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Regulating Fintech in the CBDC Era: Addressing Competitive Fragility and Preserving State-Owned Banking Stability

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Abstract
This study investigates the possible consequences of Indonesia's Digital Rupiah on the future landscape of banks and FinTech companies. Our findings indicate that the advent of Central Bank Digital Currencies (CBDCs) may create an unlevel playing field between banks and FinTech firms. With the potential for intermediaries, including banks and non-bank institutions, to gain wholesale access to the Digital Rupiah, heightened competition could ensue, posing a risk to the stability of commercial banks, even extending to state-owned entities. Policymakers in Indonesia must create fair policies that promote competition among all stakeholders while strategically positioning state-owned banks to ensure economic stability and sovereignty. Drawing inspiration from Niklas Luhmann's framework of law as a social system, which emphasizes the balance between openness and closedness, and incorporating Julia Black's principle-based approach to regulation, we propose a regulatory framework and interaction pattern between bank and fintech. This framework aims to strike a

balance between the needs of banks and FinTech firms by integrating elements of entity-based and activity-based regulation.

KEYWORDS *CBDC, Competition, Bank, Fintech*

Introduction

Prior to embarking on the journey toward a digitized banking landscape, it is important to comprehend the foundational concepts underpinning Central Bank Digital Currency (CBDC), a construct that has garnered substantial recognition for its core objectives of steadfastness, robust security, user-friendliness, and cost-effectiveness.[1] Several countries followed up with their own version and competes to appearances a digital currency with better or even best technology.[2] A pioneering country innovatively applied distributed ledger technology (DLT), inspiring other nations to follow suit. CBDC is generally categorized into two main types: wholesale CBDC and retail CBDC. However, as central banks explore the implementation of CBDCs, there's a growing consideration to include non-bank entities, such as fintech firms, in the wholesale CBDC ecosystem. [3]

In our analysis, the non-banking sector encompasses fintech enterprises, which have witnessed a significant upsurge in recent times due to the emergence of financial technology. While fintech has become ubiquitous, a deeper examination of its functions reveals numerous similarities between traditional banks and fintech companies. However, it is essential to note that fintech firms tend to exhibit higher levels of dynamism, progressiveness, and sophistication compared to their banking counterparts.[4]

1 Raúl Morales-Resendiz et al., "Implementing a Retail CBDC: Lessons Learned and Key Insights," *Latin American Journal of Central Banking* 2, no. 1 (March 2021): 100022, https://doi.org/10.1016/j.latcb.2021.100022.

2 "Today's Central Bank Digital Currencies Status," *CBDC Tracker*, June 2024, https://cbdctracker.org/.

3 Republik Indonesia, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah," 2022, https://bi.go.id/id/rupiah/digital-rupiah/Documents/White_Paper_CBDC-2022.pdf.

4 Victor Murinde, Efthymios Rizopoulos, and Markos Zachariadis, "The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks," *International Review of Financial Analysis* 81 (2022): 102103.

A key factor to consider is that fintech companies currently operate within a less stringent regulatory framework compared to commercial banks. This raises questions about the feasibility of coexistence between these two entities in the long term. While it is possible that fintech and commercial banks may coexist, there are concerns about potential challenges that could arise from this arrangement. According to Boot research, the rise of information technology—that significantly developed recently—will be a main factor of bank's transformation to be more fluid than before. Nevertheless, fintech revolution is quite challenging.[5] Murinde shows us real impact of fintech into commercial bank.[6] In Indonesia context, Legowo et.al predicted if fintech and bigtech would be the "bank" in the future.[7] Moreover, Jovic expose if CBDC trend really a threats for commercial bank.[8] Stulz argue if the unlevel playing field brings a fragility to commercial bank.[9] Given the potential dominance of fintech in the financial sector during the era of Central Bank Digital Currencies (CBDCs), it becomes essential to examine the implications on the lifecycle of banks, particularly state-owned enterprises (SOEs) in Indonesia. The analysis will involve two stages: first, identifying the positive and negative implications on fintech participation on CBDC ecosystem, and second, proposing a synchronized framework for functions and activities between commercial banks and fintech companies to establish Innovation and bank stability.

Several key recommendations can be made to regulators. These include implementing entity-based regulations, such as restricting fintech services and tailoring capital requirements for specific entities or activities, setting CBDC withdrawal thresholds, and differentiating between FinTechs, TechFins, and DFPs for policy considerations. Additionally, activity-based regulations, like

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[5] Arnoud W A Boot, "The Future of Banking: From Scale & Scope Economies to Fintech," *European Economy*, no. 2 (2017): 77–95, https://www.academia.edu/download/90878477/Boot-The-Future-of-Banking-European-Economy-2017.pdf.

[6] Murinde, Rizopoulos, and Zachariadis, "The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks."

[7] Mercurius Broto Legowo, Steph Subanidja, and Fangky Antoneus Sorongan, "Fintech and Bank: Past, Present, and Future," *Jurnal Teknik Komputer AMIK BSI* 7, no. 1 (2021): 94–99.

[8] Zoran Jović, Goran Kunjadić, and Dharmendra Singh, "Fintech and Cbdc - Modern Trends in Banking," *FINIZ 2019-Digitization and Smart Financial Reporting*, 2019, https://doi.org/10.15308/finiz-2019-27-30.

[9] René M Stulz, "FinTech, BigTech, and the Future of Banks," *NBER Working Paper* (Cambridge, September 2019), https://www.nber.org/system/files/working_papers/w26312/w26312.pdf.

merger and acquisition controls, can help prevent market dominance. For a closed system, legitimizing OJK as an enforcer and fostering collaboration with BI as a legislator in the CBDC era is advised.

Moreover, to promote flexibility and innovation, adopting principle-based regulation is crucial. If OJK identifies best practices, it should coordinate with BI and propose these measures through the legislative procedure. To further encourage financial inclusion through technology and innovation, banks should actively engage in strategic partnerships with fintech companies. Potential approaches include Banking-as-a-Platform (BaaP), back-end collaborations, and white-label fintech solutions, enabling banks to maintain their primary role while capitalizing on fintech advancements to enhance financial inclusivity. By embracing these recommendations, regulators can create a dynamic and balanced financial sector that promotes competition, innovation, and financial inclusion.

Futuristic Financial System in CBDC Era

The advent of Central Bank Digital Currency (CBDC) signifies a turning point in global finance, modernizing monetary policy and payment systems to link traditional banking with the digital economy. A widely accepted Central Bank Digital Currency (CBDC) can effectively address interoperability challenges, as demonstrated by SWIFT's collaboration with Chainlink and JP Morgan's partnership with Ownera. On a broader scale, CBDCs enable seamless cross-border transactions, facilitating instantaneous financial services regardless of distance or currency differences, effectively eliminating spatial and temporal constraints.[10] CBDCs offer economic advantages to wholesalers by opens up new financial markets and enhances liquidity.[11] The Bank for

[10] K Bear et al., "Wholesale Central Bank Digital Currencies: Approaches, Implementation Strategies and Use Cases" (Cambridge Centre for Alternative Finance, University of Cambridge, 2024), 39–41 & 48.

[11] Sergio Luis Náñez Alonso, Javier Jorge-Vazquez, and Ricardo Francisco Reier Forradellas, "Central Banks Digital Currency: Detection of Optimal Countries for the Implementation of a CBDC and the Implication for Payment Industry Open Innovation," *Journal of Open Innovation: Technology, Market, and Complexity* 7, no. 1 (March 2021): 72, https://doi.org/10.3390/joitmc7010072.

International Settlements (BIS) has sought to realize this potential through the m-Bridge project launched in 2021.[12]

Considering these advantages, Bank Indonesia will implement it immediately. Article 11 of the Financial Sector Development Law (UU PPSK) legitimizes collaboration among the Ministry of Finance, Financial Services Authority (OJK), Bank Indonesia (BI), Deposit Insurance Corporation (LPS), and other ministries or institutions in fostering financial sector growth. This provision can be seen as an implicit instruction for state-owned banks to embrace future task-sharing mechanisms that facilitate the realization of Rupiah Digital by becoming primary wholesalers in the initial distribution stages.

The digital rupiah (Indonesian CBDC) system adopts a hybrid architectural design, incorporating distributed ledger technology (DLT) and blockchain concepts for its wholesale digital rupiah component, known as w-Digital Rupiah. However, the Retail Digital Rupiah (R-digital rupiah) deviates from this approach, operating outside the blockchain framework. Instead, R-digital rupiah is managed by wholesalers, while the Central Bank of Indonesia (Bank Indonesia/BI) maintains regulatory oversight and control over its distribution.[13]

While this appears to be counterproductive on the surface, it serves a function in addressing scalability limitations and ensuring interoperability; even though on offline access condition.[14] Wholesale digital rupiah or W-digital rupiah is a type of digital currency that is handled by wholesalers. They expected to distribute into end user, contribute into financial market development, and digital economics-finance integration.[15]

W-digital rupiah may not be used in a day-to-day transaction until to be converted to R-digital rupiah which granular data utilization.[16] Wholesaler might take the r-digital rupiah into retailers that are being intermediaries

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[12] Bank for International Settlements, "Experimenting With a Multi-CBDC Platform for Cross-Border Payments What Is Project MBridge?," 2023, https://www.bis.org/innovation_hub/projects/mbridge_brochure_2311.pdf.

[13] Nima Rohmalia and I Gusti Bagus Baskara Nugraha, "Designing a Central Bank Digital Currency (CBDC) Retail Model as a Payment System," in *2023 10th International Conference on ICT for Smart Society (ICISS)* (IEEE, 2023), 1–6.

[14] Simran Simran and Richard Adam, "Legal Analysıs Of Cbdc's Role As A Dıgıtal Payment Instrument Regulatory System In Indonesıa," *Asian Journal of Management, Entrepreneurship and Social Science* 3, no. 03 (2023): 270–86.

[15] Indonesia, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah"; Lista Meria, Tatik Mariyanti, and Isabella Maria, "Development Of Digital Indonesian Rupiah Through Blockchain Technology," *Blockchain Frontier Technology* 3, no. 2 (2024): 95–101.

[16] Indonesia, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah."

between public and BI. But in some cases, wholesalers could be retailer (utilizing BI-FAST) or central bank might be either—public claim r-Rupiah Digital directly.[17] Santoso et.al. show us three different systems for calming up the retail digital currency. People can be claiming his own money by central digital itself (direct issuance) or by wholesaler to be the middleman (indirect issuance) or mixing up of its two.[18]

Bank Indonesia holds the authority to identify wholesalers within the financial system, which may include commercial banks and non-banking institutions (fintech), as indicated in its white paper. This decision aligns with the evolving financial landscape and demonstrates the central bank's commitment to fostering an inclusive and adaptable monetary framework for sustained economic growth in the digital era.[19]

Terminologically, fintech refer as a technology who can catalyze the development of financial services and operates seems like a bank.[20] Nevertheless, the foundation of financial system in a country handled by commercial bank.[21] It could be part of government or fully private.[22] While fintech encompasses the common features found in traditional banking services, it further distinguishes itself by offering unique services such as e-money, peer-to-peer lending, financial advising, insurance, and digital payment solutions.[23] These fintech entities are typically established by start-up companies, leveraging innovative solutions that are integrated into various digital platforms, such as applications, websites, and financial services features. [24] Somehow, bank would be lifted and

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17 Indonesia.

18 Wahyu Yun Santoso et al., “Design elements and risks of central bank digital currency in tailoring a prudent ‘rupiah digital’." *Diponegoro Law Review* 8, no. 2 (2023): 141-158.

19 Indonesia.

20 Atsuyoshi Takeda and Yoshihiro Ito, “A Review of FinTech Research,” *International Journal of Technology Management* 86, no. 1 (2021): 67–88.

21 Grzegorz Paluszak and Joanna Wiśniewska-Paluszak, “Corporate Social Responsibility of the Leading Bank Institutions in Poland,” *Acta Universitatis Lodziensis. Folia Oeconomica* 6, no. 339 (2018): 17–40, https://bibliotekanauki.pl/articles/656757.pdf.

22 Legowo, Subanidja, and Sorongan, “Fintech and Bank: Past, Present, and Future.”

23 Xavier Vives, “The Impact of FinTech on Banking,” *European Economy*, no. 2 (2017): 97–105; Widayat Widayat, Ilyas Masudin, and Novita Ratna Satiti, “E-Money Payment: Customers’ Adopting Factors and the Implication for Open Innovation,” *Journal of Open Innovation: Technology, Market, and Complexity* 6, no. 3 (2020), https://doi.org/10.3390/JOITMC6030057.

24 Luís Barroso, “Fintechs: Concept, Level Playing Field and the Supervisory Approach,” *Fintech Regulation and the Licensing Principle*, 2023, 27–45, https://ebi-europa.eu/wp-content/uploads/2023/02/eBook-22Fintech-Regulation-Licensing-Principle-2-2023.pdf#page=28.

if they want to stay exist, they collaborate with another fintech to build-up their own fintech.[25]

TABLE 1. Comparation Between Bank and Fintech in The Future

Aspect	Banking	Fintech
Accessibility	Have physical access and/or via the application.	Only accessed through the app.
Innovation	Long-term stability and reliability with little innovation.	More innovative and quickly adapt to the latest technology.
Regulation	It is already operating under strict regulations.	Able to operate with more flexible regulations.
Scalability	Having the capacity to handle large transaction volumes, the capacity building process can be slow.	Rapid in increasing service capacity, May face scalability issues with rapid growth.
Integration with CBDCs	It can facilitate integration with existing financial infrastructure.	Can leverage new APIs and technologies for quick integration.

Source: *Authors' analysis*

Fintech companies pose challenges for traditional banks by offering innovative financial services, adoption of API technology, real-time data exchange, quality interoperability features, and improved customer experience.[26] However, Fintech disruption has proven advantageous for banks, as exemplified by PT Bank Negara Indonesia's increased profits.[27] Fintech with its more modern features, ability to manage big data, diversity of features, and convenience to use. So, the intensity of the competition between the two is so high. Fintech with its complications and flexibility while banks with its

[25] "Kolaborasi BRI & Fintech, Berikan Layanan Pembayaran Mudah Dan Aman Pada Digital Ekosistem," *Bisnis.Com*, 2021, https://finansial.bisnis.com/read/20211013/90/1453751/kolaborasi-bri-fintech-berikan-layanan-pembayaran-mudah-dan-aman-pada-digital-ekosistem.

[26] George Yiorgos Allayannis and Joseph M Becker, "A Global Fintech Overview," *Darden Case No. UVA-F-1860*, 2019; Jović, Kunjadić, and Singh, "Fintech and CBDC - Modern Trends in Banking."

[27] Revita Chairunisa and Ferry Irawan, "Analisis Nilai Entitas Setelah Penerapan Financial Technology Oleh PT Bank Negara Indonesia (Persero) Tbk," *Keberlanjutan: Jurnal Manajemen Dan Jurnal Akuntansi* 5, no. 2 (2020): 105–16.

security.[28] Fintech's operational flexibility is demonstrated through its circumvention of interest rate policies. For instance, Alipay and WeChat Pay levy a mere 0.1% fee on mobile transactions, substantially lower than banks' debit card charges. This practice has adversely affected bank card penetration, resulting in a significant annual loss of approximately $60 billion for banks. Conversely, alternative financial instruments such as Yu'E Bao and other MMFs yield higher returns, attracting savings deposits away from traditional banks. This shift has led to a decline of one trillion yuan in banking deposits in January 2014.[29] By providing customers with lower costs and higher efficiency, China's Fintech sector has posed a real threat to the monopoly of traditional commercial banks in main retail businesses. So that, fintech will have a positive impact when banks can demonstrate their efficiency.[30] Significant improvements in profitability, sustainability, and reduction of cybersecurity risks can be achieved.[31] On other hand, banks are very effective when transacting with large volumes. With the presence fintech as a competitor, the improvement in bank performance will move to the positive pole.[32] Fintech holds the promise of expanding access to financial services, increasing the variety of product offerings, enhancing convenience, and reducing costs for clients.[33] However, the rapid emergence of FinTech is related to an ongoing debate among policymakers and academics on the impact of greater competition on financial system stability.[34]

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[28] Murinde, Rizopoulos, and Zachariadis, "The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks."

[29] Ding Chen, "Chinese Commercial Banks and Fintech-Competition and Collaboration," in *Commercial Banking in Transition: A Cross-Country Analysis*. Cham: Springer International Publishing, 2024, pp. 333–53, https://doi.org/10.1007/978-3-031-45289-5_16.

[30] Sahdan Saputra, Rina Komala, and R Ayu Ida Aryani, "Fintech, Profitabilitas Dan Efisiensi Bank Umum Konvensional Di Indonesia," *J-AKSI: Jurnal Akuntansi Dan Sistem Informasi* 4, no. 2 (2023): 214–24.

[31] Murinde, Rizopoulos, and Zachariadis, "The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks."

[32] Case M Sprenkle, "Large Economic Units, Banks, and the Transactions Demand for Money," *The Quarterly Journal of Economics* 80, no. 3 (1966): 436–42; Firnanda Yoga Tama, Sitti Zakiah Ma'mun, and Irelda Sari Syaranamual, "Pengaruh Fintech, PDB dan Inflasi Terhadap Kinerja Keuangan Bank Yang Terdaftar di Bursa Efek Indonesia," *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)* 8, no. 1 (2024): 2439–57.

[33] Selim Elekdag, Drilona Emrullahu, and Sami Ben Naceur. "Does FinTech Increase Bank Risk-taking?." *Journal of Financial Stability* 76 (2025): 101360.

[34] Saputra, Komala, and Aryani, "Fintech, Profitabilitas Dan Efisiensi Bank Umum Konvensional Di Indonesia."

Currently, the oversight of significant innovations within the fintech sector is addressed in a limited number of regulations. One such provision, Article 5 of PBI No. 19/12/PBI/2017, mandates the registration of new products, services, technologies, or business models with Bank Indonesia (BI) to ensure compliance and awareness of emerging innovations. Furthermore, Article 11 of PBI No. 19/12/PBI/2017 establishes a regulatory sandbox, offering fintech companies an opportunity to test and refine their innovations in a controlled environment under the supervision of the relevant authorities. POJK 3/2024, Article 47, relaxes the regulatory sandbox for financial sector technological innovations, facilitating coordination between the OJK and other relevant entities. The OJK SE No. 5/SEOJK.07/2024 further regulates the sandbox testing mechanism, focusing on Testing Rooms and Innovation Development procedures.

Current legislation proves insufficient business competition when considering cases of GoTo and Gopay, which achieved dominant positions with decacorn status, valuing over $10 billion. Following them are 15 unicorn companies, such as OVO, Xendit, Ajaib, Kredivo, FinAccel, DANA, and Akulaku.[35] The growing dominance of fintech has led to several apparent problems, including cartel practices within fintech associations, large-scale Mergers and Acquisitions (M&A), exploitation of dominant positions, and predatory pricing. These issues reveal the ineffectiveness of Indonesia's current competition law, UU No. 5/1999, which merely offers broad prohibitions on issues like dominant positions, forbidden agreements (e.g., cartels), and illegal activities (e.g., monopolies).[36]

Indonesian commercial banks have experienced negative consequences also due to the rise and growth of fintech, particularly in the credit sector. Banks' profits had been decreasing from 2018 to 2022. As a result, banks across the board by a strategic responses—including large and small, state-owned, and conventional and sharia institutions—improving efficiency and driving innovation to retain their customer base amid this evolving landscape.[37] Commercial banks also face competition from fintech in other sectors in basic

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[35] JakartaGlobe, "Eight Indonesian Startups Achieve Unicorn Status on CB Insights' List" (Jakarta, November 2023).

[36] Muhammad Arif Fahmi, M. Afif Hasbullah, and Ahmad Munir, "Pengaturan Hukum Persaingan Usaha Atas Jasa Keuangan Digital Di Indonesia," *MIMBAR YUSTITIA* 6, no. 1 (July 29, 2022): 26–28, https://doi.org/10.52166/mimbar.v6i1.2625.

[37] Salsa Dilla, Aidil Rizal Shahrin, and Fauzi Zainir, "Banking Competition in Indonesia: Does Fintech Lending Matters?," *Journal of Financial Economic Policy* 16, no. 4 (June 27, 2024): 540–56, https://doi.org/10.1108/JFEP-12-2023-0365.

services like utility bill payments. As fintech platforms often provide more efficient solutions and attractive loyalty programs with promotional offers, consumers increasingly opt for these services, which can erode banks' customer base.[38] GoPay and Ovo have successfully implemented loyalty programs, resulting in significant customer engagement and satisfaction. These efforts have contributed to their top-of-mind recognition and large user base, further solidifying their leading positions within the competitive fintech landscape.[39]

Amid the growing competition between banks and fintech companies, where fintech seems poised to dominate, the emergence of Central Bank Digital Currency (CBDC) or Rupiah Digital could further bolster fintech's position while posing additional challenges to traditional banks.[40] The introduction of Central Bank Digital Currencies (CBDCs) necessitates corresponding legal and policy considerations.[41] In Indonesia, Law No. 7/2011 defines currency as government-issued money for use in all economic activities. Recently, Law No. 4/2023 introduced the concept of a digital rupiah, updating the legal framework to accommodate a CBDC.

Indonesia's PPSK Law designates Bank Indonesia (BI) as the exclusive authority for issuing, circulating, revoking, withdrawing, and managing the digital rupiah. Supporting regulations, PBI No. 23/6/PBI/2021 and PBI No. 23/7/PBI/2021, solidify the digital rupiah as the only legal digital currency by prohibiting the use and circulation of other digital currencies. Additionally, payment system infrastructure operators and financial service providers are barred from processing alternative digital currencies, ensuring the centrality of the digital rupiah in Indonesia's financial landscape. However, we agree with Provisky who stated that there are no detailed rules regarding the entire process of managing the digital rupiah.[42] Even though, Rupiah Digital is being developed to coexist with Indonesia's existing financial system, as well as the

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38 Yuping Liu, "The Long-Term Impact of Loyalty Programs on Consumer Purchase Behavior and Loyalty," *Journal of Marketing* 71, no. 4 (2007): 19–35, https://doi.org/doi:10.1509/jmkg.71.4.019.

39 Aziz Rahardyan, "Riset Dompet Digital Terpopuler: OVO Dan GoPay Dominan," *Bisnis*, January 3, 2022, https://finansial.bisnis.com/read/20220103/563/1484554/riset-dompet-digital-terpopuler-ovo-dan-gopay-dominan.

40 Indonesia, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah."

41 Vivienne Lawack, "An Exploratory Analysis of Central Bank Digital Currencies—Some Considerations," *SA Mercantile Law Journal* 34, no. 1 (2022): 118–34.

42 Cedatendo Lambang Provisky, Rahmadi Indra Tektona, and Aan Efendi, "Kepastian Hukum Distribusi Mata Uang Digital Bank Sentral Sebagai Alat Pembayaran Dalam Transaksi Elektronik", *Hukum Responsif* 15, no. 1 (2024): 37–47, https://ejournalugj.com/index.php/Responsif/article/view/8910/pdf.

upcoming initiatives outlined in the *Blueprint Sistem Pembayaran Indonesia (BSPI)* and the *Blueprint Pengembangan Pasar Uang (BPPU)* projects.[43] This digital currency aims to provide a user-friendly and feature-rich system, promoting financial inclusion and adapting to the evolving digital society.[44]

The seamless coexistence of CBDC with existing payment systems has proven successful in China, as evidenced by the absence of significant differences in usage between CBDC and pre-existing e-money solutions. The introduction of CBDC has successfully catalyzed sustained innovation while transforming transaction methods in daily life. The primary challenge faced by central banks in implementing CBDC lies in the initial stages, as they must compete with the rapid innovation process driven by the fintech industry's inherent focus on cutting-edge technology and adaptability. [45] Retail CBDC design and policy play a crucial role in garnering public enthusiasm, as demonstrated in Nigeria, the Bahamas, and China.[46] Regardless of the outcome of this competition, consumers ultimately benefit from the innovations and improvements driven by the quest for the ideal CBDC implementation.[47]

Article 2 and paragraph (1) letter c, in conjunction with Article 66 of Law No. 19/2003 on State-Owned Enterprises (BUMN Law), enable the government to collaborate with SOEs through designation or direct mandate mechanisms for providing essential goods and services that benefit the public. [48] Adopting best practices from China, Indonesian state-owned banks should prioritize business innovation during the transition to the CBDC era.[49] SOEs banks, acting as wholesalers, can leverage their substantial market share to fully

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[43] Indonesia, "Proyek Garuda: Menavigasi Arsitektur Digital Rupiah."

[44] Indonesia.

[45] Náñez Alonso, Jorge-Vazquez, and Reier Forradellas, "Central Banks Digital Currency: Detection of Optimal Countries for the Implementation of a CBDC and the Implication for Payment Industry Open Innovation."

[46] Carlos León, Jose F. Moreno, and Kimmo Soramäki, "Simulating the Adoption of a Retail CBDC," *Jahrbücher Für Nationalökonomie Und Statistik*, July 4, 2024, 3, https://doi.org/10.1515/jbnst-2024-0002.

[47] Náñez Alonso, Jorge-Vazquez, and Reier Forradellas, "Central Banks Digital Currency: Detection of Optimal Countries for the Implementation of a CBDC and the Implication for Payment Industry Open Innovation."

[48] Ilona Estherina, "Bank BUMN Bakal Diberi Penugasan Dukung Program 3 Juta Rumah, Begini Penjelasan Hashim," *Tempo*, February 27, 2025, https://www.tempo.co/ekonomi/bank-bumn-bakal-diberi-penugasan-dukung-program-3-juta-rumah-begini-penjelasan-hashim-1212982.

[49] Hanying Qi, Keng Yang, and Weijia Wang, "Does Fintech Change The Market Power Of Traditional Banks In China?," *Journal of Business Economics and Management* 23, no. 5 (August 30, 2022): 1060–83, https://doi.org/10.3846/jbem.2022.17184.

explore business potential and secure a strong position in the emerging financial landscape, maximizing utility through strategic innovation

Drawing from Article 33 of the Indonesian Constitution, SOEs are empowered to oversee the management of Natural Resources (SDA) and crucial production sectors. This authority is rooted in the noble objective of promoting the welfare and prosperity of the Indonesian people in an equitable and progressive manner, emphasizing the central role of BUMN banks in the nation's socio-economic development. In Indonesia, state-owned banks assume a central role in advancing these objectives, given their dominant presence within the nation's financial sector.[50] Article 51 of Law No. 5 of 1999 concerning Prohibition of Practices Monopoly and Unfair Business Competition (Anti-Monopholy Law) stated the state can be managed monopolistically through state-owned enterprise.

China's current situation offers insightful lessons on the effects of fintech and Central Bank Digital Currencies (CBDC) on commercial banks. A notable "U-Shaped effect" occurs when fintech and CBDCs jointly exert pressure on banks, causing a gradual decline in market share over time and inducing substantial withdrawals, known as a "bank run." This phenomenon ultimately augments banks' vulnerability, presenting considerable challenges for the sector (*bank fragility*).[51] Qi et.al Observing the evolution of fintech from 2013 to 2018, with data collected from 155 Chinese banks, reveals a discernible shift in the position of commercial banks. This period indicates a noticeable impact on the banking sector due to the emergence and growth of fintech.[52] A survey conducted by Scratch further highlights the challenges faced by commercial banks, as it indicates that 75% of millennials prefer fintech services offered by companies such as Amazon, PayPal, and Google over traditional banking services.[53] Additional research on public interest in fintech was conducted in the cities of Makassar and Tangerang, employing survey methods. The findings

[50] Imola Drigă and Codruta Dura, "The Financial Sector and the Role of Banks in Economic Development," in *Financial Developement and Economic Growth* (Universitaria Simpro, 2014), 598–603, https://www.upet.ro/simpro/2014/proceedings/09.

[51] Anjan V. Thakor, "The Financial Crisis of 2007–2009: Why Did It Happen and What Did We Learn?," *Review of Corporate Finance Studies* 4, no. 2 (September 2015): 17, https://doi.org/10.1093/rcfs/cfv001; Qi, Yang, and Wang, "Does Fintech Change The Market Power of Traditional Banks In China?," 1071.

[52] Qi, Yang, and Wang, "Does Fintech Change The Market Power Of Traditional Banks In China?"

[53] Giorgio Barba Navaretti, Giacomo Calzolari, and Alberto F Pozzolo, "Fintech and Banking. Friends or Foes?," *SSRN Electronic Journal*, 2018, n. 5, https://doi.org/10.2139/ssrn.3099337.

demonstrate a notably high level of interest among the public towards fintech services in these locations.[54]

Fintech has proven to be more effective in achieving the financial inclusion goals that CBDCs aim to address. This is primarily due to fintech's non-discriminatory nature and its ability to resolve issues related to interoperability, transparency, inefficiency, and exclusivity that are commonly encountered in the traditional banking sector.[55] While banks may not possess the same level of flexibility as fintech, it is important to recognize that the restrictions imposed by banks are a natural and necessary measure to maintain their liquidity and ensure the stability of the financial system. [56] The emergence of fintech has catalyzed a paradigm shift in the financial sector, a phenomenon Siek and Sutanto term "Digital Disruption." ".[57]

Some research showed, the competition pushes banks to take more risks, which leads to increased bank fragility. Hanyang Liu research in 2020, try to find out bank's competition level and the impact of bank competition on stability in China sample covering 38 Chinese commercial banks from 2006 to 2019. The results are competition have been increasing years by years in fluctuated way and success to catalyze innovation also with efficiency in banking sector. Commercial bank more confident to take a risk and adopting radical strategies that makes them reducing their stability and control of risk.[58] Tongurai & Vithessonthi empirically test the connection between bank competition and bank risk in Japan in the period of 1993–2016, the result is

[54] Siti Asriah Immawati and Dadang Dadang, "Minat Masyarakat Bertransaksi Menggunakan Financial Technology (Fintech) Di Kota Tangerang," *Prosiding Simposium Nasional Multidisiplin (SinaMu)* 1 (2019), http://jurnal.umt.ac.id/index.php/senamu/article/view/2135; Chairul Iksan Burhanuddin and Muhammad Nur Abdi, "Tingkat Pemahaman Dan Minat Masyarakat Dalam Penggunaan Fintech," *Owner: Riset Dan Jurnal Akuntansi* 3, no. 1 (2019): 21–27, https://www.owner.polgan.ac.id/index.php/owner/article/view/79.

[55] Franklin Allen, Xian Gu, and Julapa Jagtiani, "Fintech, Cryptocurrencies, and CBDC: Financial Structural Transformation in China," *Journal of International Money and Finance* 124 (June 2022): 102625, https://doi.org/10.1016/j.jimonfin.2022.102625; S Mahendra Dev, "Financial Inclusion: Issues and Challenges," *Economic and Political Weekly*, 2006, 4310–13, https://www.jstor.org/stable/4418799.

[56] Dev, "Financial Inclusion: Issues and Challenges."

[57] Michael Siek and Andrew Sutanto, "Impact Analysis of Fintech on Banking Industry," in *2019 International Conference on Information Management and Technology (ICIMTech)*, vol. 1 (IEEE, 2019), 356–61.

[58] Hanyang Liu, "Impact of Bank Competition on Bank Stability in China," 2020.

positively correlated.[59] Kick & Prieto also give a statement if higher competition market, it will follow by the decreasing of banks pricing ability that leads to increase bank risk and bank fragility.[60]

It relates with Schumpeter's mind that explain us if the characteristic of innovation that held by fintech is creative-destructive. Innovation always needs high cost and high quality of another capital which is no assurance its will be success. If the failure has been carrying-up, the destruction to the innovator itself would be happened.[61] If its success, other parties will being destructive whether in small or big scale. The innovation's form can be a new good, method, market, material, organization of an industry, or combination between them.[62]

Law as a social system to control level playing field and financial stability

Anti-monopoly laws has already existed in Law No. 5/1999 on the Prohibition of Monopoly Practices and Unfair Business Competition (Anti-Monopoly Law)[63] and institutions that enforce them also run as well as the Financial Services Authority or in Indonesia calls it the OJK and the guardian of Indonesia's financial stability through monetary policy from Bank Indonesia or called BI that stated on Law No. 21/2011 on the Financial Services Authority (OJK), The explanation of Law No. 23/1999 on Bank Indonesia (BI Law). They also supported by KPPU (Competition Commision) and the legal system implement rule-based regulation and the consequences is strictly adhere to the

[59] Jittima Tongurai and Chaiporn Vithessonthi, "Bank Regulations, Bank Competition and Bank Risk-Taking: Evidence from Japan," *Journal of Multinational Financial Management* 56 (September 2020): 100638, https://doi.org/10.1016/j.mulfin.2020.100638.

[60] Thomas Kick and Esteban Prieto, "Bank Risk and Competition: Evidence from Regional Banking Markets," *Review of Finance* 19, no. 3 (May 2015): 1185–1222, https://doi.org/10.1093/rof/rfu019.

[61] Christopher Ziemnowicz, "Joseph A. Schumpeter and Innovation," in *Encyclopedia of Creativity, Invention, Innovation and Entrepreneurship* (Springer, 2020), 1172.

[62] Zofia Pasterny, "FinTech – A Step Ahead or a Force of Creative Destruction in Finance," *Finanse i Prawo Finansowe* 2, no. 30 (June 30, 2021): 88–89, https://doi.org/10.18778/2391-6478.2.30.06.

[63] Law (UU) Number 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition (LN. 1999/ No. 33, TLN NO. 3817).

provision of the law, potentially limiting the adaptability and responsiveness required to address the rapidly evolving fintech sector effectively.[64]

Anti-Monopoly Law aims to regulate business competition across sectors, including the financial services sector that prohibits the execution of illegal agreements and activities, curbs tendencies toward dominant market positions, and incorporates law enforcement provisions that permit intervention from the Business Competition Supervisory Commission (ICC) and impose legal sanctions. The primary objective of the Anti-Monopoly Law, as outlined in Article 3, is to safeguard public interests, enhance national economic efficiency and Article 2 about the principle to be applied, namely economic democracy that is fair to business actors and the public interest. At this time, Mappuji & Wardana sees that the Anti-Monopoly Law is still not fully effectively applied to the fintech world because the rules presented are still not concrete.[65]They suggest the need for regulatory reform to bridge the gap between traditional antitrust regulations and the modern challenges posed by the fintech industry.[66]

Law No. 21/2011 on the Financial Services Authority (OJK) has alleviated the burden on the KPPU by delegating supervisory responsibilities for competition within the financial sector to the OJK. The explanation of Law No. 23/1999 on Bank Indonesia (BI Law) mandates BI as the central bank to address the problem of economic vulnerability at the national level through its monetary policy. BI is given the authority to set rules, authorize, and impose sanctions on the financial business sector in Indonesia. BI together with the OJK formed a synergy that became a milestone in law enforcement in the fintech world and supported by KPPU.[67] Although the collaboration between regulatory bodies has shown promise, it cannot be considered entirely ideal due to Indonesia's reliance on rule-based regulations. This legal framework necessitates that law enforcers strictly adhere to the provisions of the law,

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[64] Nikmah Mentari and Adi Rahmannur Ibnu, "Principle-Based Regulation in Indonesia: In Response to Digital Age Toward Financial Services," *Audito Comparative Law Journal (ACLJ)* 4, no. 3 (October 2023): 159–69, https://doi.org/10.22219/aclj.v4i3.28999; M Raihan Mappuji and Lingga Wisnu Wardana, "Fintech Competition Compliance: Analisis Pelaku Usaha Fintech Dalam Menjalankan Program Kepatuhan Persaingan Usaha KPPU," *Journal of Studia Legalia* 4, no. 01 (2023): 43–59, https://www.academia.edu/download/109795886/JSL_M._Raihan_Mappuji_2C_Lingga_Wisnu_Wardana_Fintech_Competition_Compliance_2C_Analisis_Pelaku_Usaha_Fintech_dalam_Menjalankan_Program_.pdf.

[65] Mappuji and Wardana, "Fintech Competition Compliance: Analisis Pelaku Usaha Fintech Dalam Menjalankan Program Kepatuhan Persaingan Usaha KPPU."

[66] Mappuji and Wardana.

[67] Mappuji and Wardana.

potentially limiting the adaptability and responsiveness required to address the rapidly evolving fintech sector effectively.[68]

In anticipation of the widespread implementation of CBDCs, the existing fierce competition between banks and fintech firms is expected to intensify. As integral components of the broader socio-economic landscape, these institutions will continue to vie for dominance within the evolving financial ecosystem.

Luhmann saw an obsolete law as having to do autopoietics—the process of fixing itself and making it "*exist*" again.[69] This session does not provide a legal consideration that strictly controls and details about competition between fintechs and banks in perfect level playing field; rather, it will put the competition between the two in a "*safe*" position for themself and the public—mitigating the occurrence of collapse that are based on economic instability.

The ideal form of law can be formed when the law is designed in collaboration with other sciences also with sightseeing the environment of the context of law (the open nature of law) and confirms its existence with normative properties or what Luhmann calls the (closed nature of law).[70] Legal openness can be realized by reading the real conditions if banks are at a disadvantageous point due to the rampant fintech. On the other hand, law need to show their dignity (the closed nature of law) by showing the form of legal secrecy through coercive efforts by applying sanctions and law enforcement institutions.

However, in the formulation of the legal system, both substantial and institutional, sometimes difficulties are found if only moving on to the problem without looking at best practices. In this case, legal comparison can be helpful by still paying attention to the relevance between the country of origin (home system) to the country of the house system followed by adoption. This method is called a legal transplant; must be done carefully and accompanied by modifications to make adjustments to the house system.[71] Currently, some countries show advantages regarding laws that regulate the level of playing field between fintech and bank, such as China and a great anti monopholy law, such

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[68] Mentari and Ibnu, "Principle-Based Regulation in Indonesia: In Response to Digital Age Toward Financial Services."

[69] *Please read* Niklas Luhmann, *Law as a Social System*, ed. Klaus A Ziegert, Fatima Kastner, and Richard Nobles, *Oxford University Press* (Oxford University Press, 2004).

[70] Luhmann.

[71] Irma Johanna Mosquera Valderrama, "Legal Transplants and Comparative Law," *International Law Journal*, 2004, 261–76, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2017940.

as the United States (US). Both hold different goals; China with financial inclusion because it allows fintech to cooperate with banks to prioritize equitable distribution of its use throughout China, [72] while the United States, with its financial competition shown by a large number of fintechs, has emerged to compete with commercial banks held by the private sector , a strategic safeguard against the recurrence of a "too big to fail" scenario, such as the 2008 financial crisis. [73]

1. Regulation by Taking into Account the Nature of Open Law

The concepts of business competition rules that are commonly discussed are entity-based regulation (rules and oversight apply to the entity as a whole) and activity-based regulation (regulatory approach that focuses on specific activities or services).[74] Entity-based regulation functions as balance control and activity-based regulation as consumer protection.[75] According to Barosso, the concept that must be used is a combination of the two or what we call a combination based regulation.[76] Here are the details:

a. *Start-up Service Feature Restrictions (entity-based regulation and activity-based regulation).*

A particular area of concern lies in the distinction between FinTech firms and start-ups offering other services, such as GoPay and GoTo.[77] The integration of these entities can amplify customer retention through exclusive promotions, deferred payment options, and member-only bonuses. Liu called

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[72] Zhenlun Wu et al., "FinTech Regulation and Banks' Risk-Taking: Evidence from China," ed. Baogui Xin, *PLOS ONE* 19, no. 10 (October 2024): e0311722, https://doi.org/10.1371/journal.pone.0311722.

[73] Julia Black, "Principles Based Regulation: Risks, Challenges and Opportunities" (Sydney, 2007), https://eprints.lse.ac.uk/62814/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_Black%2C; Preethi Vijayagopal, Bhawana Jain, and Shyam Ayinippully Viswanathan, "Regulations and Fintech: A Comparative Study of the Developed and Developing Countries," *Journal of Risk and Financial Management* 17, no. 8 (July 2024): 324, https://doi.org/10.3390/jrfm17080324; Douglas W Arner et al., "The Evolution of FinTech: A New Post-Crisis Paradigm," *Georgetown Journal of International Law* 47, no. 4 (2016): 1271–1320, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2676553.

[74] Fernando Restoy, *Fintech Regulation: How to Achieve a Level Playing Field* (Financial Stability Institute, Bank for International Settlements London, 2021).

[75] Restoy.

[76] Barroso, "Fintechs: Concept, Level Playing Field and the Supervisory Approach."

[77] Kukuh Tejomurti and Udin Silalahi, "Digital Market and Its Adequacy of Merger Assessment in Indonesian Business Competition Law," *International Journal of Law and Management*, 2024.

it a loyalty program and it will constantly increase customer loyalty to service providers and ensure retention relationships between customers and service providers. Over time, the frequency of purchases and the number of transactions have the potential to increase.[78] The Digital Rupiah, which is predicted to increase financial inclusion, will certainly have positive implications for loyalty programs and the impact it produces. The advantages of data granularity in the Digital Rupiah will make it easier for start-ups to collect buyer density data. When combined with the use of AI, the stock of goods will be right on target (tailored). Customers who feel comfortable transacting will voluntarily save their money in the e-wallet; and possibly in large numbers. Thus, the prohibition of controlling business circulation from upstream to downstream is one of the appropriate formulations.

Start-up service feature restrictions could fall under both entity-based regulation and activity-based regulation, depending on how the restrictions are designed and implemented.

b. Regulation of Fintech's capital requirements (entity-based regulation)

While banks are subject to regulatory capital restrictions, fintech firms operating within similar business sectors often face less stringent capital requirements.[79] Capital is closely related to production financing, reflecting the interests of business owners, business expansion, and securing liquidity. Capital can overcome profitability risks—losses occur due to market, credit, liquidity, and operational risks. In addition, capital is the benchmark for the central bank in determining the market size and nominal credit that can be launched by commercial bank.[80] We consider subjecting fintech to capital restriction regulations akin to those imposed on banks. Capital restrictions have implications for the level of fintech quantity. When these regulations are relaxed, the growth trend of fintech will increase from time to time, as is happening in Indonesia today and US. [81] Strict regulatory restrictions, akin to

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78 Liu, "The Long-Term Impact of Loyalty Programs on Consumer Purchase Behavior and Loyalty."

79 Stulz, "FinTech, BigTech, and the Future of Banks."

80 Pujiyono et al., *Hukum Perbankan Dan Open Banking Perkembangan Bank Umum Indonesia Di Era Digitalisasi Dan Open Data*, ed. Yosephine Adinda Dwika Sandra and Shafa Qurratul Aini, 1st ed. (Surakarta: CV. Indotama Solo, 2022).

81 Gilang Kharisma, "Data Fintech Indonesia: Panduan Lengkap," *Techinasia*, August 2024, https://id.techinasia.com/data-fintech-indonesia-panduan-lengkap.

those implemented in China, could potentially result in a more limited number of fintech firms. [82]

In pursuit of stable financial growth, Indonesia should aim for a balanced regulatory environment between banks and fintech firms, leaning towards a Chinese regulatory approach. While fostering financial innovation is not the primary focus, financial stability and risk control have traditionally taken precedence over fostering financial innovation [83]. China's regulatory framework for third-party payment service providers, as outlined in the 2010 Measures on Third-Party Payment Service, underscores the importance of capital requirements to ensure the financial stability and operational resilience of FinTech companies.[84]

As mandated by these measures, payment institutions must obtain a license for operation, with capital requirements serving as a key criterion. Notably, the minimum registered capital for payment institutions stands at RMB 100 million. In addition to this financial benchmark, key stakeholders holding not less than 10% interest in the company, or exercising control over its operations, are subject to additional stipulations. They must demonstrate a proven track record of relevant service provision and profitability spanning a minimum two-year period. [85]

The licensing process is two-tiered, involving an initial examination by the local branch of the People's Bank of China (PBOC) in the applicant's domicile, followed by final approval from the PBOC itself. This stringent process reflects China's commitment to ensuring that only financially sound and capable companies can offer financial services, thereby protecting consumers and maintaining the integrity of the financial system. [86]

Licenses granted under these measures carry a five-year validity period, with the possibility of renewal contingent upon PBOC approval. As such, the Chinese regulatory framework serves as a benchmark for other jurisdictions, underscoring the critical role of capital requirements in fostering a competitive and stable financial technology landscape.[87]

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[82] Inda Rahadiyan, "Perkembangan Financial Technology Di Indonesia Dan Tantangan Pengaturan Yang Dihadapi," *Mimbar Hukum* 34, no. 1 (June 2022): 210–36, https://doi.org/10.22146/mh.v34i1.3451.

[83] Wu et al., "FinTech Regulation and Banks' Risk-Taking: Evidence from China."

[84] Robin Hui Huang, *Fintech Regulation in China: Principles, Policies and Practices* (Cambridge University Press, 2021).

[85] Huang.

[86] Huang.

[87] Huang.

Indonesia's regulatory approach for FinTech firms, while catering to a sizable user base and recognizing state-owned banks as key players, adopts a seemingly more lenient stance compared to China. Requiring just 1 billion Indonesian Rupiah in main capital for legal entities, Indonesia's standards appear less stringent than China's. This contrast highlights the need for policymakers to strike a balance between fostering FinTech innovation and ensuring that financial entities have adequate capital to maintain operations, comply with regulations, and contribute to the stability of the financial system.

To effectively address the evolving financial technology landscape, regulators must also recognize and differentiate between companies that provide financial technology services. Buckley differentiate them into three types of company named FinTechs, TechFins, and Digital Financial Platforms (DFPs).[88] This distinction is particularly critical when considering regulatory measures such as capital requirements and registration processes for market entry. As a starting point, FinTech, which have often emerged as start-ups in the wake of the 2008 Global Financial Crisis, aim to identify specific pain points within the financial services sector, creating tailored technological solutions. These innovations may be directly implemented or serve as valuable acquisition targets for incumbent institutions. To ensure the stability of the financial system, regulators may consider implementing proportionate capital requirements and streamlined registration processes to facilitate the growth of these innovative start-ups. On the other hand, TechFins are established technology companies drawing upon extensive customer data derived from non-financial services to deliver customized financial solutions. Given their potential impact on market stability and competition, regulators should consider tailored capital requirements that reflect their unique risk profiles, along with a more comprehensive registration process to evaluate their data management practices and potential implications for consumer protection.[89]

Distinct from both FinTechs and TechFins, DFPs focus on fostering collaboration between financial intermediaries and cultivating an interconnected financial ecosystem. To regulate DFPs, policymakers should assess their impact on market structure, competition, and financial stability, as well as consider specific registration requirements and capital standards that account for their unique roles as facilitators of innovation and cooperation

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[88] Ross P Buckley, Douglas W Arner, and Dirk A Zetzsche, "From FinTech to TechFin to BigTech to FinTech 4.0: Balancing the Opportunities and Risks of Scale and Concentration in Digital Finance," in *FinTech* (Cambridge University Press, 2023), 247–310, https://doi.org/10.1017/9781009086943.

[89] Buckley, Arner, and Zetzsche.

within the financial industry. Of the three types of financial technology – FinTechs, TechFins, and DFPs – TechFins pose the most significant concerns for traditional bank stability and therefore may require more stringent regulation. TechFins leverage their vast customer data, collected from diverse non-financial services, to provide highly tailored financial solutions. This data-driven approach, combined with the substantial resources and established customer bases of TechFins, may pose a considerable challenge to the competitiveness and stability of traditional banks. In contrast, FinTechs typically operate as start-ups their impact on overall stability may be less pronounced. Similarly, DFPs focus on fostering collaboration between financial intermediaries, promoting an interconnected financial ecosystem that may complement traditional banking models rather than directly competing with them. Ultimately, recognizing and addressing the nuanced differences between FinTechs, TechFins, and DFPs is crucial in ensuring that their operations do not undermine traditional banks' stability while encouraging innovation and fair competition

c. Regulation of Fintech's capital requirements (activity-based regulation)

Moreover, the diverse segments within the FinTech industry, encompassing payments, lending, wealth management, and insurance, inherently possess distinct characteristics and necessitate varying capital requirements. For instance, a payment platform may necessitate less initial capital yet require substantial working capital to effectively manage high transaction volumes and mitigate settlement risks. Conversely, a lending platform may demand a more significant upfront capital investment to finance loans and maintain compliance with capital adequacy ratios. Distinct from these, a wealth management platform might require comparatively lower overall capital, while necessitating a larger equity base to cultivate trust and establish a strong reputation amongst its clientele. The utilization of wholesale central bank digital currencies (CBDCs) by FinTech firms necessitates the implementation of tailored capital requirements to mitigate potential adverse implications on fair competition with traditional banks. A uniform capital requirement for FinTech firms, irrespective of their distinct operational risks, may lead to an uneven playing field. This could result in certain FinTech segments benefiting from lower capital requirements, gaining an unfair competitive advantage over their traditional counterparts. Furthermore, disregarding the unique risk profiles of various FinTech segments could incentivize regulatory arbitrage, as firms seek to lower their capital requirements by strategically altering their business models or blurring the boundaries between different financial services. This may undermine regulatory oversight and compromise the stability of the financial system. a well-functioning financial system relies on market discipline to hold financial institutions accountable for their risk-taking behaviours. Inaccurate capital requirements that fail to reflect the underlying risks of different FinTech segments could erode market discipline, leading to excessive risk-taking and jeopardizing the overall stability of the financial system.

d. Withdrawal threshold (entity-based regulation)

The success of retail CBDC will stimulate a change in people's behavior who previously stored money in commercial banks to switch to central banks.[90] CBDC features are a major consideration. When the entire society switches in close proximity, the bank's profitability will decrease and the liquidation ability will be disrupted. In this case, the Bank may switch to business in the less stable wholesale sector. Bank runs will be spurred and large withdrawals will trigger disruptions in banks. China is trying to maintain liquidation by limiting the withdrawal of large amounts of CBDCs. The authorities have suggested periodization of large withdrawals of money. When this is enforced, the relevant customer will be sanctioned with a fine. A gradual remuneration system with a certain threshold and applying interest on out-of-bounds money withdrawals is also implemented by China.[91]

e. Antitrust law (activity-based regulation)

Competition law in Indonesia only has general provisions that are not detailed, such as the prohibition of occupying dominant positions, monopolizing, concentration of economic power, unfair business competition, and so on. The year of its promulgation is in 1999.[92] The conditions in that year and the current are certainly very different because of the dynamic social conditions. The level of complexity of business competition has also developed

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[90] Barbara Meller and Oscar Soons, "Know Your (Holding) Limits: CBDC, Financial Stability and Central Bank Reliance," 2023, https://doi.org/https://doi.org/10.2866/79404%0A.

[91] Sarah Chan, "China's Central Bank Digital Currency: Impact and Policy Implications," *China: An International Journal* 21, no. 3 (August 2023): 141–57, https://doi.org/10.56159/chn.2023.a904731; "Progress of Research & Development of E-CNY in China," 2021, http://www.pbc.gov.cn/en/3688110/3688172/4157443/4293696/2021071614584691871.pdf#page=3.25.

[92] Law (UU) Number 5 of 1999 concerning the Prohibition of Monopoly Practices and Unfair Business Competition (LN. 1999/ No. 33, TLN NO. 3817).

significantly, so the law must be more responsive with a more descriptive substance. As with antitrust law in America, which was summarized and then elaborated by Evans and Hylton that U.S. antitrust law permits firms to acquire significant market power through lawful means and hold onto a monopoly. The law prohibits firms from colluding on prices and market parameters, and certain practices to acquire or maintain significant market power. Acquiring significant market power through mergers, acquisitions, or joint ventures is typically unlawful. [93]

On the other hand, China has designed a more modern antitrust law. Article 9 of China's anti-monopoly law explains: Operators may not use [means such as] data and algorithms, technology, or capital advantages and platform rules to engage in monopolistic behavior that is prohibited in this Law. They accommodate the rules regarding technology-based companies in it and specifically aimed at fintech and banks in general so as not to abuse the new features brought by technology.[94]

There are several notes after reflecting on America, China, and elaborated with pure ideas. The creation of more specific and stricter business competition rules for fintech-based companies must be held, such as restrictions on the fintech service sector, additional capital regulations such as banks, and prohibitions on using data, algorithms, and technology to create market centralization. Fintechs are also not allowed to make mergers and/or acquisitions in other fintechs of the same size or other start-ups, especially those that have a large market. Ultimately, regulators can play an active and positive role in encouraging innovation by giving unique business models "permission to play" in a highly competitive financial sector.

2. Building a Legal Framework with Principle-Based Regulation Inspired by the Closed Nature of Law

If we stand behind Luhmann's idea, legal system definitely should be clear from any interest. Legal system must be purely legal or not affected by anything other than law—political, economic, and so on. Justice can be created when there is consistency from within the law with the impression of "closed" interests

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[93] David S. (University College London And University Of Chicago Law School) Evans and Keith N. (Boston University) Hylton, "The Lawful Acquisition and Exercise of Monopoly Power and Its Implications for the Objectives of Antitrust," *Competition Policy International* 4, no. 2 (2008): nn. 11–13.

[94] Arendse Huld, "What Has Changed in China's Amended Anti-Monopoly Law," *Briefing, China*, 2022, https://www.china-briefing.com/news/what-has-changed-in-chinas-amended-anti-monopoly-law/.

that must be set aside.[95] With that condition, law can show his dignity and control another social system properly.[96]

In Indonesia, financial sector's regulation held by OJK and BI. We can trust two of them caused of their integrity. In 2022, BI got best predicate at integrity scoring survey from anti-corruption institution (KPK) within 87,28 score—the mean score of non-ministry institution is 71,94.[97] Even though, recently, BI has been suspected corruption at CSR funding; they supports all of legal process to take back their integrity.[98] For OJK, they integrity also proven by a lot of achievement and develop their governance regularly due to strengthening their internal integrity.[99] So that, we need to legitimize; especially for OJK; but also with BI to be an enforcer at CBDC era. Last but not least, Indonesia should show a commitment to keep their independency and throw-out the influences or potential influences from another parties (also government) within OJK and BI.

Within the framework of the closed nature of law, regulators must address emerging challenges, such as fintech innovations, while preserving the coherence and integrity of the legal system.

Rule-based regulation (Indonesia's current approach) provides absolute firmness by giving orders to legal *adresat* while principle-based regulation seems to legalize best practices in the law to provide standards that have consequences for results-oriented regulation.[100]

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[95] Bernhard Schlink, "Open Justice in a Closed Legal System," *Cardozo L. Rev.* 13 (1991): 1713, https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/cdozo13&section=108.

[96] Niklas Luhmann, "Law as a Social System," *Nw. UL Rev.* 83 (1988): 136.

[97] Stella Gracia, "Bank Indonesia Dapatkan Predikat Indeks Integritas Terbaik," *Stabilitas*, December 2022, https://www.stabilitas.id/bank-indonesia-dapatkan-predikat-indeks-integritas-terbaik/.

[98] Agustinus Yoga Primantoro, "BI Siap Dukung Penyidikan KPK," *Kompas*, December 2024, https://www.kompas.id/artikel/hormati-proses-hukum-bi-siap-dukung-penyidikan-kpk.

[99] OJK, "Komitmen OJK Tegakkan Integritas Dan Berantas Korupsi Untuk Indonesia Maju," n.d., https://www.ojk.go.id/id/berita-dan-kegiatan/siaran-pers/Pages/Peringatan-Hari-Anti-Korupsi-Sedunia-HAKORDIA-Tahun-2024.aspx; OJK, "OJK Junjung Tinggi Penegakan Integritas Lembaga," 2023, https://ojk.go.id/id/berita-dan-kegiatan/siaran-pers/Pages/OJK-Junjung-Tinggi-Penegakan-Integritas-Lembaga.aspx.

[100] Christopher Decker, "Goals-Based and Rules-Based Approaches to Regulation," *BEIS Research Paper*, no. 8 (2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3717739; Pascal Frantz and Norvald Instefjord, "Rules vs Principles Based Financial Regulation," *Available at SSRN 2561370*, 2014, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2561370.

The closed nature of law emphasizes stability and predictability, which can be maintained by relying on foundational principles rather than rigid, detailed rules. Julia Black, a distinguished legal scholar and Professor of Law at the London School of Economics and Political Science (LSE), is widely recognized for her significant contributions to the conceptualization and development of principles-based regulation (PBR). This approach allows regulators to adapt to new developments without frequent legislative changes, ensuring that the regulatory framework remains flexible yet consistent with the overarching values and boundaries of the existing legal system.

Indonesia's current rule-based regulatory approach, as implemented by OJK, may hinder financial industry innovation and progress[101] , mirroring the challenges faced by China under a similar regulatory regime. [102] In contrast, the United States has experienced substantial innovation growth due to its adoption of principle-based regulation, emphasizing flexibility and adaptability.[103]

However, adopting principle-based regulations – as successfully implemented in the United States – would be beneficial. This approach fosters flexibility and adaptability.[104] A principle-based approach is scalable and can accommodate the diversity of institutions and their business models. It avoids a "*one-size-fits-all*" approach that might unfairly burden smaller players or fail to account for the complexities of larger ones. So, in terms of the implementation of the regulatory approach, we are in line with Mentari and Ibnu who recommended that Indonesia transition towards principle-based regulation [105] to encourage innovation and efficiency of financial institutions in Indonesia.

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[101] Mentari and Ibnu, "Principle-Based Regulation in Indonesia: In Response to Digital Age Toward Financial Services."

[102] Wu et al., "FinTech Regulation and Banks' Risk-Taking: Evidence from China"; Chen, "Chinese Commercial Banks and Fintech-Competition and Collaboration"; Vladimír Pažitka, Dariusz Wójcik, and Wei Wu, "Cultivating China's Fintech Ecosystem: The Visible Hand of the State," *Regional Studies* 58, no. 5 (May 2024): 1111–23, https://doi.org/10.1080/00343404.2023.2267082.

[103] Black, "Principles Based Regulation: Risks, Challenges and Opportunities"; Vijayagopal, Jain, and Ayinippully Viswanathan, "Regulations and Fintech: A Comparative Study of the Developed and Developing Countries"; Arner et al., "The Evolution of FinTech: A New Post-Crisis Paradigm."

[104] Vijayagopal, Jain, and Ayinippully Viswanathan, "Regulations and Fintech: A Comparative Study of the Developed and Developing Countries."

[105] Mentari and Ibnu, "Principle-Based Regulation in Indonesia: In Response to Digital Age Toward Financial Services."

Nevertheless; To emphasize principle-based regulation, it is essential that new laws be formulated based on empirical evidence and proven best practices. This can be achieved by tasking the OJK and BI with identifying successful strategies through direct experience or by examining and comparing international case studies. Because principles are overarching and apply universally, they minimize opportunities for institutions to exploit loopholes or technicalities that might exist in rule-based systems.

Whenever legal enforcer found an illegal actions along with the risks they pose and actions that have a significant impact or found a *mens rea* that deliberate intent to violate the law, they must imposed with a proper sanction (termination of financial innovation products up to revocation of business license).[106] Within a relevant sanction, the illegal act can be properly prevented.[107] In line with Kelsen's opinion, sanction can be coercive act to force the subject of law to comply all of provision in law.[108] In this context, principle-based regulation leverages the closed nature of law to balance flexibility with legal certainty.

3. Encouraging collaboration between banks and fintech while maintaining banks as primary players

To sustain their central role in the financial ecosystem while leveraging the advantages of fintech innovation for inclusion, banks need to adopt strategic partnership models. These partnerships enable seamless integration with fintech solutions without compromising the stability and trustworthiness of traditional banking systems. Payment system industry players (both banks and non-banks) will be designated as Payment System Providers (PSP), classified into two categories: Primary PSP and Non-Primary PSP. [109] To make bank as a primary PSP, there are some partnerships models alternatives. One effective model is

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[106] "Peraturan Otoritas Jasa Keuangan Republik Indonesia Nomor 7 /Pojk.05/2022 Tentang Perubahan Atas Peraturan Otoritas Jasa Keuangan Nomor 35/Pojk.05/2018 Tentang Penyelenggaraan Usaha Perusahaan Pembiayaan" (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 125); Otoritas Jasa Keuangan, "Surat Edaran Otoritas Jasa Keuangan Republik Indonesia Nomor 21/SEOJK.02/2019 Tentang Regulatory Sandbox," n.d., https://ojk.go.id/id/regulasi/otoritas-jasa-keuangan/surat-edaran-ojk-dan-dewan-komisioner/Pages/Regulatory-Sandbox.aspx.

[107] Steven Shavell, "The Optimal Structure of Law Enforcement," *The Journal of Law and Economics* 36, no. 1, Part 2 (1993): 255–87.

[108] Hans Kelsen, "Law, State and Justice in the Pure Theory of Law," *Yale LJ* 57 (1947): 377–90.

[109] Oscar Borgogno, and Giuseppe Colangelo. "Data, innovation and competition in finance: The case of the access to account rule." *European Business Law Review* 31, no. 4 (2020).

the Bank as a Platform (BaaP) approach, where banks serve as foundational platforms integrating fintech services to enhance their offerings. Essentially, BaaP refers to banks that integrate services from fintechs to augment their own offerings. In this model, the bank "owns" the customer relationship and keeps the customer in its own ecosystem; the fintech owns the platform behind the scenes and orchestrates the potentially expansive range of possible commercial arrangements for the ecosystem [110] .

Examples include institutions such as CBW, Fidor, JB Financial, Solaris Bank, and Wirecard, which have developed modular banking services acting as building blocks accessible to third parties via Application Programming Interfaces (APIs). This allows third parties to create tailored products and services, while banks retain control over customer relationships. This approach provides banks with indirect access to new client groups, extends their product distribution networks, and attracts fintech innovation, all while leveraging state-of-the-art technology. Advantages for banks include monetizing advanced technology capabilities, expanding distribution networks, and attracting fintech-driven innovation. For fintech partners, benefits include leveraging banking licenses, ensuring regulatory compliance, and gaining market-ready solutions. [111]

Another significant model is the back-end banking partnership. [112] In this arrangement, banks maintain control over customer interactions while leveraging fintech firms for technological solutions such as cloud computing, data storage, and cybersecurity. In back-end partnerships, a non-bank provides technology services to a bank. This could include services such as software development, data storage, cloud computing, cyber security or artificial intelligence (AI) solutions. Essentially, in this model the bank remains the customer-facing entity and the tech firm, often referred to as the (technology) service provider, provides back-end technology services to the bank [113] .Examples include collaborations where banks utilize big tech services like Amazon Web Services and Google Cloud to enhance their operations.

Another partnership also called White-Label FinTech Partnership. White-label fintech development involves pre-built financial solutions rebranded and

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110 'Innovations in Electronic Payment Acceptance'.

111 Patricia Hines, 'APIs in Banking: Unlocking Business Value with Banking as a Platform (baaP)'.

112 Irina Barakova, Johannes Ehrentraud, and Lindsey Leposke. *A two-sided affair: banks and tech firms in banking*. Bank for International Settlements, Financial Stability Institute, 2024.

113 Barakova, Ehrentraud, and Leposke.

customized by financial institutions. This approach allows banks to offer tailored financial services without investing in extensive development. For instance, banks can deploy white-label banking software, integrating third-party solutions under their branding. This partnership accelerates market entry and ensures that banks provide innovative, user-centric products without the complexities of internal development. [114]

The importance of collaboration between banks and fintech firms is further underscored by the need for role delineation. Banks, designated as Primary Payment Service Providers (PSPs), retain critical responsibilities such as payment clearing and settlement. Simultaneously, fintech firms provide innovative front-end and end-to-end solutions that enhance customer experiences and foster competition within the payment system.

Based on the explained above, FinTech companies, act as companies providing services complimentary to bank services (e.g., providing technologies used by banks to provide financial services); instead as Technology-driven providers that active in providing simple web- and data-based financial products/services creating competition to traditional banks[115] By adopting these partnership models, banks can remain competitive and relevant in the evolving financial landscape.

Conclusion

The Indonesian Central Bank's decision to grant fintech firms access to wholesale Central Bank Digital Currency (w-CBDC) is driven by a desire to promote financial inclusion. However, this move may potentially threatening bank stability due to disparities in regulation and innovation incentives. To level the playing field in the financial sector while accounting for incumbent bank stability in the era of CBDCs, we propose a legal framework drawing on Luhmann's open and closed system perspectives. For the open system, we adopted: entity-based regulations, such as restricting fintech services, rule capital requirements by entity or by activity, setting CBDC withdrawal thresholds, and differentiate between FinTechs, TechFins, and DFPs for taking

[114] Giesecke+Devrient, "White label solutions for payment schemes: Free your payment", *White Paper,* December 2020. https://www.gi-de.com/corporate/Financial_Platforms/Payment_Technology/Smart_Cards/Inside_the_card__Industry_standards/download_white_paper_white_label_approach.pdf

[115] Inna Romānova, and Marina Kudinska. "Banking and fintech: A challenge or opportunity?." *Contemporary issues in finance: Current challenges from across Europe.* Vol. 98. Emerald Group Publishing Limited, 2016, pp. 21-35.

police consideration; and activity-based regulations such as merger and acquisition controls to prevent market dominance. For the closed system, we suggested to legitimize OJK to be enforcer and collaborating with BI to be legislator in CBDC era. For promoting the flexibility of them, we also suggest to adopt principle-based regulation. If OJK found a best practices, OJK needs to coordinate with BI and purpose the provision in legislative procedure. To promote financial inclusion through technology and innovation, banks should engage in strategic partnerships with fintech companies. The author suggests approaches like Banking-as-a-Platform (BaaP), back-end collaborations, and white-label fintech solutions. These strategies help banks retain their primary role while leveraging fintech advancements to enhance financial inclusivity.

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Generative AI Statement

None

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