

Central Bank Digital Currency: Constitutional Reconfiguration of Monetary Sovereignty Within Web3 Architectures

Mata Uang Digital Bank Sentral: Rekonfigurasi Konstitusional Kedaulatan Moneter Dalam Arsitektur Web3

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Abstract

The emergence of decentralized Web3 architectures fundamentally disrupts traditional territorial monetary sovereignty, thereby challenging the constitutional mandate of state-controlled currency. This study examines the normative collision between algorithmic decentralization and state-centric monetary frameworks under the Indonesian Constitution. Employing a doctrinal legal methodology through statutory, conceptual, and functional comparative approaches, this research analyzes the central bank digital currency as a critical constitutional defense mechanism. The findings indicate that the Financial Sector Omnibus Law positions the digital fiat as a sovereign instrument to restore macroeconomic control against transnational private stablecoins. Furthermore, balancing anti-money laundering obligations with constitutional privacy rights explicitly requires a regulation-by-design architecture, specifically implementing tiered anonymity. The institutionalization of digital fiat necessitates precise legal agency attribution within permissioned smart contracts to prevent algorithmic immunity. Ultimately, this regulatory integration represents a manifestation of digital constitutionalism, renegotiating the cyberspace social contract to ensure monetary stability while proportionally protecting all fundamental civic rights.

Abstrak

Kemunculan arsitektur Web3 terdesentralisasi secara fundamental mendisrupsi kedaulatan moneter teritorial konvensional, sehingga menantang mandat konstitusional mengenai kendali mata uang negara. Penelitian ini secara khusus mengkaji benturan normatif antara desentralisasi algoritmik dan kerangka moneter sentralistik di dalam yurisdiksi Konstitusi Indonesia. Menggunakan metodologi hukum doktrinal melalui pendekatan perundang-undangan, konseptual, dan perbandingan fungsional, riset ini menganalisis instrumen mata uang digital bank sentral sebagai mekanisme pertahanan konstitusional krusial. Temuan menunjukkan bahwa Undang-Undang Sektor Keuangan memosisikan fiat digital sebagai instrumen berdaulat guna merestorasi kendali makroekonomi terhadap aset privat transnasional. Selanjutnya, penyeimbangan kewajiban antipencucian uang dengan hak privasi secara mutlak membutuhkan arsitektur regulasi terdesain, khususnya melalui implementasi anonimitas berjenjang. Pelembagaan fiat digital ini menuntut atribusi keagenan hukum yang presisi pada kontrak pintar berizin untuk mencegah doktrin imunitas algoritmik. Pada akhirnya, integrasi regulasi tersebut merepresentasikan wujud manifestasi konstitusionalisme digital, merenegosiasi kontrak sosial siber demi memastikan stabilitas moneter sambil terus melindungi secara proporsional seluruh hak asasi warga negara.



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A. INTRODUCTION

1. Background

Over the current decade, the global financial and constitutional landscape has encountered a substantial disruption driven by the advent of distributed ledger technology and the Web3 ecosystem. These developments precipitate a distinct normative inconsistency with the traditional architecture of constitutional law. Historically and doctrinally, monetary sovereignty has been consistently construed as the exclusive prerogative of an independent state. This encompasses the sovereign authority to issue, circulate, and regulate legal tender within its defined territorial jurisdiction, primarily to safeguard macroeconomic stability and promote the general welfare.¹ Nevertheless, the Web3 architecture operating upon principles of absolute decentralization, community-driven autonomous governance, and borderless cryptography increasingly challenges this traditional state monopoly. The proliferation of crypto-assets situated beyond central bank jurisdiction, the advent of privately issued stablecoins pegged to fiat currencies, and the pervasive expansion of decentralized finance (DeFi) platforms inherently construct a novel paradigm of functional sovereignty within the digital sphere.

By subsuming the foundational economic functions of money as a medium of exchange and a store of value, these algorithmic entities precipitate a phenomenon of currency substitution. Consequently, this dynamic exacerbates regulatory lag and induces a degradation of sovereign monetary authority, thereby posing a systemic challenge to the efficacious transmission of state monetary policy.²

As an institutional countermeasure against this proliferation of privatized exchange mediums, central banks and monetary authorities across diverse global jurisdictions have proactively initiated the development of Central Bank Digital Currencies (CBDCs).³ Within the Indonesian constitutional framework, the intersection of digital innovation and sovereign authority directly implicates the core tenets of constitutional supremacy, specifically the mandates enshrined in Articles 23B and 23D of the 1945 Constitution of the Republic of Indonesia. The Constitution explicitly vests the exclusive prerogative to regulate the denomination and valuation of currency, alongside the administration of monetary policy, in the state's

¹ Gábor Horváth, "Monetary Sovereignty and Central Bank Digital Currency," *Pénzügyi Szemle = Public Finance Quarterly* 67, no. 4 (2022): 539–52, https://doi.org/10.35551/PFQ_2022_4_4.

² Wouter Bossu et al., "Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations," *IMF Working Papers* 20, no. 254 (November 20, 2020), <https://doi.org/10.5089/9781513561622.001>.

³ Marianne Bechara, Adrian Dumitrescu-Pasecinic, and Tomoyuki Kubota, *Selected Legal Considerations for Central Bank Digital Currencies* (Washington DC: International Monetary Fund, 2025).

instrumentality, Bank Indonesia. This constitutional delegation of power serves as a substantive manifestation of the State Theory of Money (Chartalism), positing that the legitimacy of currency derives entirely from sovereign will and statutory enactment.

However, this mandate encounters substantial disruption with the emergence of *Lex Cryptographia* a functional legal order constructed via algorithmic code and extraterritorial network consensus. The paradigmatic friction between centralized, territorially bound monetary sovereignty and decentralized, global algorithmic innovation compels constitutional jurisprudence to evolve. This evolution requires a structural recalibration: preserving sovereign monetary control without impeding technological advancement, while concurrently fulfilling the constitutional imperative to safeguard the privacy rights of citizens.

To substantiate the analytical rigor of this governance discourse, the investigation must be predicated upon a comprehensive mapping of the state of the art. The existing academic corpus concerning Central Bank Digital Currencies (CBDCs) and their implications for monetary sovereignty is currently polarized into three principal streams of thought.

The first constitutes the *economic efficiency stream*. Literature within this cluster demonstrates that global research on CBDCs is predominantly saturated with quantitative methodologies focused on macroeconomic efficiency and the stability of financial markets. Consequently, there remains a systemic paucity of qualitative examinations situated strictly within the paradigm of public law.⁴ The second paradigm, categorized as the *techno-regulatory stream*, posits that Web3 architecture fundamentally reconfigures global governance frameworks. It does so through the emergence of "Algorithmic Nations" novel entities that inherently subvert the traditional regulatory and jurisdictional monopolies of the sovereign state.⁵ Scholars situated within this cluster propose a structural framework wherein privacy safeguards and Anti-Money Laundering (AML) transparency mandates are embedded directly into the underlying algorithmic

⁴ Shah Fahad and Mehmet Bulut, "Central Bank Digital Currencies: A Comprehensive Systematic Literature Review on Worldwide Research Emergence and Methods Used," *American Journal of Business* 39, no. 3 (July 5, 2024): 137–57, <https://doi.org/10.1108/AJB-12-2023-0210>.

⁵ Igor Calzada, "Decentralized Web3 Reshaping Internet Governance: Towards the Emergence of New Forms of Nation-Statehood?," *Future Internet* 16, no. 10 (October 4, 2024): 361, <https://doi.org/10.3390/fi16100361>.

architecture, thereby operationalizing a "regulation-by-design" paradigm.⁶ The third category, the *civil law and institutional stream*, approaches the institutional classification of CBDCs in a manner consistent with the International Monetary Fund's (IMF) perspectives on the legal architecture of digital assets. Crucially, this discourse underscores the imperative of public ordering to safeguard sovereign financial systems from the encroaching domains of *lex cryptographia* and the emergence of private oligopolies.^{7,8}

A thematic synthesis of these three literature pillars exposes a critical analytical blind spot: the prevailing scholarship predominantly dissects Central Bank Digital Currencies (CBDCs) through the lens of private law specifically concerning token ownership or focuses on cryptographic security architectures and commercial banking utility. There is a conspicuous dearth of literature that doctrinally situates CBDCs within the ambit of constitutional law, wherein the issuance of currency is analyzed as an inherent attribute of state sovereignty. This theoretical lacuna is particularly acute for the Indonesian jurisdiction, which operates under stringent constitutional mandates and a foundational welfare state philosophy.

Departing from antecedent research, this study introduces a novel approach that squarely situates the discourse surrounding CBDC implementation and the disruptive nature of the Web3 ecosystem within a constitutional law analytical framework. This article posits that the implementation of a CBDC transcends the mere evolution of digital payment systems; rather, it constitutes a structural constitutional defense mechanism. The CBDC functions to reconstruct state monetary sovereignty against the backdrop of Web3's functional decentralization.

By juxtaposing the State Theory of Money against the disruption engendered by *Lex Cryptographia*, and by conducting a comparative analysis of the regulatory frameworks in the European Union and the United States, this study proposes a proportional legal governance model for integrating a CBDC into the Indonesian constitutional order. Specifically, this model is examined through the statutory framework of Law Number 4 of

⁶ Nadia Pocher and Andreas Veneris, "Privacy and Transparency in CBDCs: A Regulation-by-Design AML/CFT Scheme," *IEEE Transactions on Network and Service Management* 19, no. 2 (June 2022): 1776–88, <https://doi.org/10.1109/TNSM.2021.3136984>.

⁷ Bechara, Dumitrescu-Pasecinic, and Kubota, *Selected Legal Considerations for Central Bank Digital Currencies*.

⁸ Rosa M Lastra, *International Financial and Monetary Law* (Oxford University Press, 2015), <https://doi.org/10.1093/law/9780199671090.001.0001>.

2023 concerning the Development and Strengthening of the Financial Sector (UU P2SK). This legislation is designed to codify the CBDC as a digital legal tender while securing a constitutional balance between the assertion of sovereign authority and the protection of citizens' privacy rights.

2. Research Questions

Predicated upon the antecedent discourse concerning the normative friction between Web3 architecture and territorial monetary sovereignty, the analytical framework of this article is directed toward resolving the following dual constitutional law inquiries:

- a. How does the constitutional architecture, operating pursuant to the mandates of Articles 23B and 23D of the 1945 Constitution, respond to the paradigm shift precipitated by Web3 financial decentralization; and to what extent can a Central Bank Digital Currency (CBDC) be legitimately construed as an instrument for the restoration of sovereign monetary authority?
- b. How can the reconstruction of the state's regulatory governance particularly subsequent to the enactment of Law Number 4 of 2023 (the Financial Sector Development and Strengthening Act or UU P2SK) be formulated to ensure the accountability of legal subjects within smart contract ecosystems, while concurrently maintaining constitutional proportionality between the imperatives of monetary oversight and the safeguarding of citizens' fundamental privacy rights?

3. Research Methods

The present study adopts a doctrinal legal research methodology to analyze the dogmatic friction emerging between the conventional architecture of monetary sovereignty and the Web3 ecosystem. The deployment of this normative framework is predicated upon the specific contours of digital monetary sovereignty an issue fundamentally anchored in the conceptual challenges that constitutions face when confronting regulatory lag. Accordingly, advancing a comprehensive resolution to this discourse requires a rigorous philosophical examination of the foundational principles and doctrines inherent within constitutional jurisprudence.⁹

⁹ Nur Rizkiah Hasanah and Irwan Triadi, "Judicial Activism of the Constitutional Court in Progressive Law Discovery: Limitations, Checks and Balances, and the Threat of Becoming a Positive Legislator," *Siyasah Dusturiyah: State Law Review* 1, no. 3 (October 28, 2025): 80–88, <https://doi.org/10.65101/dv2vw205>.

The dogmatic analysis within this study is operationalized through three concurrent and mutually reinforcing methodological approaches. A statutory approach is employed to evaluate the internal coherence of positive legal instruments. Specifically, this entails scrutinizing the hierarchical synchronization among the 1945 Constitution, Law Number 7 of 2011 on Currency, and Law Number 4 of 2023 on the Development and Strengthening of the Financial Sector (UU P2SK). This statutory evaluation is integrated with a conceptual approach, which maps the paradigmatic shifts within the doctrine of monetary sovereignty, the rule of law principle, and the State Theory of Money in response to the disruptive architecture of Web3. To embed a dimension of global governance, the study utilizes a functional comparative method. This approach systematically evaluates institutional designs and specific regulatory architectures across external jurisdictions, critically analyzing the governance frameworks for CBDCs and cryptographic instruments within the United States as articulated in the GENIUS Act and the European Union's authoritative Markets in Crypto-Assets (MiCA) regulation.

The legal materials underpinning this inquiry are systematically delineated into primary and secondary classifications. Primary sources are anchored in authoritative Indonesian statutory documents, predominantly the 1945 Constitution and UU P2SK, alongside relevant international legislative instruments enacted through 2025. Secondary sources are derived from contemporary academic literature, encompassing international peer-reviewed journal articles and authoritative reports issued by supranational financial institutions, notably the International Monetary Fund (IMF) and the Bank for International Settlements (BIS). The aggregation of these legal materials was conducted via rigorous library research, ensuring the substantive precision and thematic relevance of the utilized literature.¹⁰

The legal analysis is operationalized through a deductive syllogistic methodology. This framework proceeds from the major premise of constitutional sovereignty doctrine to the minor premise regarding the disruption of digital asset governance, ultimately yielding a substantiated legal conclusion. Within this deductive process, the study explicitly employs a teleological interpretation to ascertain the original intent underlying the attribution of exclusive state monetary authority established in Articles 23B and 23D

¹⁰ M. Reza Saputra, "An Election Monitoring Model in Indonesia Based on the Maqâsid Al-Syarf'ah Perspective: An Analysis of the Jâsir 'Audah Theory," *Siyasah Dusturiyah: State Law Review* 1, no. 1 (July 4, 2025): 24–37, <https://doi.org/10.65101/p9cye235>.

of the 1945 Constitution.

Concurrently, a systematic interpretation is applied to harmonize the statutory framework of the UU P2SK with the constitutional principles of proportional privacy protection. Ultimately, the State Theory of Money (Chartalism) and the doctrine of the separation of powers are deployed not merely as theoretical constructs, but as the principal analytical mechanisms to dissect the systemic attenuation of monetary authority and to construct a coherent constitutional defense paradigm.

B. DISCUSSION

1. Constitutional Legitimacy and the Disruption of Monetary Sovereignty in the Web3 Era

a. Constitutional Implications of Web3 Disruption: Normative Friction Between Territorial and Functional Sovereignty

An analytical inquiry into the essence of monetary sovereignty within the digital economy necessitates a doctrinal reconceptualization of the evolving parameters of sovereignty under constitutional law. Within the classical constitutional architecture, which is firmly anchored in Westphalian doctrine, sovereignty is traditionally defined as a supreme, territorially bound authority exercised exclusively by public law institutions. In the macroeconomic sphere, this sovereign power is operationalized through the monopolistic issuance of fiat currency, thereby consolidating absolute control over monetary instruments within the purview of the central bank. Presently, however, this traditional framework is confronted by a countervailing paradigm of functional sovereignty, structurally facilitated by the decentralized architecture of Web3.¹¹ This ecosystem facilitates the architectural development of Decentralized Finance (DeFi), wherein cryptographic protocols and smart contracts function autonomously as functional substitutes for conventional legal mediation and political institutional frameworks. Such a structural transformation systematically attenuates market reliance upon central banking entities as the ultimate guarantors of institutional trust. Consequently, this dynamic precipitates the emergence of incipient "Algorithmic Nations," providing a medium through which distributed communities can operationalize their economic governance independently of traditional jurisdictional boundaries.

The constitutional ramifications associated with the privatization and

¹¹ Calzada, "Decentralized Web3 Reshaping Internet Governance: Towards the Emergence of New Forms of Nation-Statehood?"

decentralization of these exchange mediums intrinsically disrupt sovereign monetary control. From a doctrinal perspective, the prerogative to issue currency represents an inherent attribute of state sovereignty. Georg Friedrich Knapp's State Theory of Money (Chartalism) postulates that the legitimacy of currency does not emanate from its intrinsic material value, but strictly from positive legal enactments. Such statutory decrees compel the utilization of these instruments as legal tender for the settlement of public obligations.¹² When non-state actors systematically migrate toward crypto-assets or privately issued stablecoins to serve as primary stores of value and mediums of exchange, the state experiences a critical erosion of legitimate authority, precipitating the phenomenon of currency substitution. The consequent loss of sovereign dominance over the national currency directly compromises the transmission mechanism of monetary policy. Ultimately, this dynamic restricts the central bank's operational capacity to regulate benchmark interest rates, curb inflationary pressures, and fulfill its institutional mandate as the lender of last resort amid systemic financial crises.

Within the jurisprudential framework of Indonesian constitutional law, this shifting equilibrium yields a profound normative inconsistency with foundational constitutional mandates, explicitly those enshrined in Articles 23B and 23D of the 1945 Constitution. These provisions transcend mere administrative directives; they constitute a doctrinal manifestation of monetary sovereignty, vesting exclusive enumerated powers in an independent state instrumentality Bank Indonesia to structurally preclude the occurrence of currency substitution.

The proliferation of decentralized digital assets, which *de facto* execute the indispensable economic functions of currency while remaining *de jure* outside the supervisory purview of the central bank, generates a critical legal anomaly. Rather than merely resulting in a statutory lacuna, this paradigm actively catalyzes regulatory arbitrage and jurisdictional circumvention. Consequently, this dynamic systematically vitiates the delegated authority of the central bank, producing a regulatory void that fundamentally imperils macroeconomic stability.¹³

Within the conceptual framework of constitutional law, the monetary system constitutes an essential public good. Rosa Lastra and Allen precisely articulate that money

¹² Horváth, "Monetary Sovereignty and Central Bank Digital Currency."

¹³ Anh H. Le, "Central Bank Digital Currency and Cryptocurrency in Emerging Markets," *International Economics* 181 (March 2025): 100577, <https://doi.org/10.1016/j.inteco.2024.100577>.

possesses an inherent dimension of social equity, which categorically mandates public ordering.¹⁴ This jurisdictional intervention constitutes a legal imperative to mitigate the concentration of market power by transnational technology entities (Big Tech) issuing private stablecoins absent adequate frameworks of public accountability.¹⁵ Consequently, the discourse surrounding CBDC implementation must be conceptualized as an instrument of institutional adaptation and a mechanism of sovereign jurisdictional defense, aimed at reconstructing monetary governance within the digital sphere.

Table 1. Paradigmatic Confrontation in the Sovereign Governance of Payment Systems

Analytical Dimensions of Governance	of	The Web3 Paradigm (Decentralized Finance)	Sovereign Framework (CBDC)	Constitutional
Locus Authority and Legitimacy	of and	Algorithmic consensus and functional sovereignty (e.g., Proof of Work/Stake protocols).	Sovereign anchored in jurisdiction through (legal tender).	coercive monopoly in territorial positive law
Decision-Making Architecture		Distributed communities (DAOs), marked by the absence of a singular, legally accountable subject.	Independent institutions, democratic oversight via legislative representation.	central banking subject to oversight via
Monetary Transmission Mechanisms		Algorithmic automation and decentralized market-yield protocols.	Centralized institutional control serving as policy instruments for inflation targeting and exchange rate stabilization.	
Foundational Mechanisms of Trust	of	<i>Trustless</i> architecture (absolute reliance on the immutable validity of cryptographic source code).	Institutional trust (anchored in the rule of law and overarching sovereign stability).	

Table 1 delineates the profound paradigmatic divergence between Web3 governance architectures and the traditional doctrine of state sovereignty. Such jurisdictional friction intrinsically compels the sovereign to reconstitute the overarching spectrum of its authority. Consequently, monetary sovereignty can no longer remain strictly confined to the territorial monopoly over physical fiat issuance. Instead, it

¹⁴ Rosa M Lastra and Jason G Allen, "Lex Financiera Cryptographia," in *International Monetary and Banking Law Post COVID-19* (Oxford University Press, 2023), 155–75, <https://doi.org/10.1093/law/9780192869753.003.0007>.

¹⁵ Hongfei Gu, "Data, Big Tech, and the New Concept of Sovereignty," *Journal of Chinese Political Science* 29, no. 4 (December 3, 2024): 591–612, <https://doi.org/10.1007/s11366-023-09855-1>.

necessitates a structural transition toward the regulatory capture of digital infrastructures, ecosystem governance architectures, and their underlying operational protocols. Should the positive law framework permit this regulatory arbitrage to persist absent jurisdictional intervention, constitutional authority risks gradual subordination to technological determinism and the supremacy of algorithmic architecture (*code is law*).

b. A Comparative Examination of CBDC Governance Architectures: Regulatory Approaches in the United States, the European Union, and Indonesia

In responding to the erosion of sovereign monetary prerogatives precipitated by Web3 decentralization, scholarly inquiry must transcend localized contexts to examine how the doctrine of monetary sovereignty is codified within contemporary global jurisprudence. Throughout the 2024–2025 legislative cycle, the international regulatory landscape has exhibited a pronounced bifurcation in managing the jurisdictional friction between private digital asset instruments and Central Bank Digital Currencies (CBDCs). These divergent statutory pathways directly reflect the underlying constitutional philosophies and political-economic regimes intrinsic to their respective economic blocs. Consequently, a functional comparative analysis of these paradigms is foundational for evaluating the jurisdictional posture of Indonesia’s legal framework within the broader constellation of global monetary architecture.

Within the United States, the constitutional dynamics during this period have been heavily characterized by structural debates concerning the limits of federal regulatory authority vis-à-vis market liberties. This friction is particularly pronounced following recent Supreme Court jurisprudence that curtails federal agency overreach (e.g., the dismantling of *Chevron* deference), thereby reasserting Congressional primacy in dictating financial market boundaries. Fundamentally, the U.S. jurisdictional posture exhibits a propensity to delegate digital monetary innovation to the private sector. This paradigm is evidenced by substantive Congressional legislative initiatives most notably the *Financial Innovation and Technology for the 21st Century Act (FIT21)* and the *Clarity for Payment Stablecoins Act*. These statutory frameworks are explicitly engineered to establish a robust legal safe harbor and extend prudential banking legitimacy to private entities issuing U.S. dollar-pegged stablecoins. By subjecting private issuers to dual-track oversight (state-chartered trust mechanisms and federal Federal Reserve safeguards), the U.S. operationalizes its monetary sovereignty through market-driven regulatory ordering

rather than direct state monopolization.¹⁶

Parallel to the legislative facilitation of private actors, the U.S. Congress has systematically curtailed the Federal Reserve's statutory authority to promulgate a retail Central Bank Digital Currency (CBDC). This restrictive posture was definitively operationalized through the House of Representatives' passage of the *CBDC Anti-Surveillance State Act*.¹⁷ Within the framework of American constitutional jurisprudence, a retail CBDC issued directly by the sovereign is perceived as inherently antagonistic to the Fourth Amendment. Such a centralized monetary architecture poses acute constitutional vulnerabilities by potentially enabling the state to conduct unreasonable searches and seizures of granular financial data, thereby violating fundamental privacy doctrines. Consequently, the U.S. legal apparatus secures its global monetary hegemony not through direct state monopolization, but by permitting private conglomerates to dominate the transnational stablecoin market provided these entities remain strictly tethered to comprehensive federal oversight and mandatory prudential auditing frameworks.¹⁸

In stark contrast to the U.S. model of private sector delegation, the European Union has engineered a comprehensive institutional harmonization between public authorities and private entities via the *Markets in Crypto-Assets (MiCA)* regulation.¹⁹ Structurally, MiCA operationalizes this integration specifically through Titles III and IV governing Asset-Referenced Tokens (ARTs) and Electronic Money Tokens (EMTs) by subjecting private stablecoin issuers to stringent prudential reserve requirements and rigorous authorization oversight by the European Banking Authority (EBA), thereby neutralizing regulatory arbitrage.

From the vantage point of European institutional law, the European Central Bank's (ECB) initiative to design and deploy the Digital Euro constitutes a direct manifestation of

¹⁶ Edoardo D. Martino, "Monetary Sovereignty in the Digital Era. The Law & Macroeconomics of Digital Private Money," *Computer Law & Security Review* 52 (April 2024): 105909, <https://doi.org/10.1016/j.clsr.2023.105909>.

¹⁷ Lambis Dionysopoulos, Miriam Marra, and Andrew Urquhart, "Central Bank Digital Currencies: A Critical Review," *International Review of Financial Analysis* 91 (January 2024): 103031, <https://doi.org/10.1016/j.irfa.2023.103031>.

¹⁸ Lana Stern, "Regulating Cryptocurrencies in a Post-Pandemic Global Economy: A Comparative Legal Analysis of the EU, the US, and Russia," *Journal of Economic Criminology* 9 (September 2025): 100183, <https://doi.org/10.1016/j.jeconc.2025.100183>.

¹⁹ Gediminas Laucius, "Comparison of the European Union's Markets in Crypto-Assets Regulation and the United States' Enforcement-Based Approach to Crypto-Asset Regulation," *Teisė* 134 (May 27, 2025): 81-96, <https://doi.org/10.15388/Teise.2025.134.6>.

its mandate under the *Treaty on the Functioning of the European Union* (TFEU). Specifically, Article 127(2) and Article 128(1) of the TFEU explicitly vest the ECB with the exclusive constitutional prerogative to define supranational monetary policy and authorize the issuance of legal tender. This framework dictates that member states must pool their sovereign monetary authority into a centralized European apparatus.²⁰ Consequently, the Digital Euro is jurisprudentially justified as an indispensable instrument to preserve the *singleness of money* across the Eurozone and to systematically shield European monetary autonomy from the extraterritorial penetration of foreign, private stablecoin platforms.

Furthermore, to proactively mitigate the systemic risks of commercial bank disintermediation, the proposed European statutory architecture incorporates granular safeguard mechanisms. This includes the implementation of strict holding limits on Digital Euro wallets supplemented by automated 'waterfall mechanisms' that link CBDC transactions directly to commercial bank accounts to prevent structural bank runs. Concurrently, the legal framework categorically classifies the Digital Euro as a direct sovereign liability of the central bank, ensuring absolute constitutional fidelity to fiat stability^{21,22}

he constitutional architecture of Indonesia adopts a rigid posture that necessitates the absolute enforcement of state sovereignty, anchored intrinsically in the doctrine of Centralized State Chartalism. Statutory intervention via Law Number 4 of 2023 concerning the Development and Strengthening of the Financial Sector (the P2SK Law)—promulgated through a comprehensive omnibus legislative mechanism—structurally amends the preceding orthodox regime established by Law Number 7 of 2011 on Currency. Consequently, the P2SK Law provides a definitive juridical foundation by statutorily elevating the Digital Rupiah to be hierarchically commensurate with traditional paper and metallic fiat.

²⁰ Corinne Zellweger-Gutknecht, Benjamin Geva, and Seraina Neva Grünewald, "Digital Euro, Monetary Objects, and Price Stability: A Legal Analysis," *Journal of Financial Regulation* 7, no. 2 (September 1, 2021): 284s – 318, <https://doi.org/10.1093/jfr/fjab009>.

²¹ Hendrik Becker and Lennart Grabia, "Digital Euro Holding Limits and Monetary Policy Implementation: A Microdata-Based Perspective," *International Finance* 28, no. 3 (December 30, 2025): 158–79, <https://doi.org/10.1111/inf.70004>.

²² Bogdan Cristian Buzuriu, "Central Bank Digital Currencies and Financial Stability: Literature Review and New Questions," *Timisoara Journal of Economics and Business* 17, no. 1 (June 1, 2024): 41–64, <https://doi.org/10.2478/tjeb-2024-0003>.

From a jurisprudential standpoint, this formal recognition constitutes the manifestation of an evolutionary and teleological interpretation of Article 23B of the 1945 Constitution. Under this modern constitutional reading, the explicitly mandated 'forms and denominations' (*macam dan harga*) of the national currency are no longer strictly confined to tangible physical mediums; rather, the constitutional boundary is expanded to encompass cryptographically secured entities issued exclusively by the sovereign state.²³ Ultimately, this policy trajectory epitomizes the absolute centralization of digital monetary authority. Instead of relinquishing or delegating its sovereign prerogatives to private stablecoin issuers, Bank Indonesia actively assimilates these technological innovations into the national positive law (*ius constitutum*) through the institutional blueprint of Project Garuda.

Table 2. Comparative Matrix of Contemporary Digital Asset Governance Paradigms and Statutory Frameworks

Constitutional Variables	Indonesia (The P2SK Law & Project Garuda Blueprint)	United States (Stablecoin Legislation & CBDC Anti-Surveillance Act)	European Union (MiCA Regulation & Digital Euro Framework)
Sovereign Posture on Retail CBDC Implementation	<p>Statutorily formalized via Law No. 4 of 2023 (P2SK) as a co-equal complement to physical fiat. Constitutionally anchored within Bank Indonesia's exclusive monetary mandate.</p>	<p>Systematically curtailed by federal legislation to preempt centralized data surveillance, invoking stringent Fourth Amendment privacy jurisprudence.</p>	<p>Actively progressing toward codification under ECB mandate (TFEU Art. 127/128) to preserve the <i>singleness of money</i> and shield Eurozone autonomy.</p>
Regulatory Approach to Private Digital Assets	<p>Categorically excluded from <i>legal tender</i> status. Subject to dual jurisdictional oversight: regulated as commodities (Bappebti) and</p>	<p>Legislatively facilitated through private-sector delegation (e.g., <i>FIT21 Act</i>), establishing a statutory safe harbor for issuers under dual state-federal prudential banking</p>	<p>Comprehensively governed by Titles III & IV of MiCA, imposing rigorous EBA authorization and strict 1:1 prudential reserve mandates on Electronic Money</p>

²³ Aisyah As-Salafiyah, Aam Slamet Rusydiana, and Ihsanul Ikhwan, "Central Bank Digital Currency (CBDC): A Sentiment Analysis and Legal Perspective," *Journal of Central Banking Law and Institutions* 2, no. 2 (May 31, 2023): 347–72, <https://doi.org/10.21098/jcli.v2i2.177>.

Governing Doctrine of Monetary Sovereignty	of	transitioning to supervision. OJK prudential supervision under the P2SK Law. Centralized State Chartalism (Absolute centralization of monetary sovereign prerogatives within the central banking institution, rejecting private delegation).	supervision. Privatization of Digital Fiat / Delegated Sovereignty (Operationalization of monetary hegemony via regulated private-sector delegation and market-driven architecture).	Tokens (EMTs). Supranational Monetary Protectionism (Institutional pooling of sovereignty to preserve continental monetary autonomy and counter extraterritorial market displacement).
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The regulatory intervention operationalized via the P2SK Law provides a profound philosophical affirmation: the absolute decentralization propagated by Web3 architectures is fundamentally irreconcilable with Indonesia’s constitutional framework. Predicated on the previously delineated doctrine of Centralized State Chartalism, the Indonesian constitutional system categorically mandates the centralization of macroeconomic governance strictly under sovereign institutional authority.

Within Indonesian jurisprudence, the architecture of the monetary system and the preservation of exchange rate stability fall squarely within the exclusive purview of public law. Accordingly, these sovereign prerogatives must be exclusively administered by an independent statutory body manifested in Bank Indonesia's constitutional mandate and governed by the rigid parameters of the *rule of law*, rather than being abdicated to the algorithmic consensus mechanisms of anonymous, decentralized networks.

By statutorily conceptualizing the Digital Rupiah as the supreme representation of the state's payment authority serving as the direct teleological operationalization of Article 23B of the 1945 Constitution Indonesia’s legal apparatus rigorously enforces a prudential doctrine (*do no harm*). This institutional posture deliberately insulates domestic macroeconomic stability from the systemic vulnerabilities of private digital assets, while simultaneously advancing a sovereign, constitutionally compliant response to the transnational evolution of financial technologies.

2. Reconstructing the Legal Governance of CBDC in the Post-P2SK Law Era

a. "Regulation-by-Design" Architecture: Balancing Constitutional Privacy Rights with Anti-Money Laundering (AML) Obligatio

By interfacing research findings with the broader human rights discourse, the preeminent locus of dogmatic contention in the development of Central Bank Digital Currencies (CBDCs) emerges as the acute normative tension and the proportionality dilemma between satisfying public regulatory imperatives and safeguarding the fundamental privacy rights of citizens. Proponents of the Web3 paradigm consistently challenge CBDC frameworks by asserting that centralized digital fiat risks devolving into an instrument of the 'surveillance state,' possessing the architectural capacity for panoptic oversight over the entirety of an individual's financial footprint.²⁴ This potential for massive systemic data exploitation poses a non-trivial threat to civil liberties and individual autonomy. Consequently, the novelty of this analysis resides in the positioning of a 'privacy-transparency spectrum' as a constitutional resolution framework. This spectrum serves as a jurisdictional mechanism to calibrate the necessary equilibrium between state interests in financial integrity and the inviolable right to informational privacy.²⁵

At one extremity of the spectrum, should the architectural design of a CBDC prioritize absolute, cash-like anonymity, it would arguably maximize privacy protections; however, this posture simultaneously engenders profound systemic vulnerabilities, facilitating money laundering, aggressive tax avoidance, and the financing of terrorism. Conversely, at the opposite terminus, the imposition of absolute transparency wherein the central bank maintains granular oversight of every transactional touchpoint at the retail level would doctrinally infringe upon the constitutional guarantees of fundamental human rights and the inviolable right to financial privacy. From a constitutional law perspective, this latter extreme represents a departure from the 'reasonable expectation of privacy' doctrine, effectively transforming a public financial utility into an instrument of state-led digital panopticism.²⁶

²⁴ Guneet Kaur, "Privacy Implications of Central Bank Digital Currencies (CBDCs): A Systematic Review of Literature," *EDPACS* 69, no. 9 (September 15, 2024): 87–123, <https://doi.org/10.1080/07366981.2024.2376794>.

²⁵ OECD, "Central Bank Digital Currencies (CBDCs) and Democratic Values," vol. 31, OECD Business and Finance Policy Papers, July 5, 2023, <https://doi.org/10.1787/f3e70f1f-en>.

²⁶ Pocher and Veneris, "Privacy and Transparency in CBDCs: A Regulation-by-Design AML/CFT Scheme."

In the context of the Indonesian constitutional landscape, the legal framework cannot effectively operate through the mere adoption of restrictive paradigms from external jurisdictions. Instead, it necessitates a process of juridical calibration that accounts for the specificities of the domestic legal architecture.²⁷ Conversely, the state is imperatively bound by global data protection standards. Article 28G paragraph (1) of the 1945 Constitution explicitly guarantees the protection of the individual, the family, and property a mandate derivatively operationalized through the Personal Data Protection (PDP) Law. Within the constitutional law landscape, however, the right to financial data privacy is not categorized as an absolute or non-derogable right. Pursuant to Article 28J paragraph (2) of the 1945 Constitution, such rights may be subject to proportional statutory limitations to safeguard national security and public order. Consequently, the reconstruction of governance under the mandate of the P2SK Law must integrate the concepts of 'privacy-by-design' and 'regulation-by-design' into the central bank's future technical architecture. This approach necessitates a paradigm shift, whereby positive law instruments and supervisory compliance are no longer merely enforced through ex-post sanctions, but are inherently embedded within the computational code.

As a doctrinal synthesis of these findings, the most proportionate constitutional law solution for the Indonesian CBDC ecosystem resides in a tiered anonymity approach. Within this regulatory architecture, the state establishes a categorical privacy threshold. For routine micro-transactions, the CBDC infrastructure facilitates a high degree of anonymity through the implementation of advanced cryptographic technologies, specifically Zero-Knowledge Proofs (ZKP). This mechanism ensures that central bank authorities are technically precluded from monitoring the specific expenditure footprints of citizens. Conversely, for wholesale transactions, cross-border settlements, or asset transfers exceeding the statutory limit, the system automatically necessitates the application of rigid Know Your Customer (KYC) protocols. This tiered anonymity model serves as a precise operationalization of the proportionality doctrine in constitutional law, whereby limitations on the right to privacy are strictly tailored to a 'pressing social need' to safeguard public order from financial crimes without infringing upon the core essence of fundamental rights. Monetary sovereignty that fails to afford proportional protection to civil privacy rights will inevitably encounter a sociological legitimacy crisis,

²⁷ Shuping Li, "Law of Central Bank Digital Currency for Monetary Discipline," *Law, Innovation and Technology*, February 22, 2026, 1–32, <https://doi.org/10.1080/17579961.2026.2633687>.

which in turn will catalyze regulatory arbitrage driving legal subjects toward decentralized ecosystems that facilitate jurisdictional circumvention.

b. Private Law Implications and the Doctrine of Legal Subjectivity within the CBDC Smart Contract Ecosystem

While the formalization of the Digital Rupiah's legal tender status under the 1945 Constitution and the P2SK Law establishes a robust constitutional foundation, the operational efficacy of this monetary instrument necessitates a comprehensive intermediary institutional framework. The deployment of the Digital Rupiah, across both wholesale and retail modalities, is predicated upon a Permissioned Distributed Ledger Technology (DLT) architecture that incorporates smart contracts or algorithmic automation. Juridically, this system executes the transfer of property rights through self-executing programmable code a paradigm that, from the intersecting perspectives of constitutional and private law, engenders fundamental doctrinal challenges concerning the attribution of liability and the legal capacity of conventional legal subjects.²⁸

A fundamental challenge resides in the doctrine of legal liability attribution within state-authorized automated systems. Diverging from public Web3 ecosystems, which frequently utilize permissionless Decentralized Autonomous Organizations (DAOs), a CBDC is operationalized within a permissioned distributed ledger network where central bank authorities retain oversight over authoritative nodes. Consequently, the critical issue within this architecture is not the erasure of the legal subject, but rather the attributional complexity of legal obligations to automated systems involving intermediary agents. Incidents of smart contract failure, systemic risks, or cybersecurity vulnerabilities necessitate jurisprudential clarity regarding which entity bears legal capacity, given that software traditionally lacks autonomous legal agency.²⁹

In this context, regulatory engineering must be strategically directed toward the legal classification of CBDCs as *sui generis* property assets. Under the P2SK Law framework, the monetary authority underscores the exigency of designating infrastructure providers, digital wallet providers, and non-bank financial institutions as authorized legal agents or intermediaries. The statutory positioning of these entities as

²⁸ Rumi Suwardiyati et al., "Setting the Readiness of Law to Implement Central Bank Digital Currency in Indonesia," *Arena Hukum* 17, no. 3 (December 13, 2024): 514–44, <https://doi.org/10.21776/ub.arenahukum2024.01703.3>.

²⁹ Asma Alawadi et al., "Decentralized Autonomous Organizations (DAOs): Stewardship Talks but Agency Walks," *Journal of Business Research* 178 (May 2024): 114672, <https://doi.org/10.1016/j.jbusres.2024.114672>.

intermediaries ensures that all algorithmic operations remain strictly within the ambit of Indonesia's domestic jurisdiction. This assertion is pivotal to forestalling the emergence of an 'algorithmic immunity' doctrine, which would otherwise delegitimize the principles of state administrative accountability within the governance of digital finance.

Furthermore, the legal architecture of the Digital Rupiah is mandated to encapsulate minimum design standards encompassing the principle of offline settlement finality. To fortify the protection of public property rights, the regulatory framework must institutionalize robust asset segregation mechanisms or bankruptcy-remote structures applicable to intermediary entities. Such a paradigm ensures that citizens' digital assets remain legally shielded and ring-fenced from the insolvency risks inherent to intermediary institutions.³⁰ Doctrinally, this framework of asset segregation represents a substantive embodiment of the constitutional protection of property rights mandated under Article 28H paragraph (4) of the 1945 Constitution. Furthermore, it serves as a critical legal instrument for the institutionalization of distributive justice within the national digital economic ecosystem.

3. The Trajectory Toward Global Digital Constitutionalism

Extrapolating the preceding analysis into a broader macro-theoretical lens, Indonesia's trajectory in regulating Central Bank Digital Currencies (CBDCs) transcends mere domestic monetary stability; it stands to serve as a pivotal jurisprudential precedent for the global discourse on Digital Constitutionalism. The emergence of Web3 signifies far more than a routine technological evolution; it encapsulates the inherent friction at the nexus of permissionless decentralization and extra-jurisdictional algorithmic autonomy, contrasted against the fundamental public imperative for an accountable legal order.³¹

In the classical era, constitutional doctrine was primarily concerned with the vertical application of human rights as a mechanism to constrain absolute state power. However, the discourse on Digital Constitutionalism expands this protective ambit into the horizontal dimension. Basic law is currently scrutinized regarding its capacity to delineate and restrain the concentration of market power held by transnational private technological entities. These actors operate beyond the traditional parameters of democratic accountability, yet possess the functional infrastructure to issue digital assets

³⁰ Bechara, Dumitrescu-Pasecinic, and Kubota, *Selected Legal Considerations for Central Bank Digital Currencies*.

³¹ Dirk A Zetzsche, Douglas W Arner, and Ross P Buckley, "Decentralized Finance," *Journal of Financial Regulation* 6, no. 2 (September 20, 2020): 172–203, <https://doi.org/10.1093/jfr/fjaa010>.

analogous to the instruments of monetary authorities.³²

By reconstructing the CBDC framework through the statutory lens of the P2SK Law, Indonesia is essentially operationalizing a progressive modality of digital constitutionalism. This approach reflects a calibrated endeavor to maintain a systemic equilibrium between mitigating the risks associated with pervasive cryptoization and the structured integration of distributed ledger technology. At a doctrinal level, the state's proactive measure to preserve its monopoly over legal tender within the digital sphere serves as a definitive reaffirmation of the *Rechtsstaat* (rule of law) principle. Jurisprudentially, decentralized cryptographic innovations regardless of their technical sophistication cannot displace or erode the democratic sovereign authority mandated by the people through their constitutional charter.

Ultimately, the architectural development of a CBDC signifies a fundamental renegotiation of the social contract within the digital realm. In this construction, the proportional attenuation of individual privacy rights is counterbalanced by the state's definitive mandate to ensure macroeconomic stability and the institutional protection of asset values.³³ The deployment of the Digital Rupiah serves as a pivotal institutional cornerstone for the modern state, substantiating the resilience of the sovereign rule of law in mitigating technological disruptions while simultaneously upholding the normative rationality of constitutional safeguards for fundamental rights.

C. CONCLUSION

The implementation of Central Bank Digital Currency (CBDC) under the framework of the Development and Strengthening of the Financial Sector Act (the P2SK Law) constitutes a constitutional defense mechanism designed to restore state monetary sovereignty against the disruptions posed by decentralized Web3 governance. The formalization of the Digital Rupiah as legal tender dogmatically affirms the State Theory of Money, ensuring that the transmission of monetary policy remains centralized under public authority and is protected from the encroachment of transnational technological entities. To harmonize this supervisory authority with fundamental civil liberties, the institutional architecture necessitates the adoption of 'regulation-by-design' through

³² Giovanni De Gregorio, "The Rise of Digital Constitutionalism in the European Union," *International Journal of Constitutional Law* 19, no. 1 (June 7, 2021): 41–70, <https://doi.org/10.1093/icon/moab001>.

³³ Edoardo Celeste, "Digital Constitutionalism: A New Systematic Theorisation," *International Review of Law, Computers & Technology* 33, no. 1 (January 2, 2019): 76–99, <https://doi.org/10.1080/13600869.2019.1562604>.

tiered anonymity mechanisms and mandatory asset segregation at the intermediary level. This regulatory construct manifests the praxis of Digital Constitutionalism, wherein the rule of law renegotiates the social contract within cyberspace to safeguard macroeconomic stability while ensuring the proportional protection of constitutional privacy rights.

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