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MEASURING THE URGENCY OF A DIGITAL RUPIAH: A SOCIO-LEGAL REVIEW

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Abstract

This study evaluates the necessity of a Digital Rupiah, Indonesia's central bank digital currency (CBDC), by addressing issues in the cryptocurrency system, including tracking, third-party involvement, and instability. The socio-legal methodology employed in this study examines the impact of CBDC policies on the social spheres associated with the widespread implementation of a Digital Rupiah through its approaches, including normative, contextualised, independent critical analysis, and comparative analysis. By examining the potential legal and social implications of a Digital Rupiah in Indonesia, this study assesses the potential legal shifts in normative habits that may result from its implementation. It investigates the social needs that could be met through the widespread adoption of a Digital Rupiah. The findings were evaluated using bounded rationality to determine whether there is an urgent need for a Digital Rupiah in Indonesia. The author argues that studies on CBDCs in Indonesia have mainly focused on systems and policy development. In contrast, this study extends this discussion by examining the pressing need for CBDCs, as outlined in the Digital Rupiah White Paper. This study argues that the socio-legal perspective adopted is distinct from prior studies, which have primarily focused on the design of systems and policies. It emphasises the importance of the legal aspects of CBDCs in general.

Keywords: *central bank digital currency, a digital rupiah, and socio-legal*

I. INTRODUCTION

Digital currencies, comprising cryptocurrencies and central bank digital currencies (CBDCs), have emerged out of the accelerated digitisation of the financial sector. However, even though cryptocurrency is commonly referred to as "currency", it is more accurately classified as a commodity, similar to futures contracts traded on futures exchanges. One of the reasons that cryptocurrency is considered a commodity is that it falls under the classification of "any derivative" of a tradable commodity and is therefore subject to futures contracts as described in Article 1, number 2, Law No. 10 of 2011 on Amendments to Law No. 32 of 1997 on Commodity Futures Trading (CFT Law). The determination

of whether cryptocurrency is categorised as a commodity or not is determined by the Commodity Futures Trading Supervisory Agency (CFTSA) which also approves conducting commodity transactions on the Futures Exchange (crypto assets) as described in Article 1(f) Indonesia's Commodity Futures Trading Regulatory Agency Regulation Number 3 of 2019 on Commodities that Can be Used as Subjects of Futures Contracts, Sharia Derivative Contracts, and/or Other Derivative Contracts Traded in the Futures Exchange, Article 3 CFT Law. Article 15 CFT Law. Indonesia, Indonesia's Commodity Futures Trading Regulatory Agency Regulation Number 3 of 2019 concerning Commodities That Can Be Subjected to Futures Contracts, Sharia Derivative Contracts, and/or Other Derivative Contracts Traded on the Futures Exchange, Art. 1 Letter F; Indonesia, Law No. 10 of 2011 on the Amendment to Law No. 32 of 1997 on Commodity Futures Trading, Art. 1 No.2, Art. 3 and Art. 15. Despite this classification, cryptocurrencies are often treated as currencies. Beyond the classification consisting of digital currency, both cryptocurrencies and CBDCs are digital currencies or digital assets, and both use the Distributed Ledger Technology (DLT) system protocol. DLT is a protocol in the realm of blockchain that can be concisely described as a "computer connection" that validates transactions in the form of computer code. These transactions are recorded in a non-centralised ledger system, which serves as a permanent and tamper-proof transaction history.[1]

Behind the similarities between CBDC and cryptocurrencies, another main reason why CBDC was initiated was based on the difficulty of tracking or even not being tracked in the cryptocurrency system, and the involvement of third parties who do not have clear duties, principals, or functions in the operation of the DLT system, which also causes unstable payment system supervision, regulation, and financial stability. The challenge of monitoring and maintaining anonymity within cryptocurrency systems, coupled with the involvement of third parties with unclear responsibilities, duties, and functions in the operation of decentralised ledger technologies (DLTs), may inadvertently contribute

[1] Ghiath Shabsigh et al., "Distributed Ledger Technology Experiments in Payments and Settlements," *FinTech Notes* 20, no. 01 (2020): 1, https://doi.org/10.5089/9781513536330.063; Tareq Ahram et al., "Blockchain Technology Innovations," in *2017 IEEE Technology & Engineering Management Conference (TEMSCON)* (TEMSCON, Santa Clara: IEEE, 2017), 137; Xuan Han et al., "A Blockchain-Based Framework for Central Bank Digital Currency," paper presented at the *2019 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI)*, 2019, 265, https://doi.org/10.1109/SOLI48380.2019.8955032.

to the use of cryptocurrencies as a means and trend for money laundering.[2] Eventually, the concept of CBDC was proposed following the trend of digital development to control the irregularities and imperfections of cryptocurrency systems, stabilise the financial payment market, and provide new opportunities for traditional financial infrastructures.[3]

Additionally, the Digital Rupiah, as an Indonesian CBDC, has features that are not held in a physical form. Thus, the Digital Rupiah, as a payment system, has more functions that can influence the process of money circulation among economic agents. The Legality of a Digital Rupiah can be referred to Article 10(1)(2) of Law No. 4 of 2023 on the Development and Strengthening of the Financial Sector.[4] Therefore, according to Bank of Indonesia (BI), a Digital Rupiah is also necessary because of its benefits and design which includes four components:[5] First, the a Digital Rupiah is anticipated to serve as a trusted digital form of payment that is accessible to greater society; Second, the a Digital Rupiah is expected to emerge as a sustainable solution*;* Third, the a Digital Rupiah is expected to offer greater safety and efficiency compared to cash and current accounts at BI; and fourth, the issuance of a Digital Rupiah by BI is anticipated to bolster the payment systems resilience of Indonesian society.

According to the above description, the most important differentiating element of this study from previous studies is the socio-legal perspective. Since 2020, CBDC research in Indonesia has primarily focused on the design of systems and policies, the general need for CBDC, its security aspects, and broader legal considerations. For instance, the study conducted by Zams et al. specifically focused on designing an Indonesian CBDC using the Delphi-ANP approach, taking into account various elements such as benefits, risks (primarily cyber risks), opportunities, and costs.[6] Additionally, the study by Simran and Richard examined CBDCs from the perspective of payment

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[2] David Chaum, "Security Without Identification: Transaction Systems to Make Big Brother Obsolete," *Communications of the ACM* 28, no. 10 (1985): 1030, https://doi.org/10.1145/4372.4373; APG, "Asia/Pacific Group on Money Laundering Yearly Typologies Report 2022: Methods and Trends of Money Laundering and Terrorism Financing," *Typologies Report* (Wales: Asia/Pacific Group on Money Laundering, July 2022), 29.

[3] Han et al., "A Blockchain-Based Framework," 263.

[4] Filianingsih Hendarta, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah," White Paper, Proyek Garuda (Jakarta: Bank Indonesia, 30 November 2022), 17, https://www.bi.go.id/id/rupiah/digital-rupiah/Documents/White_Paper_CBDC-2022.pdf; Indonesia, Law No. 4 of 2023 on The Development and Strengthening of the Financial Sector (hereinafter Law 4/2023), Art. 10, No. 1, para. 2.

[5] *Ibid.,* 14.

[6] Bastian Muzbar Zams et al., "Designing Central Bank Digital Currency for Indonesia: The Delphi–Analytic Network Process," *Bulletin of Monetary Economics and Banking* 23, no. 3 (2020): 23.

instrument regulatory systems, which are already regulated and addressed by Law 4/2023.[7] Furthermore, Maryaningsih et al. attempted to explain the differences between CBDC adoption in emerging and advanced countries using an ordered probit model. In contrast, David K. Linan's study provided specific assumptions and questions regarding the factors surrounding the need and legal aspects of Indonesian CBDCs in general.[8]

Certainly, the period of this study encompasses studies published between 2020 and early 2023, which differ from past investigations in that they do not explicitly reference the Digital Rupiah White Paper, the foundational document authored by Bank Indonesia. Consequently, this study departs from prior studies in its thorough examination of the critical need for the realisation of a Central Bank Digital Currency in Indonesia, guided by the original blueprint outlined in a Digital Rupiah White Paper.

Although a Digital Rupiah/CBDC presents a potentially optimistic scenario if it is widely adopted as a new payment instrument, it will have a direct impact on the locals.[9] Thus, this study employs a socio-legal methodology, incorporating normative, contextual, independent critical analysis, and comparative approaches. The normative approach was used to assess the impact of CBDC policies on social, economic, and political relations. Moreover, the contextualisation approach was utilised to contextualise legal norms within sociological theory. A critical analysis approach is employed to foster genuine self-criticism, enabling a thorough examination of power structures, contemporary social conditions, and established frameworks. Finally, a comparative analysis is used to construct and explain the relationship between the law and other related perspectives. For the record, the comparison approach does not necessarily mean comparing legal regulations with those of countries that have similar social conditions and legal systems, but rather specifically comparing them with the most relevant and related rules that discuss similar topics. In doing so, the author does not have an obligation to compare and filter countries with similar social conditions and legal systems to Indonesia. In fact, the author in this study is comparing only countries that

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[7] Simran Simran and Richard Adam, "Legal Analysis of CBDC's Role as a Digital Payment Instrument Regulatory System in Indonesia," *Asian Journal of Management, Entrepreneurship and Social Science* 3, no. 03 (2023): 283.

[8] Novi Maryaningsih et al., "Central Bank Digital Currency: What Factors Determine Its Adoption?," *Buletin Ekonomi Moneter Dan Perbankan* 25, no. 1 (June 20, 2022): 16; David K. Linnan, "Central Bank Digital Currencies in the Indonesian Setting: Questions & Choices," *Journal of Central Banking Law and Institutions* 2, no. 2 (July 25, 2023): 260, https://doi.org/10.21098/jcli.v2i2.45.

[9] Paulo Rupino Cunha et al., "From Bitcoin to Central Bank Digital Currencies: Making Sense of the Digital Money Revolution," *Future Internet* 13, no. 7 (July 2021): 11, https://doi.org/10.3390/fi13070165.

have enacted regulations on CBDC, specifically Canada and the United States of America.[10]

This study requires a thorough examination of at least two key aspects. The first part is an exploration and analysis of the potential legal implications of implementing a Digital Rupiah in social spheres in Indonesia. This examines the potential impact of a Digital Rupiah's future implementation on the Indonesian legal system, as well as the capacity of a Digital Rupiah to alter prevailing normative legal practices in Indonesia, considering its concepts, norms, and systems. The second part of the study, on the other hand, investigates and analyses the social needs that may be fulfilled through the widespread implementation of a Digital Rupiah. This section describes the underlying urgency for the mass deployment of a Digital Rupiah in the social lives of Indonesian society.

II. EXPLORING THE SOCIAL SPHERES OF WIDESPREAD IMPLEMENTATION OF A DIGITAL RUPIAH

The parameters of what can be deemed a social or sociological phenomenon within the realm of law refer to the social relationship between the law and the social system in which the law is an integral part. This involves analysing law as a social phenomenon, an expression, and a regulation part of communal relations.[11] Ultimately, the critical analysis of rules, current social conditions, and existing forms of knowledge, including economic and political aspects, can be classified as sociological.[12]

II.A. Possible Legal Effects of a Digital Rupiah Implementation on Social Spheres in Indonesia

The introduction of CBDC has become a topic of increasing interest among policymakers and financial institutions worldwide. Several levels of development and adoption must be achieved to implement CBDCs fully. Although some of these levels are currently limited in scope and application, they provide a useful framework for assessing CBDC development in each country. The following is a brief overview of the different levels of CBDC development:[13]

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[10] Perry-Kessaris, *Socio-Legal Approaches,* 16.

[11] Roger Cotterrell, *Law, Culture and Society: Legal Ideas in the Mirror of Social Theory* (London: Routledge, 2017), 57, https://doi.org/10.4324/9781351217989.

[12] Jiří Přibáň, ed., *Research Handbook on the Sociology of Law* (Edward Elgar Publishing, 2020), 12, https://www.elgaronline.com/display/edcoll/9781789905175/9781789905175.xml.

[13] Vu Minh Ngo et al., "Governance and Monetary Policy Impacts on Public Acceptance of CBDC Adoption," *Research in International Business and Finance* 64 (2023): 2–3.

a. Cancelled: This level refers to a country that has cancelled or deactivated CBDC.
b. Research: This level refers to countries researching suitable concepts and systems for CBDCs within their national contexts.
c. Proof of Concept: This level refers to countries that are in advanced stages of research and have published CBDC proofs of concept.
d. Pilot: This level refers to countries that have developed CBDCs that are being tested in real situations, either with a limited number of parties or on a wider scale.
e. Launched Publications: This level refers to countries that have officially launched CBDC widely.

Given that Indonesia is currently in the "research" phase for CBDCs, the legal implications in the social realm are explored using resources from countries that have progressed to the "pilot" stage or have already implemented CBDCs to some extent. The use of sources from related countries is linked to legal and social facts in Indonesia, which helps build and explain the relationship between CBDC as a legal tender and its social aspects. This section provides a more comprehensive perspective on which social spheres may be affected by the implementation of a Digital Rupiah as a CBDC in Indonesia.

With the legalisation and implementation of a Digital Rupiah as a legal tender, there are two related impact scenarios: positive or negative. In an optimistic scenario, BI would initiate research on a Digital Rupiah to fulfil the public's need for a risk-free digital medium of exchange, maintaining monetary sovereignty, maintaining monetary and financial system stability, encouraging digital transformation, providing easy-to-use cross-border payments, participating in financial inclusion, and improving the efficiency and security of the payment system.[14] The issuance of CBDC has become a concern for the central banks due to the increasing trend of "cryptoisation", which has reached a global market capitalisation of USD 3 trillion, related to several risks such as shadow banking, cyber risk, fraud, terrorism financing, competition, and misuse of data privacy.[15] The most likely impact of CBDCs is to fulfil the public's need for a risk-free medium of exchange, as cryptocurrencies are not directly supervised or regulated by governments and are therefore vulnerable to unpredictable price fluctuations.[16]

Another potential social benefit associated with implementing a Digital Rupiah is a reduction in counterfeiting.[17] The reason why counterfeiting

[14] Hendarta, "Proyek Garuda," 14.
[15] Hendarta, "Proyek Garuda," 7.
[16] Hendarta, "Proyek Garuda," 12.
[17] Sarah Allen et al., "Design Choices for Central Bank Digital Currency: Policy and Technical Considerations," Working Paper, Working Paper Series (National Bureau of Economic Research, August 2020), 12, https://doi.org/10.3386/w27634.

has become a justification for issuing CBDC is that the cash form is highly susceptible to manipulation and counterfeiting, and, in some cases, the counterfeit paper currency is so similar to the authentic bills that it is difficult to tell the difference.[18] Furthermore, because CBDCs exist solely in digital form, hacking or counterfeiting CBDCs requires sophisticated hacking skills, unlike physical paper currency, which is easier to duplicate. This extra security comes from the fact that CBDCs are designed with advanced cryptographic and security features, making them inherently more resistant to counterfeiting than physical paper currency.[19]

In addition to reducing the activity of counterfeiting cash forms, a Digital Rupiah, which comes in two forms: retail (r-a Digital Rupiah) and wholesale (w-a Digital Rupiah), also opens up potential for new professions. This refers to the concept of participation in the w-a Digital Rupiah platform, which consists of wholesalers and non-wholesalers that are then divided into three roles: validating nodes, non-validating nodes, and no nodes.[20] Because the determination of counterpart roles and classifications for participating in a Digital Rupiah is under the authority of BI, each role and classification requires different infrastructure operationalisations and human resources to obtain permission and run a Digital Rupiah circulation process.[21] Therefore, a Digital Rupiah can reduce unemployment by creating new job opportunities through emerging professions.

In conjunction with the introduction of Digital Rupiah, new options are emerging to provide the public with greater access to electronic currency. This 'cashless society', which involves a segment of society using electronic currencies and alternative options to paper money and coins, increases the number of people who can access currency.[22] Thus, the issuance of CBDC may fulfil the community's need for a currency based on the DLT system and will lead to the formation of a new paradigm, possibly a 'Blockchain' or 'DLT society'.

Furthermore, the introduction of a new DLT-based currency could also bring about broader macroeconomic changes, including increased money supply and consumer demand, as individuals become more inclined to purchase

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[18] Suraj Telrandhe et al., "Survey Paper on Fake Currency Detection Using Image Processing," *International Research Journal of Modernization in Engineering Technology and Science* 4, no. 11 (November 20, 2022): 1246, https://doi.org/10.56726/IRJMETS31462.

[19] Matheus R. Grasselli and Alexander Lipton, "On the Normality of Negative Interest Rates," *Review of Keynesian Economics* 7, no. 2 (April 1, 2019): 9, https://doi.org/10.4337/roke.2019.02.06.

[20] Rozidyanti et al., "Proyek Garuda: Wholesale Rupiah Digital Cash Ledger," Consultative Paper (Jakarta: BI, January 2023), 8.

[21] Rozidyanti et al., "Proyek Garuda," 9.

[22] Mifta Qoirun Nisa Arifin and Shanty Oktavilia, "Analysis the Use of Electronic Money in Indonesia," *Economics Development Analysis Journal* 9, no. 4 (2020): 365, https://doi.org/10.15294/edaj.v9i4.39934.

goods in transactions using CBDCs.[23] This increase in demand, driven by higher consumption, encourages retail banks to create more deposits, which in turn enables them to invest more in improving infrastructure operationalisation, resulting in a positive general equilibrium feedback effect.[24] CBDC could promote financial inclusion, a goal defined by POJK 3/2023, which refers to a society's access to various formal financial institutions, products, and services that cater to the needs and abilities of the community, thereby enhancing individuals' well-being.[25]

As a result of financial inclusion, CBDCs may open opportunities for unbanked populations. For instance, during the COVID-19 pandemic, many unbanked American adults faced delays and additional costs when receiving stimulus checks, a situation that could be mitigated using CBDC digital wallets.[26] Central banks in various countries have recognised the potential of CBDCs to ensure universal access to payment services, especially when private sector innovation is insufficient or when oligopolies impede the development of new payment systems.. In summary, however, CBDCs are not a guaranteed solution to address financial access inequality; they present a promising avenue for expanding financial inclusion and providing unbanked individuals with greater access to financial services.[27]

The implications of CBDC extend beyond their economic advantages to their capacity as a "social tool", raising questions about their potential role in precipitating or exacerbating broader social issues.[28] Consequently, if the system and policy framework are not comprehensively prepared, it could lead to negative scenarios. Although BI has produced white and consultative papers as part of its development of systems and policy frameworks, it is essential to thoroughly discuss and address the social aspects that may arise in the context of meaningful participation.

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[23] Jonathan Chiu and Mohammad Davoodalhosseini, "Central Bank Digital Currency and Banking: Macroeconomic Benefits of a Cash-Like Design," *Staff Discussion Paper/Document D'Analyse Du Personnel* 2021, no. 63 (2023): 22.

[24] Chiu and Davoodalhosseini, "Proyek Garuda," 22.

[25] Indonesia, Financial Service Authority Regulation No. 3 of 2023 concerning Enhancement of Financial Literacy And Inclusion in the Financial Services Sector for Consumers and the Public (POJK 3/2023), Art. 1, No.7; Raphael Auer et al., "Central Bank Digital Currencies: A New Tool In The Financial Inclusion Toolkit?," FSI Insights, Policy Implementation (Basel: BIS, 12 April 2022), 13, https://www.bis.org/fsi/publ/insights41.htm.

[26] Cunha et al., "From Bitcoin to Central Bank Digital Currencies," 12.

[27] Auer, Banka, et al., "Central Bank Digital Currencies," 22.

[28] Gregory Parker, "Central Bank Digital Currencies (CBDC) and Socialism: Implications for Economic and Social Change," SSRN Scholarly Paper (Rochester, NY, May 17, 2023), 1, https://doi.org/10.2139/ssrn.4451739.

As mandated by the Constitutional Court, Decision No. 91/PUU-XVIII/2020, the achievement of meaningful participation encompasses three essential elements: the right of the public to have their opinions heard; the right to have their views considered; and the right to have their opinions explained or answered.[29] The provisions of Law 4 of 2023 relating to a Digital Rupiah as a Central Bank Digital Currency (CBDC) are limited to its definition, classification, and governance.[30] Therefore, it is imperative to evaluate the potential negative scenarios that may arise before imposing additional regulations on a Digital Rupiah through special or derivative legislation, as implementing rules, given the importance of this matter.

The most apparent negative social outcome is the reduced use of cash. This is indeed an irony as well as contrary to the fulfilment of the needs for a cashless society. The reduced use of cash may be a disadvantage for certain social groups, such as the elderly or those in rural areas, who are more reliant on cash transactions and therefore struggle to adapt to new digital payment methods.[31] However, in its white paper, BI stated that CBDC would not replace existing currencies but would instead strengthen and coexist with the existing financial system, as evidenced by the concept of a configuration, distribution, business model design for a Digital Rupiah, and the 3i concept (integrity, interoperability, and interconnection).[32]

Moreover, the idea that a Digital Rupiah could be used offline may be an alternative to rural areas, which rely more on cash transactions.[33] However, this should be examined with scepticism as to whether it makes sense for 'digital' currencies to be used offline and whether it would be the same as using cash or through some other means of payment. These assumptions do not come out of the blue, but follow an examination of the offline implementation of CBDC in Finland and Ghana, which instead use smart cards for offline functionality.[34] Thus, if a Digital Rupiah adopts the same offline features as in Finland and Ghana, then the similarities to existing features of debit, credit, e-money, and e-wallet cards contradict BI's own statement that "CBDC will strengthen and coexist with the existing financial system". Furthermore, CBDCs have the potential to disrupt existing payment systems in several ways.

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[29] Constitutional Court, No. 91/PUU-XVIII/2020, 3 November 2021, p. 393.

[30] Law 4/2023, Arts. 2 and 14A.

[31] Diana Castilla et al., "Teaching Digital Literacy Skills to the Elderly Using a Social Network with Linear Navigation: A Case Study in a Rural Area," *International Journal of Human-Computer Studies* 118 (October 1, 2018): 27, https://doi.org/10.1016/j.ijhcs.2018.05.009.

[32] Hendarta, "Proyek Garuda: Menavigasi Arsitektur a Digital Rupiah," 20–25.

[33] Hendarta, "Proyek Garuda: Menavigasi Arsitektur a Digital Rupiah," 3.

[34] Aleksi Grym, "Lessons Learned from the World's First CBDC," *Bank of Finland Economic Review*, Research Report, 8, no. 2020 (2020): 14, https://nbn-resolving.de/urn:nbn:fi:bof-202009152340; Auer, Banka, et al., "Central Bank Digital Currencies," 20.

1. Competition with Existing Payment Systems
   This could happen with the concept of a Digital Rupiah distributed by the private sector (wholesalers, non-wholesalers, and retailers).[35] The participation of private sector entities presents several challenges, including disruptions to existing business models. For instance, the implementation of new connections may necessitate substantial investment by stakeholders or competition with existing profitable services. Furthermore, the absence of broader compatibility could result in additional costs and risks, deterring the public from adopting a CBDC.[36]
2. Competition with Private Digital Currencies
   The possibility of competition between CBDCs and private digital currencies arises from their unique features. CBDCs are regulated digital currencies that offer the convenience of digital currencies while retaining state oversight.[37] On the other hand, private digital currencies or cryptocurrencies (Bitcoin, Pintu, etc.) are decentralised currency systems that operate independently of government control.[38] As such, the existence of CBDCs, which offer the potential to enhance regulatory oversight, stability, social impact, and private digital currencies, with their unique features and decentralised nature, influences the likelihood of competitive dynamics in the evolving digital currency landscape.

Based on the description above, the implementation of CBDC requires further development to avoid conflicts with private institutions and existing systems. If the assumption and adverse scenario are proven true for a Digital Rupiah, the public may become confused and lose interest in using it as a legal tender. Therefore, given that the offline CBDC system envisioned by BI does not yet exist, as well as the potential for similarities in features that could disrupt the existing payment system, further discussion on this issue needs to be elaborated to determine which concepts and solutions are appropriate for a Digital Rupiah.

Another area of concern is data privacy, as CBDC can facilitate the emergence of social credit scores that integrate financial and non-financial data, allowing governments to assess individual behaviour and store data.[39] This leads to concerns about government oversight of the privacy of stored

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[35] Hendarta, "Proyek Garuda," 21.

[36] Raphael Auer et al., "Multi-CBDC Arrangements and the Future of Cross-Border Payments," *BIS Papers*, 2021, 7.

[37] Ying Huang and Maximilian Mayer, "Digital Currencies, Monetary Sovereignty, and U.S.–China Power Competition," *Policy & Internet* 14, no. 2 (2022): 328, https://doi.org/10.1002/poi3.302.

[38] Alex Cukierman, "Reflections on Welfare and Political Economy Aspects of a Central Bank Digital Currency," *The Manchester School* 88, no. S1 (2020): 8, https://doi.org/10.1111/manc.12333.

[39] Parker, "Central Bank Digital Currencies," 2.

data.[40] Allowing governments to store public data makes central banks lucrative 'honey pots' for hackers. In 2020 and 2023, Indonesia experienced numerous data privacy breaches, affecting both private and public institutions.[41] The Indonesian Consumers Foundation (*Yayasan Lembaga Konsumen Indonesia*) documented 54 instances of a data breach in e-commerce, 27 cases in peer-to-peer lending, and five instances in electronic money.[42]

On the other hand, an alternative option for the government or central bank to store and monitor CBDC data is to design CBDC transactions to be anonymous. However, this option is ultimately a double-edged sword, as it involves no data privacy leaks. However, it also presents CBDCs with the opportunity for illicit transactions, such as money laundering, terrorist financing, and tax evasion.[43]

Another reason why Central Bank Digital Currency (CBDC) is linked to illegal transactions is that a Digital Rupiah is essentially a virtual or digital asset. According to the definition provided by the Financial Action Task Force (FATF), virtual assets are digital representations of value that can be traded or transferred electronically and used for payment or investment purposes.[44] Based on this definition, a Digital Rupiah meets two criteria that classify it as a virtual asset: Firstly, it is a digital representation of the value of the Rupiah cash currency. Secondly, it can be transferred digitally as a means of payment.[45]

A Digital Rupiah, as a virtual asset, also has the potential to create a new medium for criminals to launder criminal proceeds or finance illicit activities.[46]

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[40] World Economic Forum, "Privacy and Confidentiality Options for Central Bank Digital Currency," White Paper, Digital Currency Governance Consortium White Paper Series (Geneva: WEF, November 2021), 14.

[41] World Economic Forum, 14.

[42] Moody Rizqy Syailendra Putra et al., "Protection of Personal Data of BPJS Health Users against Data Leakage," *International Journal of Law and Politics Studies* 4, no. 2 (November 26, 2022): 98, https://doi.org/10.32996/ijlps.2022.4.2.11; Fauziyah Fauziyah et al., "Knowledge Management Strategy for Handling Cyber Attacks in E-Commerce with Computer Security Incident Response Team (CSIRT)," *Journal of Information Security* 13, no. 4 (August 23, 2022): 294, https://doi.org/10.4236/jis.2022.134016; Al Sentot Sudarwanto and Dona Budi Budi Kharisma, "Comparative Study of Personal Data Protection Regulations in Indonesia, Hong Kong and Malaysia," *Journal of Financial Crime* 29, no. 4 (January 1, 2021): 1443, https://doi.org/10.1108/JFC-09-2021-0193.

[43] World Economic Forum, "Privacy and Confidentiality Options for Central Bank Digital Currency," 14.

[44] FATF, "Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers" (Paris: FATF, October 2021), 21.

[45] Hendarta, "Proyek Garuda," 3; Zahrashafa Mahardika et al., "Going a Digital Rupiah: Some Considerations From Sovereignty And Cybersecurity Perspectives," *Journal of Central Banking Law and Institutions* 2, no. 1 (2023): 39, https://doi.org/10.21098/jcli.v2i1.42.

[46] FATF, "Virtual Assets Red Flag Indicators of Money Laundering and Terrorist Financing" (Paris: FATF, September 2020), 3, www.fatf-gafi.org/publications/fatfrecommendations/documents/Virtual-Assets-Red-Flag-Indicators.html.

This is due to its ability to facilitate rapid cross-border transactions, which allows criminals to acquire, move, and store assets digitally outside the regulated financial system.[47] Furthermore, obscuring the origin or destination of funds makes it difficult for reporting entities to identify suspicious activities in a timely manner, thus raising the hurdle for authorised officials to detect and investigate criminal activity. The FATF further describes "virtual assets" as digital representations of value that can be traded or transferred digitally and used for payment or investment purposes. Virtual assets exclude digital representations of fiat currencies, securities, and other financial assets already covered by the FATF Recommendations.[48] Consequently, a Digital Rupiah can be identified as a virtual asset with distinct features that may create new opportunities for money launderers, terrorist financiers, and other criminals to launder the proceeds of crimes or finance illicit activities.

As previously discussed, virtual assets have been utilised for legitimate purposes. However, it cannot be refuted that they have also been employed for unlawful objectives. Various instances of significant fraud, theft, money laundering, and other crimes involving virtual assets with valuations in millions of US dollars have been reported. For example, Silk Road, AlphaBay, and Wannacry ransomware attacks. Although these cases ultimately resulted in successful law enforcement outcomes, the percentage of successful case resolutions remained relatively low.[49] Although the exact amount of abuse of virtual assets worldwide is unclear, it still appears to be smaller in volume and frequency than the misuse of traditional financial services.[50] According to a report from the International Monetary Fund (IMF), virtual assets are attractive as a medium for money laundering for several reasons, including:[51]

1. The anonymity of transactions
   With the widespread use of Bitcoin as a digital currency, transactions can be traced online from one wallet to another. However, linking a specific address or wallet to an individual is difficult. This challenge is further compounded by the availability of mechanisms that are specifically designed to impede the traceability of transaction flows. Anonymity-enhancing features, including mixers, layered encryption, stealth addresses, and signatures, limit the amount of available information, such as transaction values and counterparties. Moreover, some of these features obscure identification

[47] FATF, "Virtual Assets Red Flag Indicators," 3.

[48] FATF, "Virtual Assets Red Flag Indicators," 3.

[49] Francisca Fernando et al., *Virtual Assets and Anti-Money Laundering and Combating the Financing of Terrorism (1): Some Legal and Practical Considerations*, Fintech Note, NOTE/2021/002 (Washington, D.C: International Monetary Fund, 2021), 3.

[50] FATF, "Virtual Assets Red Flag Indicators," 19.

[51] Fernando et al., *Virtual Assets,* 3.

through secondary information by obfuscating IP addresses, geolocation data, device identifiers, and transaction hashes.

2. Transactions without face-to-face contact
   Virtual asset activities are often conducted online and can be difficult to identify during the onboarding process or transaction due to their nature. This difficulty can increase the risk of false or inaccurate identification information. While some conventional financial services allow non-face-to-face onboarding and transactions, some Payment Service Providers (PSPs) require in-person transactions for high-value transactions. Therefore, the anonymity of virtual asset activities can exacerbate this problem and pose challenges to accurate identification.
3. Potential for decentralisation and near-instant fragmentation of global services
   The ease and speed of virtual assets provide an opportunity for rapid exchange between different virtual assets, facilitating more sophisticated concealment and the ability to disguise the origin of funds in cross-border transactions.[52] A Virtual Asset Service Provider (VASP) can maintain its presence in one jurisdiction while simultaneously registering in another, hosting a user's server in multiple locations, and furnishing services on a global scale without the need for a central headquarters. This presents a challenge to financial intelligence units in examining suspicious transaction reports, because case information may be scattered across multiple countries. Furthermore, it hampers law enforcement efforts as there is typically no singular entity upon which to focus an investigation.
4. Uneven implementation of domestic AML/CFT measures
   The majority of countries have yet to fully adopt the FATF standards, which presents a considerable opportunity for regulatory arbitrage and exploitation by criminals. Criminals can take advantage of VASPs that are domiciled or operate in countries with limited or no virtual asset or VASP AML/CFT regulations.[53]

Based on these factors, which make CBDC a medium for money laundering, BI claims, in its white paper, that a Digital Rupiah is safe because it uses the DLT system.[54] However, it is also worth noting that although DLT offers more security than centralised systems, this does not mean that DLT is

[52] FATF, *FATF Report to the G20: Finance Ministers and Central Bank Governors on So-called Stablecoins* (Paris: FATF, 2020), 10, www.fatf-gafi.org/publications/virtualassets/documents/report-g20-so-called-stablecoins-june-2020.html.

[53] Sendy Pratama Firdaus, "The Urgency of Money Laundering Policy Reform for a Digital Rupiah Implementation," *AML/CFT Journal: The Journal of Anti Money Laundering and Countering the Financing of Terrorism* 2, no. 1 (2023): 77.

[54] Hendarta, "Proyek Garuda," 32.

entirely immune to hacking, data privacy leaks, or other illegal activities. For instance, between 2011 and 2019, 65 reported cybersecurity incidents occurred in Blockchain, which employs a DLT concept, resulting in total financial losses of USD 3 billion.[55]

Ultimately, the Financial Intelligence Unit (FIU), VASP, and BI face substantial challenges due to the complexities of the AML/CFT prevention framework and enforcement measures. Malicious actors may obstruct the effective implementation of the AML/CFT prevention framework and enforcement measures, posing a threat to the system's integrity. The utilisation of virtual assets, characterised by heightened anonymity, presents a formidable problem with substantial potential for money laundering and TF risks.

Besides virtual assets that present a formidable problem for ML and TF risks, virtual assets are also linked to primary offences, which are typically associated with drug-related crimes and fraud. As previously discussed, Indonesia witnessed instances of fraud, as demonstrated by the cases of Indra Kenz and Doni Salmanan. Furthermore, this is supported by the presence of case evidence in Australia, which involves drug-related offences. In the more complex way of money laundering through virtual assets, virtual assets can also serve as a gateway to a range of predicate offences, including the sale of illegal substances and other illicit goods (such as weapons), fraud, tax evasion, cybercrime (e.g., cyber-attacks resulting in theft), child exploitation, human trafficking, and terrorism financing. However, among these crimes, drug-related offences and fraud (such as investment fraud and scams, extortion, and blackmail) are the most prevalent.

Although virtual assets are related to many primary offences, the utilisation of virtual assets in the majority of detected instances exhibits a relatively modest value when compared with those involving traditional financial products and services. Nevertheless, it has come to our attention that professional money laundering networks are beginning to capitalise on this vulnerability and employ virtual assets as a means to launder the illicit proceeds of their criminal activities. These trends have revealed the deployment of registered or operational VASPs in jurisdictions that lack adequate AML/CFT safeguards, the involvement of multiple VASPs, and the utilisation of tools and techniques that promote anonymity. To address these concerns more explicitly, the Financial Action Task Force (FATF) has amended its standards and agreed to conduct a 12-month review. This review will assess the implementation of the revised standards by jurisdictions and the private sector, and monitor any

[55] Pujiyono Pujiyono et al., "The Role of Blockchain in Strengthening Indonesia's Economic Stability" (International Conference for Democracy and National Resilience 2022 (ICDNR 2022), Atlantis Press, 2022), 199, https://doi.org/10.2991/978-2-494069-75-6_25.

changes in the typology, risks, and market structure of the virtual asset sector. Ultimately, the Asia-Pacific Group on Money Laundering issued a report that virtual assets and the use of new payment methods or types have become one of the typologies of money laundering.[56]

Therefore, as policymakers explore the development of CBDCs, it is essential to engage in an open and critical debate on the broader societal implications of digital currencies and establish a clear regulatory framework that protects individuals' privacy and security from token/account breaches and hacks. If not properly designed and regulated, CBDCs have the potential to infringe upon personal data rights; in worst-case scenarios, they could be used for illicit activities, such as money laundering, terrorism financing, illegal transactions, and tax evasion.[57]

II.B. The Fragile Foundation of a Digital Rupiah Implementation in Social and Legal Spheres in Indonesia

Essentially, laws contain abstract ideas or concepts. Nevertheless, the purpose of creating legal norms is to implement them in everyday social life. Therefore, there is a need to implement these ideas in society. The series of plans to realise these ideas in reality is a law enforcement process.

A Digital Rupiah as a policy concept will always intersect with various factors, so that, ideally, A Digital Rupiah is not understood as something that stands alone on a black-and-white formulation of regulatory text (blueprint), but is always the result of the interaction of various factors (interchange).[58] Therefore, attention must be directed to the relationship between the law and other non-legal factors, especially the values, attitudes, and views of legal subjects (society and policymakers). Following Friedman's legal theory, law is perceived as an integral component of an overarching cultural milieu, encompassing elements such as habits, values, mindsets, and behaviours, which collectively shape the propensity of social forces to either conform to or distance themselves from legal norms or policies.[59] Although it has not been implemented in the payment system in Indonesia, the Digital Rupiah has

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[56] APG, "Asia/Pacific Group on Money Laundering," 3.

[57] Raphael Auer et al., "Central Bank Digital Currencies: Motives, Economic Implications and the Research Frontier" (Basel: BIS, November 4, 2021), 14, https://www.bis.org/publ/work976.htm; Diandian Ren at al., "Managed Anonymity of CBDC, Social Welfare and Taxation: A New Monetarist Perspective," *Applied Economics* 55, no. 42 (2023): 4992, https://doi.org/10.1080/00036846.2022.2133896.

[58] Dewi Rahmaningsih Nugroho and Suteki Suteki, "Membangun Budaya Hukum Persidangan Virtual (Studi Perkembangan Sidang Tindak Pidana via Telekonferensi)," *Jurnal Pembangunan Hukum Indonesia* 2, no. 3 (2020): 300.

[59] Lawrence Meir Friedman, *Law and Society: An Introduction* (Prentice-Hall, 1977), 76.

legal force in the sense that it is normatively and textually regulated in Article 10 of Law 4/2023.[60] As a concept that already has a legal standing, it certainly reinforces the opinion that a Digital Rupiah will become an integral part of everyday life, allowing Rupiah Digital to be used as a means of interpreting social relations and merging all perspectives, which are rooted in both legal and non-legal experiences.[61] Therefore, the social aspect of society is one of the factors in this study to measure the urgency of a Digital Rupiah in Indonesia because a Digital Rupiah, as a concept, is always limited by the situation or environment in which it is formulated as what should be (*das sollen*) with the actual circumstances (*das sein*).

Based on the description above, the description in this section is limited with reference to aspects of 1) the social experience of Indonesian society related to the payment system;[62] 2) objective conditions regarding the urgency of a Digital Rupiah;[63] and 3) objective conditions regarding the lack of urgency of a Digital Rupiah.[64] These three aspects will be further elaborated using bounded rationality theory, as bounded rationality provides a more concrete description of human nature that is overly optimistic, biased towards justice, and exhibits heuristic tendencies that lead to mistakes.[65] Therefore, the three aspects previously described will be elaborated on with bounded rationality to understand whether the Digital Rupiah concept makes sense. If it is based on reasonable reasons, it will provide an answer regarding the urgency of implementing a Digital Rupiah in Indonesia. If it is not based on reasonable reasons, it will address the lack of urgency in implementing a Digital Rupiah in Indonesia. This description will delve into the causal chain that underlies the success or failure of a policy, discussing the factors that contribute to its effectiveness or ineffectiveness.[66]

The first is the social experience of Indonesian society regarding payment systems. People in Indonesia face two forms of currency, which are*:* 1) Currency-Based Payments (CBP) and 2) non-cash, which is divided into two types, namely, Deposit Account-Based Payments (DABP), and Non-

[60] Law 4/2023, Art. 10.

[61] Cotterrell, *Law, Culture and Society*, 110.

[62] Cotterrell, *Law, Culture and Society*, 110.

[63] Friedman, *Law and Society*, 76.

[64] Friedman, *Law and Society*, 76.

[65] Richard H. Thaler and L. J. Ganser, *Misbehaving: The Making of Behavioural Economics* (Penguin Books Limited, 2015), 258.

[66] Mara S. Sidney, ed., "Policy Formulation: Design and Tools," in *Handbook of Public Policy Analysis: Theory, Politics, and Methods*, Public Administration and Public Policy (CRC/Taylor & Francis, 2007), 80.

Deposit Account-Based Payments (non-DABP).[67] Non-DABP is further divided into three forms: electronic currencies (e-money and digital wallets), cryptocurrencies (including cryptocurrencies and stablecoins), and CBDCs.[68] These forms of currency are explained in more detail below.

Table 1: Forms of Currency

	DABP	**Non-DABP**				
Forms	**Any banking account-based payment instrument**	**Electronic Currency**		**Cryptocurrency**		**CBDC**
		Electronic Money	**Electronic Wallet**	**Common Crypto**	**Stablecoin**	
Basis	Card, Chip and Server	Chip	Server	Token	Token	Token and account
Information Technology (IT) System	Integrated Payment Interface (IPI)	IPI	IPI	Distributed Ledger Technology (DLT)	DLT	DLT
Example	Credit card, debit card, and all cardless online and offline credit and debit transfers.	Mandiri E-money, BCA Flazz, BNI Tapcash, etc.	Go-Pay, T-Cash, Mandiri E-cash, BCA Sakuku, XL, Tunai, Paypro, BBM Money, Doku Wallet, OVO, etc.	Bitcoin, Ethereum, Tether, etc.	Binance USD, USD Coin, etc.	a Digital Rupiah, e-Ringgit, eAUD, eCNY, eDollar, etc.

Source: Analysed from various existing regulations.

Table 1 shows the development and diversity of currency forms. Although the use of CBP as a means of payment still exists and is massively used in everyday life, technological developments have shifted people's habits. In fact, transactions using DABP have shifted primarily to wholesale payments, while retail payments are dominated by the use of electronic currencies as part of non-DABP transactions. According to Nazar et al., retail payment transactions using electronic money are expected to increase by 173% by 2020.[69] This

[67] Filianingsih Hendarta, "Blueprint Sistem Pembayaran Indonesia 2025 Bank Indonesia: Menavigasi Sistem Pembayaran Nasional di Era Digital," Blueprints (Jakarta: Bank Indonesia, November 28, 2019), 21.

[68] Parma Bains et al., "Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets," Fintech Note (Washington, D.C: International Monetary Fund, September 2022), 12; Lina Marlina et al., "Cashless dan Cardless Sebagai Perilaku Transaksi di Era Digital: Suatu Tinjauan Teoretis dan Empiris," *Jurnal Co Management* 3, no. 2 (2020): 536; Hendarta, "Blueprint Sistem Pembayaran Indonesia 2025 Bank Indonesia: Menavigasi Sistem Pembayaran Nasional di Era Digital," 21.

[69] Mohammad Rafki Nazar et al., "Analisis Faktor Faktor Yang Memengaruhi Minat Penggunaan Electronic Money dan Munculnya Cashless Society di Indonesia," *Jurnal Ilmiah Wahana Pendidikan* 9, no. 7 (2023): 294.

argument is corroborated by data presented by Sitompul et al., which indicates that as many as 84.5% of young people in 2022 will use electronic currency payment systems as a means of daily payment more than physical currency.[70] Additionally, Marlina et al. found that the initiation of cashless transactions and the behaviour of cardless transactions occurred in only five years.[71]

The reasons for this shift from CBP to electronic currencies vary from source to source. According to Sitompul et al., young people prefer non-DABPs as a means of payment due to the benefits they offer, including convenience, risk, trust, and product knowledge. These factors positively influence the reasons and objectives for using electronic currency as a means of payment.[72] In addition, based on the study by Nazar et al., the shift from CBP to non-DABP/electronic currencies was motivated by preventing the circulation of counterfeit money, minimising crime, and reducing interface payment time.[73]

Unlike electronic currencies, cryptocurrencies have also experienced rapid development, but the reasons for their use differ from those of electronic currencies. Cryptocurrency is primarily intended as an investment tool rather than a means of payment.[74] As of September 2022, the use of cryptocurrency as an investment tool in Indonesia has reached 16.3 million people (investors) and a valuation of Rp. 38.3 trillion.[75] Based on the description of the social experience of the people in Indonesia related to the payment system in the types of CBP, DABP, electronic money, and crypto money, a Digital Rupiah (CBDC) is a further policy in dealing with the times and technology; in particular, especially so far crypto money issued by private parties has become a challenge for BI in providing answers to people's needs for DLT-based currencies. In addition to offering DLT-based financial services in the form of a Digital Rupiah, the risk of cryptocurrencies creating conditions known as shadow currencies and shadow central banking is also a reason for BI's initiation. The term "shadow" pertains to the act of deliberately evading the process of legislating a specific concept or idea.

Additionally, it can be comprehended as the convergence of two elements: the avoidance of legal oversight and the widespread utilisation of a service by the public. In this context, the absence of a governing authority that monitors

[70] Jessica Sessi Amanda Sitompul et al., "Analysis of the Use of Non-Cash (Cashless) as a Payment Tool among Generation Z in Indonesia," *Endless: International Journal of Future Studies* 5, no. 3 (2022): 143.

[71] Marlina et al., "Cashless dan Cardless," 541.

[72] Sitompul et al., "Analysis of the Use of Non-Cash," 143.

[73] Nazar et al., "Analisis Faktor Faktor," 292.

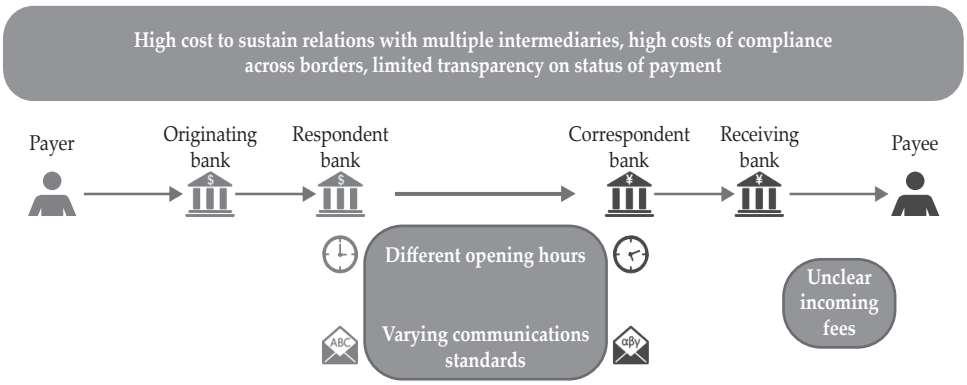
[74] Timothius Martin, "Ini Kelebihan Aset Kripto Dibanding Yang Lain," *Buletin Bappebti*, July 2022; Muhammad Yusuf Musa, "Ini Kelebihan Aset Kripto," *Buletin Bappebti*, July 2022.

[75] Hendarta, "Proyek Garuda," 10.

and regulates the provision of such services becomes particularly evident.[76] This is because the process of creating, circulating, and controlling crypto assets occurs outside the formal monetary system and can develop into a digital currency area that is not supervised and regulated by any jurisdiction.[77]

Second, objective conditions regarding the urgency of a Digital Rupiah. The first condition supporting the need for a Digital Rupiah is the value of import and export activities. According to the latest data, exports for June 2023 totalled USD 20,605.1 million, while imports reached USD 17.15 billion.[78] Behind the immense value of exports and imports is the problem of inward and outward money transfers. As explained by the World Bank, cross-border transactions are plagued by lengthy transaction delays. They are highly costly due to the involvement of numerous intermediaries at various points throughout the correspondent banking process, as illustrated in Figure 1.[79]

Figure 1.



Source: R Auer, P. Haene, and H. Holden, "Multi-CBDC Arrangements and the Future of Cross-Border Payments," p. 3.

[76] Perry Mehrling et al., "Bagehot Was a Shadow Banker: Shadow Banking, Central Banking, and the Future of Global Finance," SSRN Scholarly Paper (Rochester, NY, November 5, 2013), 1, https://doi.org/10.2139/ssrn.2232016; Hossein Nabilou and Andre Prum, "Central Banks and Regulation of Cryptocurrencies," *Review of Banking and Financial Law* 39 (2019): 1035.

[77] Hendarta, "Proyek Garuda," 12; Markus K. Brunnermeier et al., "The Digitalization of Money," Working Paper, Working Paper Series (National Bureau of Economic Research, September 2019), 19–20, https://doi.org/10.3386/w26300.

[78] Badan Pusat Statistik, "Perkembangan Ekspor dan Impor Indonesia Juni 2023," Berita Resmi Statistik (Jakarta: Badan Pusat Statistik, July 2023), 1.

[79] World Bank, "Central Bank Digital Currencies for Cross-Border Payments: A Review of Current Experiments and Ideas," (Washington, DC: World Bank, November 2021), 13, https://openknowledge.worldbank.org/handle/10986/36764; Auer et al, "Multi-CBDC Arrangements," 3.

From Figure 1 above, it is evident that the current cross-border transaction system is characterised by a high degree of complexity. Thus, a Digital Rupiah, as a CBDC, is a multicurrency platform that allows multiple parties to transact directly, paying in different currencies.[80] Therefore, the simplification of cross-border transactions through the adoption of CBDC is one reason why many countries have introduced CBDC.[81]

The second condition that supports the introduction of a Digital Rupiah is the central bank's efforts to fulfil and develop the public's need for cashless and cardless payment systems. The section on social experiences of people in Indonesia related to payment systems has provided objective data regarding cashless and cardless payment systems.[82] The third condition supporting the introduction of a Digital Rupiah is that people are currently faced with a payment-based platform system, where this condition is described as "an economy centred around digital platforms", for example, payments on the Shopee, Tokopedia, and TikTok Shop platforms.[83] This allows Indonesians to transfer funds directly from their bank accounts to these platforms, thus increasing the need for payment systems in CBDCs that are integrated, interoperable, and interconnected.[84] The shift from a traditional financial system to a CBDC system offers numerous benefits to society, as outlined by the 3i concept proposed by BI. By incorporating the 3i concept, the payment-based platform system is significantly enhanced, and the connection between financial assets, participation arrangements, and interoperability is seamlessly facilitated, ensuring the ease of conversion, transfer of funds, and exchange between different infrastructures.[85]

The first condition that does not support the need for a Digital Rupiah is its potential for political intervention in a Digital Rupiah as a CBDC. Political intervention could occur if BI were to lower the interest rate on a Digital Rupiah, particularly in an attempt to implement negative interest rates. In this case, BI would be perceived as directly intervening in the lives of those who rely on interest income from safe investments, including members of the public who may be less financially savvy and have fewer financial alternatives.[86]

The second condition that does not support the need for a Digital Rupiah is the potential for limited public participation. This condition can be observed

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[80] Hendarta, "Proyek Garuda," 43.

[81] Maryaningsih et al., "Central Bank Digital," 16.

[82] Maryaningsih et al., "Central Bank Digital," 16.

[83] Brunnermeier et al., "The Digitalization of Money," 14–17.

[84] Hendarta, "Proyek Garuda," 17.

[85] Rozidyanti et al., "Proyek Garuda," 13.

[86] Walter Engert and Ben S. C, Fung, "Central Bank Digital Currency: Motivations and Implications," *Staff Discussion Paper/Document D'Analyse Du Personnel* 2017, no. 16 (2017): 20.

in Canada, where the public's adoption of CBDC has not reached 10%.[87] While in Canada, most of the population already has access to banking services. It is therefore digitally literate and not an early adopter; the introduction of CBDCs is expected to enhance the flow and efficient utilisation of funds.[88] Consequently, the data on the projected adoption rate of Canada CBDCs is anticipated to yield only modest benefits.[89] This condition is also supported by data from the Bank of Finland, which launched the Avant system as the world's first CBDC, leaving people uninterested because the Avant CBDC had features similar to electronic currencies.[90]

Additionally, it is well known that CBDCs have implications for the global financial system, particularly cross-border transactions. Consequently, factors such as education, community networks, and geographical variation play a more significant role in determining the adoption and use of financial innovations than the population itself.[91] Kusumaningtyas and Suwarto also argued that educational level is a determining factor in predicting the adoption and use of information and communication technology (ICT).[92] However, it is essential to note that the impact of educational level on CBDC adoption may vary depending on specific demographic factors. Lee et al. highlighted that training programs have a positive effect on the use of mobile banking, regardless of the level of education in the community; thus, training on the use of CBDC may also increase adoption.[93] This implies that individuals with higher educational levels are more likely to understand and accept the concept of CBDCs.

Education in Indonesia is problematic and requires reform.[94] Thus, if limited education leads to limited CBDC adoption, the cost incurred by BI in developing a CBDC may outweigh its benefits. Moreover, the funds for CBDC development could be allocated to other financial system developments with greater real macroeconomic potential.

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[87] Kim P. Huynh, "Demand for Payment Services and Consumer Welfare: The Introduction of a Central Bank Digital Currency," *Staff Discussion Paper/Document D'Analyse Du Personnel* 2020, no. 7 (2020): 25.

[88] Huynh, "Demand for Payment Services," 25.

[89] Huynh, "Demand for Payment Services," 25.

[90] Grym, "Lessons Learned From the World's First CBDC," 16.

[91] Maryaningsih et al., "Central Bank Digital Currency," 12.

[92] Nurhidayati Kusumaningtyas and Dyna Herlina Suwarto, "ICT Adoption, Skill and Use Differences among Small and Medium Enterprises Managers Based on Demographic Factors," *Procedia - Social and Behavioral Sciences*, The 6th Indonesia International Conference on Innovation, Entrepreneurship, and Small Business (IICIES 2014), 169 (January 20, 2015): 296, https://doi.org/10.1016/j.sbspro.2015.01.313.

[93] Jean N. Lee et al., "Narrowing the Gender Gap in Mobile Banking," *Journal of Economic Behavior & Organization* 193 (January 1, 2022): 276, https://doi.org/10.1016/j.jebo.2021.10.005.

[94] Agnes Sukasni and Hady Efendy, "The Problematic of Education System in Indonesia and Reform Agenda," *International Journal of Education* 9, no. 3 (2017): 183, https://doi.org/10.5296/ije.v9i3.11705.

Based on the aspects discussed above, there is a strong argument for the adoption of a Digital Rupiah by BI when examined from legal and social perspectives. However, it is essential to maintain cautious optimism, as this attitude could potentially lead to mistakes. This is supported by the third aspect, which highlights the objective conditions that do not currently justify the need for a Digital Rupiah. Ultimately, for CBDC to replace existing payment methods, it must offer significant improvements in terms of consumer perception and transaction costs.[95] However, even with partial adoption, CBDCs provide only small but significant welfare benefits.

III. CONCLUDING REMARKS

A Digital Rupiah, an idea that holds legal significance and is currently under investigation by the BI, may be considered a social phenomenon. As a social phenomenon, a Digital Rupiah policy has a direct impact on society, which also has potential legal implications. This includes the creation of new employment and professional opportunities through its participation system in the Digital Rupiah. The participation system in a Digital Rupiah also presents opportunities for increased financial inclusion through existing digital transformation, leading to greater economic interaction among economic agents. Additionally, the existing digital transformation has a domino effect on fulfilling the needs of a cashless society. Therefore, the reduction in cash currency activities also has an impact on reducing counterfeiting activities in cash or physical currency.

The potential benefits of a Digital Rupiah may paradoxically engender confusion and scepticism among the elderly and individuals residing in rural areas, as well as competition with existing payment instruments. Additionally, the use of digital currency raises privacy and security concerns that may facilitate illicit transactions. Furthermore, a comprehensive evaluation of a Digital Rupiah should consider the social experiences of the Indonesian populace regarding payment instruments and objective conditions regarding the necessity of a Digital Rupiah. Considering the constraints of bounded rationality, these three factors suggest that the implementation of a Digital Rupiah is urgent in Indonesia. However, it is also imperative to consider potential inhibitors, such as political interventions, lack of public enthusiasm, and inadequate public education, to prevent a Digital Rupiah from becoming a white elephant.

[95] Huynh, "Demand for Payment Services," 25.

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