing legal framework is sufficiently equipped to prevent and manage the risks generated by its circulation.

The CBDC literature has developed rapidly in economics, payment-system policy, and information-technology governance. Auer and Böhme (2020) analyse the technological architecture of retail CBDC; Brunnermeier and Niepelt (2019) examine conditions under which private and public money may be equivalent; Bindseil (2020) develops a tiered-remuneration model to reduce structural disintermediation; Fernández-Villaverde et al. (2021) explore CBDC as an account-based central banking arrangement for the public; and Carapella et al. (2024) analyse the financial-stability implications of CBDC under different design choices. Recent BIS work has further distinguished between slow disintermediation under normal conditions and fast disintermediation under stress (Bidder et al., 2025).

In Indonesia, the debate has been dominated by payment-system modernisation, digital-economy development, and the legal recognition of the Rupiah Digital. What remains underdeveloped is a systematic normative legal reconstruction of digital bank-run risk mitigation. Existing statutes recognise Bank Indonesia's monetary mandate, banking intermediation, financial-system crisis management, deposit insurance, and financial-sector supervision. Yet these statutes were largely constructed before the operational reality of retail CBDC. They do not expressly answer how the law should limit CBDC accumulation, price CBDC balances, activate emergency restrictions, provide liquidity to banks affected by CBDC migration, or allocate cyber-risk governance responsibilities across institutions.

The originality of this article lies in its legal reconstruction of Digital Rupiah risk mitigation as an integrated regulatory architecture. Rather than treating holding limits, remuneration, crisis management, liquidity facilities, and cybersecurity as separate

technical issues, the article frames them as mutually reinforcing legal safeguards required to protect monetary stability, banking intermediation, and the constitutional function of currency. This contribution is particularly important because the Rupiah Digital is a sovereign monetary instrument; its design and risk controls cannot be left only to operational regulations or technical standards after deployment.

This article addresses two research questions. First, why has the regulation of digital bank-run risk mitigation in the circulation of the Rupiah Digital become an urgent legal necessity for Indonesia? Second, what regulatory model should Indonesia adopt to prevent and manage digital bank-run risk while preserving monetary stability, financial-system stability, and the public function of banking?

The article proceeds as follows. Section 2 reviews the relevant literature and conceptual framework. Section 3 explains the normative legal method. Section 4 presents the results, including the risk-transmission mechanism and five legal gaps in the current Indonesian framework. Section 5 discusses the normative urgency and reconstructs a five-pillar regulatory model. Section 6 concludes with recommendations, limitations, and future research directions.

## Literature Review and Conceptual Framework

### 1. CBDC, Central-Bank Money, and Legal Tender

CBDC is generally understood as digital money denominated in the national unit of account and issued as a direct liability of the central bank. This characteristic differentiates CBDC from commercial bank deposits, e-money, and private crypto-assets. Commercial bank deposits are claims against banks, while CBDC is a claim against the monetary authority. This legal distinction is central to the Digital Rupiah debate because, in a crisis, the public may regard central-bank money as safer than bank money. Lastra (2006) and Proctor (2012) show that the legal nature of money cannot be separated from the institutional authority that issues it and the public-law framework that makes it acceptable in settlement.

In Indonesia, Rupiah has a constitutional dimension. Article 23B of the 1945 Constitution provides that the types and value of currency shall be determined by law. Law No. 7 of 2011 on Currency further positions the Rupiah as the legal currency of the Republic of Indonesia. The P2SK Law then updates the financial-sector framework in response to digital transformation. The Digital Rupiah must therefore be analysed not merely as an electronic payment product but as a legal monetary instrument that carries public-law consequences for sovereignty, value stability, payment-system stability, and institutional accountability.

The literature also recognises that the economic consequences of CBDC depend heavily on design. Kumhof and Noone (2018) argue that the balance-sheet effects of CBDC depend on access, convertibility, remuneration, and issuance rules. Brunnermeier and Niepelt (2019) show that substituting public money for private money need not disrupt equilibrium under certain conditions, but those conditions depend on institutional arrangements and confidence. The legal implication is clear: design safeguards are not peripheral features; they determine whether a retail CBDC functions as a complementary means of payment or becomes a destabilising substitute for bank deposits.

### 2. Digital Bank Runs and Banking Disintermediation

The classic theory of bank runs was formalised by Diamond and Dybvig (1983), who show that banks are vulnerable because they transform liquid deposits into illiquid long-term assets. A run can occur even when a bank is fundamentally solvent if depositors believe that other depositors will withdraw. CBDC does not abolish this coordination

problem. Instead, it may intensify the run equilibrium by providing a real-time and risk-free destination for funds.

CBDC-related disintermediation can appear in two forms. Slow disintermediation occurs when households gradually substitute bank deposits with CBDC under normal conditions. Fast disintermediation occurs when, under stress, depositors rapidly flee from banks to CBDC. Bidder et al. (2025) emphasise that both forms matter, but fast disintermediation is more dangerous because it can turn a confidence shock into a systemic liquidity event. Adrian and Mancini-Griffoli (2019) similarly note that digital money may reshape the relation between central banks, commercial banks, and private payment providers.

For Indonesia, this risk must be linked to the legal function of banks. Article 3 of the Banking Law establishes banking's principal function as collecting and distributing public funds to support national development. If the Digital Rupiah unintentionally drains the deposit base required for this function, the state would create a legal instrument that undermines another legal mandate. This potential contradiction makes digital bank-run mitigation a problem of regulatory coherence, not merely prudential economics.

### 3. Regulatory Safeguards in CBDC Design

The international policy debate has converged around several safeguards. Holding limits restrict the maximum amount of retail CBDC that each user may hold. Tiered remuneration reduces the incentive to hold large CBDC balances as a store of value. Circuit breakers or switching limits allow temporary restrictions during stress. Emergency liquidity facilities ensure that solvent banks experiencing CBDC-induced outflows can obtain central-bank liquidity. Cyber-risk governance secures the operational ecosystem surrounding wallets, application programming interfaces, network layers, and operational controls.

Bindseil (2020) proposes tiered CBDC remuneration as a mechanism to control CBDC volume while preserving payment functionality. The BIS (2021, 2025) identifies CBDC safeguards as core financial-stability instruments. The ECB's digital euro work has examined holding limits and financial-stability impacts, including technical analysis of a EUR 3,000 individual holding limit under conservative scenarios (European Central Bank [ECB], 2025a, 2025b). Carapella et al. (2024) further argue that CBDC design choices and traditional liquidity tools should be evaluated together rather than in isolation. These international practices provide comparative insight for Indonesia, although any adoption must be calibrated to domestic constitutional, banking, and crisis-management law.

## METHOD

This study uses normative legal research. Normative legal research examines legal norms, principles, doctrines, institutional mandates, and interpretive coherence within a legal system (Marzuki, 2017). The object of analysis is not an empirical measurement of CBDC adoption but the adequacy of Indonesia's legal architecture in anticipating a rationally foreseeable risk created by the Digital Rupiah.

Three approaches are employed. First, the statutory approach analyses positive legal instruments governing currency, central banking, banking, financial supervision, deposit insurance, crisis prevention, and financial-sector development. Second, the conceptual approach examines CBDC, digital bank-run risk, central-bank money, disintermediation, lender-of-last-resort functions, proportionality, and monetary sovereignty. Third, a comparative-institutional approach is used to learn from international CBDC safeguards developed by the BIS, ECB, Federal Reserve, IMF, and selected central-bank literature.

This third approach is not used to transplant foreign rules mechanically, but to identify regulatory options that can be reconstructed within Indonesian law.

Primary legal materials include the 1945 Constitution of the Republic of Indonesia; Law No. 7 of 2011 on Currency; Law No. 23 of 1999 on Bank Indonesia, as amended; Law No. 10 of 1998 on Banking; Law No. 21 of 2011 on the Financial Services Authority; Law No. 9 of 2016 on the Prevention and Resolution of Financial System Crises; and Law No. 4 of 2023 on Financial Sector Development and Strengthening. Secondary materials include Bank Indonesia's Proyek Garuda documents, the Indonesia Payment System Blueprint, BIS CBDC publications, ECB digital euro materials, Federal Reserve research, IMF notes, Basel liquidity standards, legal theory, and peer-reviewed or institutional literature on CBDC and financial stability.

The legal analysis uses grammatical, systematic, and teleological interpretation. Grammatical interpretation identifies the literal scope of statutory terms such as currency, Rupiah, bank deposits, payment-system stability, and financial-system crisis. Systematic interpretation examines coherence among the mandates of Bank Indonesia, OJK, LPS, and the Financial System Stability Committee (KSSK). Teleological interpretation evaluates whether existing and proposed norms fulfil the purposes of monetary stability, banking intermediation, legal certainty, public welfare, and the protection of national economic sovereignty.

## RESULTS AND DISCUSSION

### 1. The Legal Architecture of the Digital Rupiah and Its Structural Risk

The Digital Rupiah differs fundamentally from commercial bank deposits. Third-party funds held in banks are liabilities of commercial banks to depositors. Although deposits are protected by the deposit-insurance framework within specified conditions, they still contain institutional credit and liquidity risk. By contrast, the Digital Rupiah is designed as a direct liability of Bank Indonesia. This status makes it a form of central-bank money and, in public perception, a safer asset than commercial bank money during uncertainty.

The legal asymmetry between bank deposits and central-bank money becomes highly relevant when confidence declines. Under normal conditions, the public may treat deposits, e-money, and CBDC as functionally similar means of payment. Under stress, however, the public will differentiate them according to issuer risk. The Digital Rupiah would provide an immediate conversion route from bank liabilities to central-bank liabilities. This is the juridical root of digital bank-run risk.

The risk is not that a CBDC automatically causes a banking crisis. Rather, the risk is conditional: if the legal framework permits unlimited holdings, offers no disincentive for large balances, lacks a rapid crisis protocol, and provides no CBDC-specific liquidity response, the Digital Rupiah can amplify panic. The structural question is therefore whether Indonesian law has sufficient ex ante safeguards to keep the Digital Rupiah's function as a means of payment from becoming a destabilising store of value during crisis conditions.

### 2. Transmission Mechanism of a Digital Bank Run

A digital bank run may evolve through a sequence of mutually reinforcing stages. This transmission mechanism shows why the issue extends beyond private banking operations and becomes a macroprudential and constitutional concern. Table 1 summarises the causal chain.

**Table 1.** Transmission Chain of Digital Bank-Run Risk in the Digital Rupiah Ecosystem

| Stage | Mechanism | Legal-economic effect | Key risk |
|---|---|---|---|
| 1 | Market rumour or confidence shock leads depositors to convert DPK into Digital Rupiah. | Funds shift from commercial-bank liabilities to central-bank liabilities. | Instantaneous flight to safety. |
| 2 | Banks lose core funding while their assets remain locked in illiquid credit portfolios. | Asset-liability mismatch and LCR pressure intensify. | Structural liquidity deficit. |
| 3 | Banks restrict new lending and stop credit rollovers to preserve liquidity. | Banking intermediation weakens. | Credit crunch. |
| 4 | MSMEs, corporations, and long-term projects lose working-capital and investment financing. | Production, employment, and household income decline. | Real-sector contraction. |
| 5 | Foreign investors reassess macro-financial risk and capital outflows may rise. | Exchange-rate pressure and imported inflation threaten Rupiah stability. | Monetary-policy dilemma. |
| 6 | Public confidence in bank deposits may suffer persistent damage. | Long-term preference shifts toward central-bank money. | Structural disintermediation. |

The first stage is the migration of funds from banks to the Digital Rupiah. In Indonesia, the 1997/1998 banking crisis illustrates how loss of confidence can spread across the banking system, although at that time withdrawals were constrained by physical queues, branch hours, cash availability, and operational frictions (Batunanggar, 2002; Nasution, 1998). In the digital era, the acceleration of rumours through social media changes the crisis dynamics. The Bank Bukopin episode in 2020 showed how negative sentiment and disinformation could intensify withdrawals and pressure liquidity even without a full systemic crisis (Pangestu & Sumirat, 2021). If a similar confidence shock occurs after retail Digital Rupiah deployment, depositors would have a direct and frictionless destination for funds.

The second stage is erosion of the banking funding base. Indonesian banks rely heavily on DPK as a source of liabilities. Because loans and other bank assets cannot be liquidated instantly without losses, rapid deposit conversion into CBDC would create asset-liability mismatch. Basel III's Liquidity Coverage Ratio framework assumes deposit run-off over a stress horizon; a CBDC-enabled run compresses that horizon into hours or days (Basel Committee on Banking Supervision, 2013). If liquidity reserves are depleted, the bank may breach prudential thresholds and require supervisory intervention.

The third stage is credit contraction. Liquidity pressure forces banks to ration credit, freeze new disbursements, and prioritise balance-sheet survival. This creates a credit crunch. In economic terms, credit contraction can transmit financial distress to the real economy, as shown in the literature on financial crises and credit channels (Bernanke, 1983; Mishkin, 2016). In legal terms, the banking system's capacity to perform Article 3 of the Banking Law is impaired.

The fourth stage is a domino effect on the real sector. MSMEs and corporations depend on credit for working capital, investment, supply-chain continuity, and employment. If banks restrict credit, production declines, layoffs may rise, and household purchasing power weakens. This is especially critical for Indonesia, where household consumption has historically constituted the largest component of GDP (Badan Pusat Statistik, 2025; Bank Indonesia, 2024). A Digital Rupiah-related liquidity crisis may

therefore move from monetary infrastructure into welfare and national-development outcomes.

The fifth stage is exchange-rate pressure. A domestic banking shock can affect foreign-investor confidence and trigger capital outflows. In a small open economy, pressure on the Rupiah exchange rate can feed imported inflation and complicate monetary policy. Bank Indonesia may face a policy dilemma: liquidity expansion supports banks but may increase monetary pressure, while monetary tightening supports the exchange rate but may deepen bank liquidity stress. This tension is related to the macroeconomic logic of crisis models and the policy trilemma (Krugman, 1979; Obstfeld & Taylor, 2004).

The sixth stage is long-term confidence damage. Once the public experiences the Digital Rupiah as the safest and fastest escape from banking risk, behavioural preferences may shift permanently. This hysteresis effect can erode the deposit base even after the acute crisis ends. The legal implication is that Digital Rupiah safeguards must operate preventively, before public expectations settle into destabilising patterns.

## 3. Why a Digital Bank Run Is More Dangerous Than a Conventional Bank Run

A digital bank run is not merely a conventional bank run conducted through a smartphone. It is qualitatively more dangerous in at least five dimensions. First, it is faster. Conventional runs are slowed by branch hours, ATM capacity, cash logistics, and physical queues. Digital runs can occur twenty-four hours a day through payment interfaces. Second, it has wider scale and reach. Depositors across regions can act simultaneously, including during weekends and public holidays.

Third, social media acts as a digital catalyst. Rumours about a bank's liquidity may spread rapidly and coordinate mass withdrawal behaviour. Fourth, the run may be systemic rather than idiosyncratic. A conventional run often targets a particular bank. A CBDC-related run can affect all banks because the trigger is not only the weakness of one bank but the structural superiority of central-bank money as perceived by the public. Fifth, Bank Indonesia would face an institutional paradox. As issuer of the Digital Rupiah, it provides the instrument into which funds flow; as lender of last resort, it must support banks from which funds have flowed. This role conflict has no precise precedent in conventional banking-crisis law.

## 4. Five Normative Gaps in Indonesia's Existing Framework

The analysis of Indonesian positive law reveals five major gaps. These gaps do not mean that Indonesia has no financial-stability framework. Rather, they show that the existing framework was designed primarily for conventional banking crises and does not yet address the specific characteristics of a CBDC-enabled run.

**Table 2. Normative Gaps in Digital Rupiah Risk Mitigation**

| No. | Required instrument | Current legal condition | Risk created | Regulatory implication |
|---|---|---|---|---|
| 1 | Holding limits | No explicit statutory basis for maximum individual or institutional Digital Rupiah balances. | Uncontrolled migration from DPK to CBDC. | Law should empower BI to impose dynamic caps. |
| 2 | Tiered remuneration | No clear authority to apply differentiated rates to CBDC balances. | CBDC may become an attractive large-value store of wealth. | Law should allow price-based safeguards. |
| 3 | Digital-run crisis protocol | KSSK framework is designed for conventional crisis escalation. | Authorities may react too slowly. | Law should define indicators, circuit breakers, communication, and exit rules. |

| No. | Required instrument | Current legal condition | Risk created | Regulatory implication |
|---|---|---|---|---|
| 4 | Emergency CBDC liquidity facility | Existing LOLR rules do not specifically address CBDC-induced system-wide outflows. | Solvent banks may fail due to policy-induced liquidity migration. | A special facility should complement traditional LOLR. |
| 5 | Cyber-risk governance | No ecosystem-wide CBDC security framework for wallets, APIs, networks, and operational actors. | Cyber incidents may trigger panic and undermine confidence. | Law and implementing rules should allocate cyber duties and liability. |

**a. Absence of Digital Rupiah Holding Limits**

The first gap is the absence of explicit authority to impose maximum Digital Rupiah balances per person or entity. A holding limit is crucial because it preserves the Digital Rupiah as a payment instrument while preventing excessive substitution of bank deposits. The constitutional objection that holding limits restrict property rights must be answered carefully. A holding limit does not restrict the amount of wealth a person may own. It restricts only the proportion of wealth that may be held in a particular monetary instrument. The remaining wealth can still be held in bank deposits, government securities, shares, gold, property, or other lawful assets.

The proportionality principle supports this approach. The restriction is suitable because it reduces large-scale deposit migration; necessary because less restrictive instruments may be insufficient in crisis; and proportionate in the strict sense because it balances individual convenience against monetary and financial-system stability. Indonesian law already recognises that property-related restrictions can be justified for public purposes, as illustrated by the maximum-control logic in agrarian law. In the monetary field, the public good is the stability of the Rupiah and the financial system.

**b. Absence of Tiered Remuneration Rules**

The second gap concerns tiered remuneration. A tiered remuneration scheme treats small balances used for daily transactions differently from large balances used as a store of value. It is not a tax or a fiscal levy. It is a monetary-policy instrument that can reduce incentives to hoard Digital Rupiah. Bindseil (2020) argues that tiered remuneration can help control CBDC volume and mitigate bank disintermediation. The ECB and Federal Reserve literature also treats remuneration design as part of the financial-stability toolkit (Carapella et al., 2024; ECB, 2025a).

The Currency Law, drafted before the legal reality of digital Rupiah balances, does not expressly address remuneration of digital central-bank money. This silence should not be interpreted as a prohibition. It is a regulatory gap. A statutory amendment or dedicated Digital Rupiah law should expressly authorise Bank Indonesia to determine remuneration parameters, thresholds, and emergency adjustments.

**c. Absence of a Digital Bank-Run Crisis Protocol**

The third gap is the absence of a crisis protocol calibrated to digital speed. Law No. 9 of 2016 establishes the KSSK framework for financial-system crisis prevention and resolution. However, a CBDC-enabled digital run may unfold faster than ordinary institutional coordination. A specialised protocol should define quantitative indicators, such as abnormal DPK-to-CBDC conversion rates within short intervals; authorise temporary circuit breakers; specify coordination among Bank Indonesia, OJK, LPS, and the Ministry of Finance through KSSK; and require coordinated public communication.

Because circuit breakers may temporarily restrict access to a lawful monetary instrument, the authority must be grounded in statute. The law should specify activation

criteria, maximum duration, oversight, reporting duties, and judicial or parliamentary accountability mechanisms. Emergency power without legal certainty may undermine trust; emergency power without speed may be ineffective. The law must supply both.

**d. Absence of a CBDC-Specific Emergency Liquidity Framework**

The fourth gap is the absence of emergency liquidity provisions for banks facing outflows caused not by internal mismanagement but by migration into a central-bank-issued instrument. Traditional lender-of-last-resort facilities address bank liquidity stress, but CBDC creates a new problem: the central bank may have to offset liquidity stress amplified by its own monetary innovation. A CBDC-specific facility should therefore be designed as a complement, not a replacement, to existing emergency liquidity assistance.

The facility should apply to solvent banks experiencing extraordinary CBDC-related DPK outflows. It should have accelerated assessment procedures, pre-agreed collateral rules, and integrated KSSK coordination. Without such a framework, fundamentally sound banks could become illiquid during panic, thereby converting a preventable liquidity shock into a solvency and systemic crisis.

**e. Absence of Ecosystem-Wide Cyber-Risk Governance**

The fifth gap concerns cyber-risk governance. This issue should not be misunderstood as a rejection of distributed ledger technology or blockchain. The vulnerability does not necessarily lie in the ledger architecture itself. It often lies in surrounding layers: user wallets, private-key management, interfaces between banks and payment providers, APIs, network infrastructure, operational procedures, and human factors. Buckley et al. (2021) emphasise that CBDC implementation requires governance of information-technology and cybersecurity risks, not merely monetary design.

For the Digital Rupiah, cyber-risk governance should include security-by-design obligations, authentication standards, incident reporting, continuous monitoring, stress testing, business-continuity requirements, coordination with the National Cyber and Crypto Agency (BSSN), and rules on liability for losses resulting from system failures. A cyber incident affecting Digital Rupiah wallets or conversion channels could trigger panic even if the ledger itself remains intact. Cyber governance is therefore part of financial-stability regulation.

## Discussion

### 1. Normative Urgency of Regulation

The urgency of Digital Rupiah risk mitigation rests on four normative grounds. First, monetary stability is a statutory and constitutional mandate. Article 7 of the Bank Indonesia Law requires Bank Indonesia to achieve stability of the Rupiah value, maintain payment-system stability, and contribute to financial-system stability. A Digital Rupiah-induced run threatens all three mandates simultaneously: it drains bank liquidity, weakens credit transmission, and may pressure the exchange rate.

Second, banking intermediation is a legal function that must be protected. The state cannot require banks to collect and distribute public funds while simultaneously introducing a risk-free instrument that may drain those funds without adequate safeguards. Regulatory coherence requires that the Digital Rupiah be designed as a complement to bank money, not a mechanism that structurally displaces banking.

Third, monetary-policy transmission depends on functional banking channels. Bank Indonesia's policy rate affects the economy through deposit rates, lending rates, credit availability, and expectations. If banking is weakened by digital disintermediation, the transmission of monetary policy becomes less effective. Fourth, public confidence in the

Rupiah is a public good. The Rupiah is not only a unit of account and medium of payment; it is a symbol of monetary sovereignty. A poorly regulated Digital Rupiah could damage the very confidence it is intended to strengthen.

## 2. Five-Pillar Regulatory Model

This article proposes a five-pillar model. The pillars are designed to operate cumulatively. Holding limits address quantity. Tiered remuneration addresses incentives. Crisis protocols address emergency authority. Liquidity facilities address systemic liquidity. Cyber-risk governance addresses technological and operational confidence. Table 3 summarises the model.

**Table 3. Proposed Five-Pillar Regulatory Model for the Digital Rupiah**

| Pillar | Core rule | Legal form | Main institution | Stability objective |
|---|---|---|---|---|
| 1. Holding limits | Dynamic caps on retail and institutional balances. | Statutory mandate plus BI regulation. | BI, with KSSK oversight in crisis. | Prevent excessive DPK migration. |
| 2. Tiered remuneration | Differentiated rates for transaction balances and large balances. | Statutory authorisation plus monetary-policy rules. | BI. | Preserve payment function and reduce hoarding. |
| 3. Crisis protocol | Indicators, circuit breakers, emergency communication, exit mechanism. | Statutory emergency power plus KSSK protocol. | BI, OJK, LPS, Ministry of Finance/KSSK. | Stop panic transmission rapidly. |
| 4. Emergency CBDC liquidity facility | Fast liquidity support for solvent banks hit by CBDC-induced outflows. | Amendment to LOLR framework or special Digital Rupiah law. | BI with OJK and KSSK coordination. | Prevent liquidity shocks from becoming solvency crises. |
| 5. Cyber-risk governance | Security standards, incident response, liability, BSSN coordination. | Statute plus implementing cyber and payment regulations. | BI, BSSN, OJK, payment-system providers. | Maintain operational trust and resilience. |

### a. Pillar One: Dynamic Holding Limits

The first pillar is a statutory basis for dynamic holding limits. These limits should differentiate between individuals, businesses, government entities, and financial institutions. They should also distinguish normal conditions from stress conditions. Under normal conditions, the limit should be sufficient for ordinary transactions. Under stress, Bank Indonesia should be able to tighten limits temporarily to prevent destabilising conversion from bank deposits.

The law should set the authority and principles, while technical thresholds can be set by Bank Indonesia regulation after consultation with OJK, LPS, and the Ministry of Finance. This division maintains democratic legitimacy while preserving operational flexibility. The ECB's digital euro process shows that holding-limit design should be embedded in a legislative framework rather than left entirely to operational discretion (ECB, 2025a, 2025b).

### b. Pillar Two: Tiered Remuneration

The second pillar is tiered remuneration. The first tier should cover normal payment balances and may be non-remunerated or treated neutrally. The second tier, covering balances above ordinary transaction needs, should receive lower remuneration. A third tier for very large balances may receive zero or negative remuneration, subject to legal limits and proportionality. The aim is not to penalise the public but to align incentives with the Digital Rupiah's intended function as a means of payment.

This pillar is essential because holding limits alone may be rigid, while remuneration alone may be insufficient during panic. Combined quantity-based and price-based safeguards give the central bank a broader toolkit. The model is consistent with the financial-stability literature, which increasingly treats CBDC safeguards as a portfolio of instruments rather than a single rule (BIS, 2025; Carapella et al., 2024).

**c. Pillar Three: Statutory Crisis Protocol and Circuit Breaker**

The third pillar is a Digital Rupiah crisis protocol. Its first component is early warning. Bank Indonesia and OJK should monitor abnormal conversion volumes, liquidity ratios, payment-system congestion, social-media-driven panic indicators, and bank-specific outflow concentrations. Its second component is the circuit breaker. If predetermined thresholds are exceeded, Bank Indonesia should be able to slow, cap, queue, or temporarily suspend conversion from bank deposits into Digital Rupiah, subject to strict time limits.

The third component is institutional coordination. OJK must supervise bank liquidity and prudential compliance. LPS must assess implications for deposit insurance and resolution. The Ministry of Finance must assess fiscal implications. Bank Indonesia must manage payment-system and monetary consequences. KSSK should serve as the coordination forum for systemic conditions. The fourth component is communication. Crisis messaging must clarify that temporary restrictions protect the financial system and do not invalidate the Rupiah or confiscate wealth. The fifth component is exit. The emergency status must terminate when indicators return to normal and must be followed by public accountability reporting.

**d. Pillar Four: Emergency CBDC Liquidity Facility**

The fourth pillar is an emergency CBDC liquidity facility. Its scope should be limited to banks that are fundamentally solvent but face extraordinary outflows due to CBDC migration. Eligibility should be based on liquidity stress indicators, solvency assessment by OJK, collateral availability, and systemic relevance. Procedures should be faster than ordinary facilities because digital outflows occur at digital speed.

The facility should not create moral hazard. Banks should not be protected from losses caused by poor governance or reckless asset management. However, when liquidity stress is caused by systemic flight to a central-bank instrument, the central bank and crisis-management authorities must provide a stabilising response. This framework aligns with the lender-of-last-resort principle while adapting it to the CBDC era.

**e. Pillar Five: Cyber-Risk Governance**

The fifth pillar is cyber-risk governance. The regulation should define Digital Rupiah infrastructure as critical financial infrastructure. It should impose security standards for wallet providers, banks, payment-service providers, and technical vendors. It should require multi-factor authentication, fraud monitoring, encrypted communications, secure key management, operational-resilience testing, cyber-incident reporting, and consumer protection procedures.

The law should also clarify liability. If a user suffers loss because of wallet-provider negligence, API failure, inadequate authentication, or delayed incident response, responsibility must be legally traceable. If the failure is systemic, Bank Indonesia and KSSK must have pre-agreed escalation procedures. Cybersecurity is inseparable from public confidence: a single major incident can transform technical vulnerability into monetary panic.

### 3. Constitutional Proportionality and Rights Protection

Because the Digital Rupiah is lawful money, restrictions on its holding or conversion require a strong legal basis. The regulatory model proposed in this article must therefore satisfy constitutional proportionality. The objective is legitimate: protection of monetary stability, financial-system stability, banking intermediation, and public welfare. The instruments are suitable because they directly address the mechanisms that produce digital bank-run risk. They are necessary because ordinary banking-crisis tools are too slow or incomplete for CBDC-related runs. They are proportionate because they regulate the use of a specific monetary instrument rather than confiscating or limiting total wealth.

Rights protection must also include transparency and accountability. Holding limits should be published. Remuneration tiers should be predictable. Crisis protocols should be legally defined before use. Emergency measures should have maximum durations and review mechanisms. Cyber incidents should trigger notice duties and remedies. These safeguards are essential to prevent risk-mitigation regulation from becoming arbitrary administrative power.

### 4. Institutional Integration within the KSSK Framework

The Digital Rupiah requires integrated governance because no single institution controls all relevant risks. Bank Indonesia controls issuance, payment-system operations, and monetary policy. OJK supervises banks and financial-services institutions. LPS protects depositors and handles bank resolution. The Ministry of Finance assesses fiscal consequences. BSSN has national cyber-security competence. KSSK provides the systemic coordination forum. The law should therefore specify a Digital Rupiah crisis matrix that assigns roles, decision thresholds, information-sharing obligations, and accountability.

A practical legal reconstruction would include amendments to the Bank Indonesia Law, the Currency Law, the Banking Law, and the financial-system crisis framework, or alternatively a dedicated Digital Rupiah Law. A dedicated law may be preferable because it can regulate issuance, user rights, data protection, interoperability, financial-stability safeguards, cyber governance, institutional coordination, emergency powers, and accountability in one coherent instrument. Implementing Bank Indonesia regulations would then provide technical thresholds and operational procedures.

## CONCLUSION

This article concludes that regulation of digital bank-run risk mitigation in the circulation of the Rupiah Digital is an urgent legal necessity for Indonesia. The Digital Rupiah's legal character as a direct liability of Bank Indonesia makes it safer than commercial bank deposits in public perception. Under normal conditions, this difference may be functionally invisible. Under stress, it can trigger rapid migration from bank deposits to central-bank money. The resulting transmission chain may erode DPK, weaken bank liquidity, produce credit contraction, transmit to the real sector, pressure the Rupiah exchange rate, and create persistent disintermediation.

The current Indonesian legal framework is not yet adequate to address this risk. The analysis identifies five structural gaps: no explicit holding-limit authority, no tiered-remuneration basis, no Digital Rupiah crisis protocol, no CBDC-specific emergency liquidity facility, and no ecosystem-wide cyber-risk governance framework. These gaps are interconnected. Filling only one of them would not be sufficient, because digital bank-run risk arises from the interaction among user behaviour, central-bank money, banking liquidity, payment-system technology, and legal confidence.

The article proposes a five-pillar regulatory model: dynamic holding limits, tiered remuneration, statutory crisis protocols and circuit breakers, an emergency CBDC liquidity facility, and cyber-risk governance. These pillars should be enacted at the statutory level and operationalised through Bank Indonesia regulation, OJK prudential rules, LPS coordination, BSSN cyber standards, and the KSSK crisis-management mechanism. The Digital Rupiah should be designed as a complement to commercial bank money, not as an uncontrolled substitute for bank deposits.

Future research should quantify the optimal level of Digital Rupiah holding limits for Indonesia, estimate potential DPK outflow under different crisis scenarios, and analyse the interaction between Digital Rupiah data governance, privacy rights, and consumer protection. Comparative empirical work on jurisdictions with operational or pilot CBDCs would also strengthen Indonesia's regulatory calibration. Before full public implementation, however, the legal direction should be clear: monetary innovation must be accompanied by risk-mitigation regulation capable of preserving stability, confidence, and constitutional economic welfare.

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